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Are we living in another Migration Period? Pandemics, migrations and the environmental link. A focus on Europe

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Introduction

Pandemics, migrations, and climate change: a summary of 2020, one would say. We are not talking of our time, tough. The same events, indeed, occurred during the so-called *Migration Period*, an historical period stretching from the 3rd to the 9th century, during which populations across Eurasia left their original homeland. This was due to several factors, but increasing evidence and studies reveal that a major role was played by climate changes. Notably, the same is happening now. It is sometimes said, indeed, that climate change will make people leave their homes in the future: data, however, reveal that changing climate conditions already had a major role in an important conflict which was at the basis of a great migration flow: the Syrian civil war. Moreover, zoonotic spill-overs, responsible of the Covid-19 as well as of the other twenty-first century pandemics, are also being favoured by the habitat disruption, one of the main drivers of climate change, along with CO2 emissions.

Therefore, are we at the edge of another Migration period, an era of great migratory flows and pandemics triggered by climate change? The concurrence of the Covid-19 outbreak and of the migratory crisis of these years seems to suggest it. We believe, indeed, that climate change will become the main driver of migrations and conflicts in the future, while nowadays it is already a "threat multiplier", being at the basis of droughts, floods and rising tensions in many countries of the Middle East and Africa. Europe is therefore already witnessing the arrival of the first "climigrants", but we could argue that in the future more and more people will decide to leave their countries due to the effects of changing weather conditions and even Europeans might decide to leave for countries experiencing more favourable conditions.

The current study addresses the issue through a comparison between our era and the Migration Period. Such a comparative approach is useful to grasp common trends and similarities between different periods while at the same time it can help foreseeing possible evolutions. Throughout the analysis we mainly focus on the following issues: how do people react to pandemics? Were the effects of the Justinian Plague different from the ones of the Covid-19? And which are the reasons that drive people out of their countries? Hence, can policymakers learn from the past and can we suggest possible policies?

Remarkably, we decided to focus on the Migration period because it is also known in southern European countries as the period of the "barbarian invasions"; such a striking difference (barbarian invasions/migrations) is extremely interesting for the different meaning a same period can have in different cultures or countries. We thus decided to focus on the Early Medieval Europe to study the migratory waves of the time with the aim to approach the current ones as historical processes triggered by important causes we need to deal with. Importantly, the presence of pandemics in both periods further gives the possibility to compare the two periods, also focusing on the interactions between pandemics, migrations, and climate change.

The analysis will also be based on two main underlying points. First of all, the study will deal with the concept of globalization: in our view, globalization is intrinsic to mankind, though it can certainly vary among societies and historical periods. There is no doubt, indeed, that our society is more globalized than the one of the Migration period. Nonetheless, in the past, globalization travelled along the trade routes and the migratory ones, and so did the Plague of Justinian. The same can be said, for instance, for Covid-19. However, given that our world is extremely more connected than the Early Medieval one, trends and processes are consequently accelerated. For instance, while it took one year for the Justinian Plague to reach Constantinople – Mediterranean's most important city at the time – from Pelusium (where the first outbreak was recorded), Covid-19 probably reached New York from Wuhan in less than a day. This gives the idea of the importance of analysing and comparing historical trends so to foresee possible and immediate consequences.

The second important underlying issue will be the collaboration between sciences: in such a globalized world, indeed, an holistic approach is needed, especially among policymakers. In the current study, indeed, we will deal with medicine, epidemiology, physics, sociology, economics, geopolitics and, naturally, history. This approach will thus highlight the necessity to adopt a viewpoint which spans the different branches of science; both in the past and in our time, indeed, this is exemplified for instance by the fact that a tiny bacterium or virus can have major geopolitical effects.

The analysis will be divided in three chapters. In the first chapter we will focus on the Migration Period, analysing the effects of the Justinian Plague on society, its possible diffusion, and the mystery of its origin. We will then move to the migratory movements that characterise the historical period, describing the migratory routes and the migrations' causes. Finally, we will deal with the climate change that took place in that era, arguing possible connections between it and the Germans', Slavs' and Avars' migrations, as well as with the Justinian Pandemic.

The second chapter will deal with the Contemporary era: after having introduced the twenty-first century pandemics, we will concentrate on the Covid-19's effects on the contemporary society, from an economic to a geopolitical point of view. The following paragraph, on the other hand, is dedicated to the migratory routes, but also returns on the issue of the current pandemic when showing how people in developing countries are losing their jobs, thus possibly decide to migrate in the next future. Moreover, in the final paragraph, we argue that the current climate change is already responsible of migrations and that the past and current pandemic are also triggered by the disruption of natural habitats.

In the final chapter we address the research question: are we living in another Migration Period? The chapter mainly compares the Contemporary and Early Medieval Europe, focusing on similarities and common trends. We then investigate possible evolutions and challenges, introduce the international climatic agreements and the mitigation strategies to deal with climate change as well as the European Green Deal. Finally, we suggest possible policies to deal with climate change and the related issues, in the short, medium, and long term.

I. The Migration Period

1.1. The 'Justinian Plague' and the First Plague Pandemic

What became known as the 'Justinian Plague' first appeared in CE 541 in the Mediterranean port of *Pelusium*, located in the easternmost bank of the Nile. Its outbreak is documented by several contemporary sources which have no doubt in placing the – historical - beginning of the "First plague Pandemic" in Egypt. Certainties, however, end here. For instance, scientists proved that *Yersinia pestis* was the bacterium responsible of the pandemic only in 2013[1] and a huge debate regarding the real number of the losses is still going on, as it will be illustrated below. It is still uncertain even why the pandemic suddenly ended, after several outbreaks over 200 years[2]. Moreover, we still do not know the exact path which led the Plague to the shores of the Mediterranean Sea, and this will probably remain a mystery unless new discoveries provide new certainties[3].

The best approach seems therefore to start our analysis from the historical sources. Among the most important contemporary ones we include Procopius (c. 500 – c. 570), author of the *History of the Wars*, John of Ephesus (c. 507 – c. 588) author of the *Ecclesiastical History*, Evagrius Scholasticus (c. 536 – c.594), author of the *Ecclesiastical History* and Gregory of Tours, (c. 538 – 594), author of the *History of the Franks*. We will also mention Paul the Deacon (c.720 – 796/9), author of the *History of the Lombards.*

Justinian, the emperor from which the Plague took the name, was in his fourteenth year of reign and in that year, he also had to deal with the invasion of the Ostrogoths in Italy and the Persians pushing in modern day Georgia. Indeed, Europe was in the middle of the Migration Period and was crossed by the armies of the Germanic and Asian tribes; moreover, four years before, an obscure event had covered the skies of the Continent: from that moment onward, 536/7 will be known as the "year without summer[4]". We will deal with both issues later. Nonetheless, this gives the idea of an entire period which has been interpreted as a *caesura* between the Roman era and the Middle Ages[5].

Considering that, as said before, all the contemporary sources agree on the fact that the first outbreak was recorded in Egypt[6] or in the Red Sea[7], it is interesting to stress the fact that they also concur in affirming that

[1] Harbeck M, Seifert L, Hänsch S, Wagner DM, Birdsell D, Parise KL, et al, *Yersinia pestis DNA from Skeletal Remains from the 6th Century AD Reveals Insights into Justinianic Plague*, PLoS Pathog 9, 5, 2013

[2] McCormick, *Toward a Molecular History of the Justinianic Pandemic*, in Plague and the end of antiquity, the pandemic of 541-750, edited by Lester K. Little, Cambridge University Press in association with The American Academy in Rome, 2007.

[3] Sallares R., *Ecology, Evolution, and Epidemiology of Plague* in Plague and the end of antiquity, the pandemic of 541-750, cit.

[4] Gunn, J.D., *The years without summer: tracing AD 536 and its aftermath,* British Archaeological Reports International, Archaeopress, 2000

[5] Meir, M., *The 'Justinianic Plague': the economic consequences of the pandemic in the eastern Roman empire and its cultural and religious effects*, Early Medieval Europe, 24,3, 267–292, 2016

[6] "It started among the Egyptians" (Procopius, *History of the Wars, II, 22*)

[7] "It took its rise from Aethiopia, as is now reported, and made a circuit of the whole world in succession" (Evagrius, *Ecclesiastic History,* XXIX)

it spread via sea, that is to say thanks to the main long-distance mean of transport of the time. This is underlined by both ancient sources like Gregory of Tours ("a ship from Spain […] unhappily brought the seed of this disease"[8]) and Procopius ("[…] this disease always took its start from the coast, and from there went up to the interior") and modern research[9].

Alexandria, the main port of the Mediterranean at the time, was hit the same year of Pelusium. Then, the plague moved from Egypt to the rest of the known world, reaching as far as Ireland in 544; in 542 it arrived in Palestine, North Africa, Sicily and Anatolia, in 543 it arrived in Rome, Spain and Northern France and the following year it finally reached the North Sea[10].

Constantinople, the Capital city of the Eastern Roman Empire, was struck in 542. Among the others, at the court of the Emperor Justinian there was the historian Procopius. He therefore witnessed the effects and the symptoms of the Plague and gave a precise description of them:

> "And in the second year [the disease] reached Byzantium in the middle of spring, where it happened that I was staying at that time […] But with the majority it came about that they were seized by the disease without becoming aware of what was coming either through a waking vision or a dream. And they were taken in the following manner. They had a sudden fever, some when just roused from sleep, others while walking about, and others while otherwise engaged, without any regard to what they were doing. And the body shewed no change from its previous colour, nor was it hot as might be expected when attacked by a fever, nor indeed did any inflammation set in, but the fever was of such a languid sort from its commencement and up till evening that neither to the sick themselves nor to a physician who touched them would it afford any suspicion of danger. It was natural, therefore, that not one of those who had contracted the disease expected to die from it. But on the same day in some cases, in others on the following day, and in the rest not many days later, a bubonic swelling developed; and this took place not only in the particular part of the body which is called "boubon" that is, below the abdomen, but also inside the armpit, and in some cases also beside the ears, and at different points on the thighs[11]"

Similar symptoms are also described by the other important source of the time, Evagrius, which even caught it and survived:

> "The plague was a complication of diseases: for, in some cases, commencing in the head, and rendering the eyes bloody and the face swollen, it descended into the throat, and then destroyed the patient. In others, there was a flux of

[8] Gregory of Tours, *History of the Franks*, translation of Earnest Brehaut. It is also interesting to observe that other authors such as John of Ephesus and Procopius claim that people were having visions of bronze boats roaming over the sea with a crew of headless men ("When this plague was passing from one land to another, many people saw shapes of bronze boats and (figures) sitting in them resembling people with their heads cut off. Holding staves, also of bronze, they moved along on the sea and could be seen going whithersoever they headed. These figures were seen everywhere in a frightening fashion, especially at night. Like flashing bronze and like fire did they appear, black people without heads sitting in a glistening boat and traveling swiftly on the sea, so that this sight almost caused the souls of the people who saw it to expire")

[9] Little, K., *Life and Afterlife of the First Plague Pandemic in Plague and the end of Antiquity*, in Plague and the end of antiquity, the pandemic of 541-750, cit.

[10] Keller, M., Spyrou, M.A., et al., *Ancient Yersinia pestis genomes from across Western Europe reveal early diversification during the First Pandemic (541–750)*, PNAS, 116, 25, 12363-12372, 2019

[11] Procopius, *History of the wars*, Book II. 22, translated by H. B. Dewing, Loeb Classical Library 48. Cambridge, MA: Harvard University Press, Cambridge, 1914.

the bowels: in others, buboes were formed, followed by violent fever; and the sufferers died at the end of two or three days, equally in possession, with the healthy, of their mental and bodily powers. Others died in a state of delirium, and some by the breaking out of carbuncles. Cases occurred where persons, who had been attacked once and twice and had recovered, died by a subsequent seizure"[12].

We have to consider that the Greek and sources (Procopius and Evagrius) had both knowledge of previous epidemics[13] and had also probably read Thucydides' accounts of the Athens' pestis[14]. This explains why they attempted to give a rational explanation and they were interested in describing the works of the doctors, which attempted to investigate the nature of the disease, though not understanding much, according to Procopius:

"Now some of the physicians who were at a loss because the symptoms were not understood, supposing that the disease centred in the bubonic swellings, decided to investigate the bodies of the dead. And upon opening some of the swellings, they found a strange sort of carbuncle that had grown inside them […]. I am able to declare this, that the most illustrious physicians predicted that many would die, who unexpectedly escaped entirely from suffering shortly afterwards, and that they declared that many would be saved, who were destined to be carried off almost immediately. So it was that in this disease there was no cause which came within the province of human reasoning; for in all cases the issue tended to be something unaccountable"[15]

From the accounts of the time, we can see that they hypothesised how the diseases could spread:

"For some perished by merely living with the infected, others by only touching them, others by having entered their chamber, others by frequenting public places. Some, having fled from the infected cities, escaped themselves, but imparted the disease to the healthy. Some were altogether free from contagion, though they had associated with many who were afflicted, and had touched many not only in their sickness but also when dead.[16]"

What struck the contemporary sources was the fact that whether on one hand the disease seemed to have spread all over the world[17] and to infect through contact, on the other one they could not understand why several houses or areas were left unhurt and why some people were not contaminated:

"In some instances, having infected a part of a city, it left the remainder untouched; and frequently in an uninfected city one might remark a few households excessively wasted; and in several places, while one or two households utterly perished, the rest of the city remained unvisited: but, as we have learned from careful observation, the uninfected households alone suffered the succeeding year […] For neither physicians nor other persons were found to contract this malady through contact with the sick or with the dead, for many who were constantly engaged either in burying

[12] Evagrius, *Ecclesiastic History, History Of The Church, In Six Books, From A. D. 431 To A.D. 594, A New Translation From The Greek, with an account of the author and his writings,* Samuel Bagster And Sons, London, 1846 Chapter XXX
[13] K. Little, *Life and Afterlife of the First Plague Pandemic in Plague and the end of Antiquity*, edited by Lester K. Little. Cambridge: Cambridge University Press, in association with the American Academy in Rome, 2006
[14] Maddicot, J.R., *Plague in seventh-century England*, Past & Present, in Plague and the end of antiquity, the pandemic of 541-750, cit; "in some respects similar to that described by Thucydides", Evagrius, *Ecclesiastic History*, chapter XXIX,cit.
[15] Procopius, *History of the Wars* 7 Vols., translated by H. B. Dewing, cit.
[16] Evagrius*, Eccleasiastic History,* Chapter XXIX, cit.
[17] "It embraced the entire world […] For it left neither island nor cave nor mountain ridge which had human inhabitants" (Procopius)

> or in attending those in no way connected with them held out in the performance of this service beyond all expectation, while with many others the disease came on without warning and they died straightway."[18]

Furthermore, Procopius argues that the cities that were left untouched "were seized with disorder", a description of mass hysteria which is also described by other sources, which point out that those who remained sane started to behave like dogs or sheep[19]. Therefore, the conclusion of Procopius is:

> "I am unable to say whether the cause of this diversity of symptoms was to be found in the difference in bodies."

Moreover, we must not forget that, at the time, many attributed the disease to the magical world: indeed, the contemporary sources wrote about visions of headless supernatural beings who transmitted the disease[20] or about bronze people rowing bronze boats[21]. On the other hand, physicians attributed the plague to "bad airs", but this explanation was also used for malaria[22].

Now we know that the disease was caused by the bacterium *Yersinia Pestis*[23], which was also responsible of the "Black Death" (the "Second Plague Pandemic") and of the "Third Plague Pandemic" and is still with us, appearing from time to time in several locations known as *bacterial foci*, that is to say natural locations in which the bacterium is enzootic, native to animals[24]. Indeed,the disease affects several species of rodents and it is transmitted to humans by bites of infected fleas which leave the body of the animals[25]. This explains why several houses were left untouched: sanitary conditions could have varied among the houses, or in certain cases people could have lived nearer to food provisions, that is to say closer to what attracts gnawers. This also explains why, according to the historical sources, poor people were affected more than others[26]: their living conditions at the time should have been appalling. Interestingly, the historian McCormick, author of *Tracking mass death during the fall of Rome* even argues that "butchers and slaughterhouses attract rats, whereas some evidence suggests that the intermittent noise of carpenters and metalworkers drives them away"[27].

[18] Evagrius, *Eccleasiastic History*, Chapter XXIX, cit.
[19] Atkinson, J., *The Plague of 542: not the birth of the Clinic*, Acta Classica, Vol. 45, pp. 1-18, 2002
[20] Procopius, *History of the Wars,* cit.
[21] John of Ephesus, *Ecclesiastic History,* cit.
[22] Sallares R., *Ecology, Evolution, and Epidemiology of Plague* in Plague and the end of antiquity, the pandemic of 541-750, cit.
[23] Harbeck M, Seifert L, Hansch S, Wagner DM, Birdsell D, et al., *Yersinia pestis DNA from Skeletal Remains from the 6th Century AD Reveals Insights into Justinianic Plague*, cit.
[24] Eroshenko GA, Nosov NY, Krasnov YM, Oglodin YG, Kukleva LM, Guseva NP, et al., *Yersinia pestis strains of ancient phylogenetic branch 0.ANT are widely spread in the highmountain plague foci of Kyrgyzstan*, PLoS ONE 12, 10, 2017
[25] Retief, F.P., *The epidemic of Justinian (AD 542): a prelude to the Middle Ages*, Acta Theologica, Supplementum 7, 2005
[26] "poor, for they died first" Michael the Syrian in Rosen, W., Justinian's Flea, Plague, Empire, and the Birth of Europe, Viking Penguin, 2007
[27] McCormick, M., *Tracking mass death during the fall of Rome's empire (I). Journal of Roman Archaeology*, 28, 325-357, 2015

1.1.1 Mortality and demographic effects

Apart from the "poor", the plague seemed not to have made differentiation per sex or even age; this is, at least, what we can understand from the historical sources[28], compared to several studies: according to McCormick, indeed, a study found that while "sex seems not to have strongly affected the risk of death from plague, another study argues that, unsurprisingly, previous frailty did increase that risk somewhat". Mortality seemed not to have varied in relation to the place where it hit, according to Procopius, who states that the Plague's victims corresponded "exactly to the number destroyed at the earlier time"; he also adds that the pestilence lasted four months in the city of Constantinople and:

> "at first the deaths were a little more than the normal, then the mortality rose still higher, and afterwards the tale of dead reached five thousand each day, and again it even came to ten thousand and still more than that[29]."

Furthermore, Procopius in his *Anecdota* or *Secret History* argues that the total amount of the deaths was about half the population of the city[30]. Nonetheless, there is no agreement on the issue: while several authors such as Kyle Harper suggest that the Justinian Plague killed half the population of the Eastern Roman Empire during the plague waves with devastating effects in the society of the time[31], others such as historians Mordechai and Eisenberg rejects this interpretation[32]. As for the latter interpretation, the authors of *Rejecting Catastrophe: The case of the Justinian Plague*, claim that "the plague was geographically vast and caused high mortality in some cases […] it had a devastating short-term effect […] however […] the effects of the plague were neither uniform, nor so catastrophic as to cause substantial mortality at the societal level, not to mention the collapse of states or empires[33]". In a previous article, Mordechai had asserted that the possible deaths for the city of Constantinople (with an estimated population of 500.000) during the first wave could have been "from 329,000 to 342,000 deaths with 67–71 days exceeding 100 mortalities per day[34]". Therefore, even though Procopius'assertion has been considered unreliable due to his criticism towards Justinian, as shown in the *Anecdota*, his estimates seem to be right. Mordechai and Eisenberg also confirm the version of John of Ephesus, who claim that the counting of the deaths was stopped when it reached 230.000, but he estimates that "300,000 people in Constantinople died during the first outbreak in the city"[35]. On the other hand, we can only hypothesise the effects of the Plague in the countryside[36]

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[28] "However, they say that three women in confinement survived though their children perished" (Procopius *History of the Wars*)
[29] Procopius*, History of the Wars*, cit.
[30] "And afterwards came the plague as well, mentioned by me before, which carried off about one-half of the surviving population" (Procopius, *Secret History,* XVIII, 44, translation of Henry Bronson)
[31] Harper, K., *The Fate of Rome, Climate, Disease and the End of an Empire,* The Princeton History of the Ancient World, Princeton University Press, 2017
[32] Mordechai, L., Eisenberg, M., *Rejecting Catastrophe: The Case of the Justinianic Plague*, Past & Present, Volume 244, Issue 1, August, Pages 3–50, 2019
[33] *Ibidem*
[34] White, L.A., Mordechai, L., *Modeling the Justinianic Plague: Comparing hypothesized transmission routes*, PLoS ONE 15,4, 2020
[35] *Ibidem*
[36] Meier, M., *The 'Justinianic Plague': An "Inconsequential Pandemic"? A Reply,* Medizinhistorisches Journal, Volume 55, 2, pp 172-199, 2020

However, Mordechai and Eisenberg's main assertion is that the Pandemic should not be considered a watershed event and they base their hypothesis on the analysis of the pollen, of the literary and non-literary sources (legislation, numismatics, papyri and archaeology)[37]. In their opinion, these analysis does not show sufficient proofs that the Justinian Plague had major demographic effects; having been so, we could find clear evidence in legal texts or an abandonment of exploited lands, measured by the palynological analysis. On the other hand, according to Mischa Meir, historian at University of Tubingen, Mordechai and Eisenberg's analysis is not sufficient to prove their conclusions. Meier, indeed, argues that the absence of an exhaustive account of the pestis must be explained making reference to the style and to the priorities of the historians.[38] According to the historian, we do not have to take in account the fact that "Procopius dedicates only 1.0% of his work to the plague[39]" or that "Gregory of Tours […] dealt with the plague in 1.3% of his work[40]". Meier, on the other hand, stresses the fact that John Lidus announces a separate chapter on the plague in his *De magistribus* (which has gone lost), thus giving a great attention to the history (and possibly, to the effects) of the plague.

In addition, in relation to the purported absence of evidence of the Plague in the legal texts, we can actually find some in the "7th edict of March 1, 542, [in which] reference is made quite bluntly to the encompassing presence of death in all places'[41]". Moreover, we should also consider the 122nd novel of 23 March 544 which was aimed to counteract the price increases not only in the Capital, but also to ethe entire Roman East; moreover, the so called "*epibolè*", the allocation of land to certain person who had to pay the tax burden on lying on these lands, was probably due to the abandonment of land, as a result of the Plague death toll[42].

As for the relative absence of references to the plague in the epitaphs, Meier argues that this is not a proof, as the Plague is said to have affected mainly the poor, which could have not afforded an epitaph. Moreover, it is also arguable that people died for the effects of the plague were predominantly buried in mass graves [43] and not in "normal" graves.

In order to the respond to the supposed absence of indications of losses made by Mordechai and his colleagues, Meir also include in his analysis the fact that "apparently, people in Egypt began to conclude long-term leases in the middle of the 6th century, which in turn reflects a change in the assessment of the value of agricultural land and may be related to the experiences during the plague"[44]. This would also reveal new insights in relation to the penetration of the pandemic in the countryside. Actually, the effects of the Plague in the countryside are

[37] Mordechai, L., Eisenberg, M., *Rejecting Catastrophe: The Case of the Justinianic Plague*, cit.
[38] Meier, M., *The 'Justinianic Plague': An "Inconsequential Pandemic"? A Reply,* cit.
[39] *Ibidem*
[40] *Ibidem*
[41] *Ibidem*
[42] Retief, F.P., *The epidemic of Justinian (AD 542): a prelude to the Middle Ages*, cit.
[43] Harbeck M, Seifert L, Hanasch S, Wagner DM, Birdsell D, et al., *Yersinia pestis DNA from Skeletal Remains from the 6th Century AD Reveals Insights into Justinianic Plague*, cit.
[44] Meier, M., *The 'Justinianic Plague': An "Inconsequential Pandemic"? A Reply,* cit.

also reflected in the abovementioned *epibolé* and in the description of Paul the Deacon of the Italian countryside.

Furthermore, in Meier's opinion, the palynological analysis should be embedded in "further source material", as it should regard lands that we are sure were actually used for agriculture. Lastly, in rejecting Mordechai's opinion, Meier argues that the plague was a major shock for the fact it was "the condensing moment of an extraordinary series of disasters extending over several decades[45]". Contemporary sources, indeed, stress the fact that the period was also characterized by famine, floods, volcanic eruptions, and earthquakes, not to mention the wars and the so called "barbaric invasions"[46]. This explains the words of Paul the Deacon, which describes abandoned villages and deserted fields as well as a huge silence among empty cities at the time of the pestilence of Italy[47]. Interestingly, this is the same description given by John of Ephesus.[48]

The sense of unpredictability present in the historians' description is also considered a proof of the huge demographic impact given by the pandemic: "John of Ephesus – Meir argues – wondered every morning whether he would live to see the evening"[49]; in his *Chronicles*, copied by Dionysus Telhmaharensins, he wrote:

> "One fell as he spoke, the other ran away; another died while eating; every man lost hope of living, and was afraid to go out, saying: "I shall perish in the middle of the house"[50].

In conclusion, we probably cannot precisely estimate the exact mortality rate of the First Plague Pandemic, but we should predominantly rely on the secondary effects to evaluate its demographic impact. Evidence seems to reveal it had a huge impact on the society of the time, both on the demographic and on the mentality point of view. New studies and statistics argue that the share of global population which died due to the Justinian Plague between 541 and 767 can be estimated around 33% and 40%, while the population decline in infected areas between 541 and 544 could have been around 20-25% and the population decline in infected regions between 541 and 700 might have been around 50-60%[51]. A section of this analysis will be therefore dedicated to the study of the socio-economic effects of the pandemic.

We will now focus on the geography of the First Plague Pandemic.

[45] *Ibidem*
[46] Retief, F.P., *The epidemic of Justinian (AD 542): a prelude to the Middle Ages*, cit
[47] Paolo Diacono, *Historia Langobardorum,* Foro Barbarico, GBL Grande Biblioteca, ebook, 2020
[48] Meier, M., *The 'Justinianic Plague': An "Inconsequential Pandemic"? A Reply,* cit.
[49] *Ibidem*
[50] Pseudo-Dionysius of 'Tell-Mahre', *Chronicles*, Liverpool University Press, 1996, p.74-98.
[51] O'Neill, A., *Estimated death toll of the Plague of Justinian 541-767*, Statista LUISS, April 2020

1.1.2 The First Plague Pandemic across Europe

According to the chronicles of Michael the Syrian, who reported the ones of John of Asia, the Plague, after its outbreak in the Red Sea, moved to the rest of the world, that is to say, "to the regions of the West, which are called "upper", the peoples of the Romans, the Italians, the Gauls, and the Spanish"[52].

As for Italy, we know that he the first outbreak hit in 543[53]. However, the most important historical source which give a wide description of the phenomenon in Italy is Paul the Deacon, who records an outbreak in Liguria during 565[54]. After a brief description of the symptoms, the author of *Historia Langobardorum* reports the effects on the country:

> "Everywhere there were mourning and tears, and since word had spread that those who left their homes had a good chance of surviving, these were left empty, abandoned, only the dogs remained as guardians. The flocks remained alone, the sheep were left alone, without a shepherd to watch over them. Where villages and crowded fortified places could be seen before, there was now an absolute silence. Sons fled, leaving the corpses of their parents unburied; Parents fled, leaving their children in raging fever. Those who remained to bury his near relative, he remained himself unburied. Abandoned places returned to primordial silence, no voices in the fields, no whistling of shepherds; no dangers of wild beasts among the cattle; no harm to domestic fowls. The crops outliving the time of the harvest, awaited the reaper untouched; the vineyard with its fallen leaves and its shining grapes remained undisturbed while winter came on. Silence reigned supreme where before the trumpets of war and the clang of arms were heard; no travellers and not even brigands, yet there were corpses as far as the eye could reach. Pastoral places had been turned into sepulchres for men, and human habitations had become places of refuge for wild beasts.[55]"

This description is also coherent with the demographic analysis provided by historians Barbiera e Dalla Zanna[56]. Indeed, the authors of the research "Population Dynamics in Italy in the Middle Ages: New Insights from Archaeological Findings", argue that the obtained data reveal a demographic pattern consistent with the outbreaks of the First Plague Pandemic. While experts agree on the fact that after the first outbreak "the number of inhabitants in Italy remained fairly constant for centuries[57]", there is evidence for an "intermittent" demographic regime, that is to say a series of mortality crisis followed by a rapid increase of the younger population[58]. Paul the Deacon claims that the last plague outbreak in Italy took place in the summer of 680[59], while we know that the final one was recorded in 749/50 in Sicily and Naples[60]; remarkably, according to the abovementioned study, the population began to increase "not until the 9th century"[61]. On the other hand, we

[52] *Ibidem*
[53] Little, L.K., *Life and afterlife of the First Plague Pandemic* in Plague and the End of Antiquity: The Pandemic of 541-750, cit.
[54] *Ibidem*
[55] Paul the Deacon, *Historia Langobardorum,* Foro Barbarico, cit., translation of the Author
[56] Barbiera, I., Dalla-Zuanna., G., *Population Dynamics in Italy in the Middle Ages: New Insights from Archaeological Findings, Population and development review* 35, 2, 367 – 389. 2009
[57] *Ibidem*
[58] *Ibidem*
[59] Little, L.K., *Life and afterlife of the First Plague Pandemic* in Plague and the End of Antiquity: The Pandemic of 541-750, cit.
[60] *Ibidem*
[61] Barbiera, I., Dalla-Zuanna., G., *Population Dynamics in Italy in the Middle Ages: New Insights from Archaeological Findings*, cit.

should also consider that the demographic crisis might have been a consequence of both the plague and the events of that period. At the time, Italy was ravaged by the armies of the two Goths and the Byzantines, sent by the Emperor Justinian to reconquer Italy and to free it from the hands of what he saw as invaders. On the other hand, it was in the same period that the Lombards decided to move to Italy: according to Paul the Deacon, following their decision, "fire swords appeared in the night skies of Italy", foreshadowing the arrival of the Germanic people. For two decades the Italian territory passed alternatively from the Goths to the Byzantines and vice versa, devastating a territory already hit by the pandemic: then, in 568, the Lombards moved in Italy. The end of their kingdom overlapped with the last pandemic outbreak[62].

As for Rome, Paul the Deacon wrote that "so many people were dying that bodies were placed two by two on biers for transport to the tombs outside the city"[63]. Moreover, Gregory of Tours relates the *pestis inguinaria* (that is to say, which affects the groin) to the flood of the Tiber.

As previously stated, the last outbreak was recorded in Southern Italy at the middle of the seventh century: it was one of the last outbreaks of the disease[64]. In concluding the analysis of the effects of the Plague in Italy, it is interesting to focus on a phrase of Paul the Deacon:

> "But this misfortune struck the barbarians within the Italian territory, up to the border with the Alemanni and the Bavarians.[65]

Until a few decades ago, it was dubious that the plague effectively crossed the Alps, but new discoveries confirmed the assertion of Paul the Deacon[66] – thus, probably his reliability in describing the effects of the disease in Italy. It is also important to stress – as we will see later – that the discovery made by the authors of the study "*Yersinia pestis DNA from Skeletal Remains from the 6th Century AD Reveals Insights into Justinianic Plague*" is the only evidence of the presence of the plague north of the Italian mountain range[67]. This was possible thanks to the analysis carried out in the early-medieval cemetery of Ascheim, near Munich. As far as we know, Paul the Deacon is the only historical source who claim that the plague effectively crossed the Alps.

However, before concentrating on the delicate issue of the presence of the plague pandemic in Northern Europe, we will analyse its effects in modern-day France. The main historical source is Gregory of Tours, who described the effects of the plague in his book *Historia Francorum.* The first mention of the plague is in the 31st chapter of the fifth book and it's anticipated, as in the narration of its arrival in Rome, by several prodigies,

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[62] Little, L.K., *Life and afterlife of the First Plague Pandemic* in Plague and the End of Antiquity: The Pandemic of 541-750, cit.
[63] *Ibidem*
[64] McCormick, *Toward a Molecular History of the Justinianic Pandemic*, in Plague and the end of antiquity, the pandemic of 541-750, cit.
[65] Paul the Deacon, *Historia Langobardorum,* Foro Barbarico, cit., translation of the Author
[66] Harbeck M, Seifert L, Hänsch S, Wagner DM, Birdsell D, Parise KL, et al. Yersinia pestis DNA from Skeletal Remains from the 6th Century AD Reveals Insights into Justinianic Plague, cit.
[67] *Ibidem*

like "three of four suns in the sky"[68] a "comet with a ray like a sword"[69] and fires in the sky[70]. Then, in the city of Clermont (Haute-Savoy),

> "the plague came, and such a carnage of the people took place through the whole district that the legions that fell could not be counted. For when sepulchres and gravestones failed, ten or more would be buried in a single trench. Three hundred dead bodies were counted one Sunday […]. Death was sudden. A wound the shape of a serpent would appear on groin or armpit and the man would be so overcome by the poison as to die on the second or third day. Moreover, the power of the poison rendered the victim insensible. […] At that time Lyons, Bourges, Cahors, and Dijon were seriously depopulated from this plague"[71]

We know that this happened in 563 because it is narrated after the so called "Tauredunum event", a tsunami triggered by a massive landslide in Lake Geneva. Again, after another prodigious event in Paris, during which "real blood fell from the cloud",

> "there was a great plague that year among the people. The sickness took various forms and was severe with pimples and tumours which brought death to many. Still many who were careful escaped. We heard that at Narbonne in that year the bubonic plague was very fatal, so that when a man was seized by it, he had no time to live."

Again, in the seventh book, chapter I, we are told that, approximately in the year 584,

> "the plague grew worse in Albi, and the greatest part of the people had now died and few of the citizens remained[72]"

The last mention of the Plague in France is found in the ninth book, chapter XXI; interestingly, in the chronicles we find that king Childebert II refuses to send his armies against the Lombards "for a very severe plague is now wasting Italy". Later we know that the same king

> "was told at the time that Marseilles was suffering greatly from the bubonic plague and that the disease had spread swiftly as far as the village in the country of Lyons called Octavus. But the king […] directed that nothing else than barley bread and clean water should be taken in the way of food and that all without intermission should keep watch."[73]

As for the city of Marseilles we are told that:

> "a ship from Spain […] brought the seed of this disease. And many citizens bought various merchandise from her, and one household in which were eight souls was quickly left vacant, its inmates all dying of this plague. But the fire of the plague did not at once spread through all the houses, but after a definite time like a fire in standing grain it swept the whole city with the flame of disease. […] The plague passed away in two months, and when the people, now reassured, had returned to the city the disease came on again and they who returned perished. Later on, the city was many times attacked by this death."[74]

[68] Gregory, Bishop of Tours, *History of the Franks*, translated by Ernest Brehaut, Fordham University online
[69] *Ibidem*
[70] *Ibidem*
[71] *Ibidem*
[72] *Ibidem*
[73] *Ibidem*
[74] *Ibidem*

This happened in 588[75], but the plague also recurred three years after. As Gregory clearly states, the disease was brought through the trade routes up to the interior of the country; we know that Arles was struck by the pandemic in 551 and since the city is situated by the Mediterranean Sea and at the mouth of the Rhone river, it probably travelled along this river. Another proof confirming that the Plague followed the trade routes along the French rivers lie in the necropolis of Sens, contemporary to the First Plague Pandemic, which was investigated by historians Dominique Castex and Sacha Kacki[76].

On the other hand, Gregory of Tours also states that several parts of France were left out by the Plague: that was the case of Clermont and the Auvergne[77]. According to Jean-Noel Biraben, cited by Dick Harrison, even northern Gaul and the Midi were not reached by the plague[78]. This, according to Harrison, would confirm what previously stated, that the disease mainly spread along the trade routes.

Since we are told that the Plague arrived in Marseille from Spain, we have a clue that is also hit the Iberian Peninsula. Unfortunately, this is only one of the few written evidence we have[79]. This is a problem raised by both the historians Micheal Kulikowski[80] and Jordina Carbonnell in two separate essays[81]. The circumstances of the arrival of the disease in Spain are almost the same experienced by Italy; within two centuries, Spain had been ruled by the Romans, the Visigoths, the Alans and the Visigoths again[82]. Moreover, during the kingdom of Justinian, in 552, Spain was also invaded by the Byzantine Army, which established the province of *Spania.* At the time of the first outbreak of the Justinian Plague in Spain – between 541 and 543[83] - the Iberian Peninsula was divided between the Visigoths' Kingdom – Toledo serving as Capital City – the Kingdom of the Suebi – with Capital Braga – and the Byzantine province.

In this chaotic context, the pandemic was also spread by the Byzantine army, but it had already weakened the Kingdom of the Visigoths too[84]. It had probably arrived in Spain's main ports before the summer of 542 thanks to the close commercial ties with the Byzantine Greece[85], though we can only rely on the annotations on the chronicles of Victor of Tunnuna, the so-called *Chronicles of Saragoza*, the only literary source for the initial outbreak of the disease[86]. In this text we find reference to an "inguinal plague" that "devastated almost all of Hispania". In order to understand the lack of historical sources on the plague, we have to consider the social context of the Iberian Peninsula of the time. The post-Imperial Roman *Hispania* was, indeed, becoming a rural

[75] McCormick, *Toward a Molecular History of the Justinianic Pandemic*, in Plague and the end of antiquity, the pandemic of 541-750, cit.
[76] Castex, D., Kacki, S., *Demographic Patterns Distinctive of Epidemic Cemeteries in Archaeological Sampl*es. Microbiology Spectrum, American Society for Microbiology, 2016.
[77] Sallares R., *Ecology, Evolution, and Epidemiology of Plague* in Plague and the end of antiquity, the pandemic of 541-750, cit.
[78] Harrison, D., *Plague, Settlement and Structural Change at the Dawn of the Middle Ages,* Scandia, Vol 59,1*,* 1993
[79] Kulikowski, M., *Plague in Spanish Late Antiquity*, in Plague and the end of antiquity, the pandemic of 541-750, cit.
[80] *Ibidem*
[81] Sales-Carbonell, J., *Reaccions i estratègies davant l'arribada de la «pesta de Justinià» a la Península Ibèrica (segles VI-VII)*, Revista d'igualada, 64-65, 2020
[82] *Dall'Impero Romano a Carlo Magno,* La Storia, La Biblioteca di Repubblica, UTET
[83] Kulikowski, M., Plague in Spanish Late Antiquity, in lague and the end of antiquity, the pandemic of 541-750, cit.
[84] Sales-Carbonell, J.,R*eaccions i estratègies davant l'arribada de la «pesta de Justinià» a la Península Ibèrica (segles VI-VII)*, cit
[85] Kulikowski, M., *Plague in Spanish Late Antiquity*, in Plague and the end of antiquity, the pandemic of 541-750, cit
[86] Sales-Carbonell, J.,*Reaccions i estratègies davant l'arribada de la «pesta de Justinià» a la Península Ibèrica* (segles VI-VII), cit

society, and was experiencing widespread violence, economic difficulties and several diseases and epidemics, in addition to the Justinian Plague[87]. These were aggravated by the common poor hygienic conditions and the economic hardship triggered by the events of the Migration Period. Therefore, historians can only depend on some hints rather than on clear evidence or historical sources. Even where we find massive burials, clear indication of an infectious disease, we can only hypothesise a link with the Justinian plague, since no paleogenetic studies have been carried out in these sites so far[88]. For instance, collective graves dating to the 6th century can be found in Valencia: no organization and no funerary rites has been detected[89]. Moreover, since we cannot find evidence of violence and as the corps seemed to have been burned or simply thrown into caves, we can conclude that these are clear evidence of the Justinian Plague. An extensive study aimed to detect massive burials relating to the First Plague Pandemic has been made by Maria Benavides, History Graduate at University of Alcalà[90]. The fact that there are several improvised burials, such as caves and galleries, can be interpreted as a indicative of fear and oversaturation of burials. In this sense, the indications given by the Valencia council in 546 seems quite revealing: it is reported that in case of a sudden death, the tomb must be quickly sealed. Fifteen years later, another council in Braga ruled that bodies should not be buried in the walls of the basilicas.

As for the historical sources, we can find a hint of the plague in the death of a man narrated in one chapter of the *Life of the Fathers of Mérida*, narrating episodes of the 6th century; as "food shortages" "diseases" and "plague epidemics" are mentioned in the same chapter, we can argue that he probably died of bubonic plague, judging from his medical picture[91].

Another evidence reported by Jordina Sales-Carbonell is an epigraph found in Cordoba dating to the year 609, which contains a person died of inguinal plague[92].

Given the widespread evidence, Carbonell argues that by the seventh century, the plague was already endemic[93]. However, according to Kulikowski, continuous outbreaks could have not been possible without constant reintroduction of the disease from outside the Iberian Peninsula[94]. This is due to the fact that, according to the historian, even at its peak, the population was "not large enough to sustain density dependent disease endemically"[95]. Actually, constant reemissions could have been possible thanks to the continuous invasions that affected the former Roman province of *Hispania*. In 711, the armies of Tariq ibn Ziyad invaded Spain, establishing the Umayyad Caliphate. Two year before, according to the *Akhbar Majmu'a,* an Arabic

[87] *Ibidem*
[88] *Ibidem*
[89] Kulikowski, M., *Plague in Spanish Late Antiquity*, in Plague and the end of antiquity, the pandemic of 541-750, cit
[90] Benavides, M., *Evidencias arqueológicas de la peste justinianea en Hispania*, Arqueología y Prehistoria del Interior Peninsular, 8, 2019
[91] Sales-Carbonell, J.,*Reaccions i estratègies davant l'arribada de la «pesta de Justinià» a la Península Ibèrica (segles VI-VII)*, cit.
[92] *Ibidem*
[93] *Ibidem*
[94] Kulikowski, M., *Plague in Spanish Late Antiquity*, in Plague and the end of antiquity, the pandemic of 541-750, cit.
[95] *Ibidem*

source, between 707 and 709 half of the Spanish population died in consequence of famine and the plague[96]. However, we have little information about subsequent outbreaks of the disease after the invasion of 711[97].

In conclusion, we can argue that, even though we cannot rely on precise descriptions of the First Plague Pandemic in Spain, evidence show that it had profound effects on the society of the time: however, we will dwell later on this specific point. Nonetheless, it is important to stress that the historical sources analysed so far are coherent with the description given by the contemporary ones in Italy and France. At the same time, it is also crucial to emphasize that the demographic decline witnessed by the abandonment of rural settlements from the beginning of the sixth century can also be attributed to the chaotic conditions of the Iberian Peninsula. The Justinian plague, therefore, aggravated the condition of a society already hit by the dramatic changes following the collapse of the Roman Empire.

Epochal changes make it difficult to detect the effects or even the arrival of the Justinian plague in the British Isles as well. This period, indeed, was dense of transformations and tensions: the end of the Roman rule in Britain, the simultaneous raids of Saxons, Picts and Angles and the establishment of a multitude of little kingdoms scattered among the island (as narrated by Gildas in his *De Excidio et Conquestu Britannia)*.

However, among the few literary sources we can find the work of the abovementioned Gildas, probably a member of a Briton noble family: once become a monk, he travelled to Ireland and to Rome, after which he founded a monastery in Rhuys, Britanny[98]. There, he wrote his most famous work, *De Excidio et Conquestu Britannia* and probably died around 570, in his seventies. In his work we can possibly find a reference to the bubonic disease that was spreading in Europe: indeed, in Part I, chapter 22, he writes about a "*famosa peste",* that is to say a "well known plague"[99]:

> "a deadly pestilence came upon the unwise people which, in a short time, without any sword, brought down such a number of them that the livings were unable to bury the dead"[100]

The use of the adjective "well known" seems to suggest that the disease was widespread in the country: interestingly, Gildas travelled to Ireland, where we can find a possible reference to the arrival of the Plague in the Annals of Ulster of 545[101]: "*Mortalitas prima que dicitur blefed in qua Mo-Bi Clâranech obit* [that is to say] The first mortality which is called bléfed, in which Mo-Bi Clârai died"[102]. In addition, in the *Annals of*

[96] *Ibidem*
[97] Sales-Carbonell, J.,*Reaccions i estratègies davant l'arribada de la «pesta de Justinià» a la Península Ibèrica (segles VI-VII)*, cit.
[98] *Gildas il Saggio*, Enciclopedia Treccani online
[99] Gildas, *The ruin of Britain*, fragments from lost letters, the Penitential, Together with The lorica of Gidas. Edited for the Hon. Society of Cymmrodorion by Hugh Williams, Published by the the Hon. Society of Cymmrodorion by David Nutt, 1899
[100] *Ibidem*
[101] Haley, G.C., *Tamlachta: The Map of Plague Burials and Some Implications for Early Irish History*, Proceedings of the Harvard Celtic Colloquium ,22, pp. 96-140, 2002
[102] *Ibidem*

Clonmacnoise we are told that "*The[re] was a great mortality w[hi]ch was called Irish Blefeth, of which Disease Clarineagh al[ia]s Berchann, who is supposed to be called in English Merlyn*"[103].

We cannot determine whether the aforementioned "disease" effectively was the Justinian Plague, though the timing seems to suggest it. It could be possible, since the plague appeared in 541 in Egypt and there were close connections between the British Isles and the Mediterranean world at the time; furthermore, there is evidence that this trade also involved corn and cloth, commodities associated to rats and fleas [104]. Moreover, in the Annals of the Four Masters we read that:

> "[in] The Age five hundred and forty-three. The fifth year of Diarmait. There was an extraordinary universal plague through the world, which swept away the noblest third part of the human race".

The reference to the "world" and the "third part of the human race" is effectively consistent with the spread of the plague and the mortality rate we found in the other parts of Europe. Interestingly, on the other part of the Sea, in Wales, the King Maelgwn died during the "great mortality of 547", as reported by the *Annales Cambriae*[105]. Another reference to th e "great mortality" is made in the Annals of Ulster[106]

Moreover, the historian William MacArtur reports that "The pestilence that is called *samtrusg*"[107], recorded in 554, should be associated to something affecting the skin, as the name seems to suggest[108]: however, given its degree of infectivity implicit in the word "pestilence", it cannot be identified with leprosy, as suggested by the Annals of Ulster.

We have to wait for the chronicles of Beda – who lived between 673 and 735 – for a literary evidence of what could have possibly been the arrival of the plague in England. It is important to stress that, unlike Procopius and his contemporary historians, Beda had not probably read the description of the pestilence in Athens given by Thucydides and when the plague arrived in the monastery he was living in, he was only a teenager[109]. Nonetheless, his description of a disease is precise:

> In the same year 664, there happened an eclipse of the sun, on the third day of May, about the tenth hour of the day. In the same year, a sudden pestilence depopulated first the southern parts of Britain, and afterwards attacking the province of the Northumbrians, ravaged the country far and near, and destroyed a great multitude of men. […] Moreover, this plague prevailed no less disastrously in the island of Ireland."[110]

[103] *Ibidem*
[104] Maddicot, J.R., *Plague in seventh-century England,* Past & Present, Aug., 1997, No. 156 (Aug., 1997), pp. 7-54

[105] *Ibidem*
[106] *Ibidem*
[107] MacArthur, W., *The Identification of Some Pestilences Recorded in the Irish Annals*, Irish Historical Studies, 6, 23, 169-188, 1949
[108] *Ibidem*
[109] Maddicot, J.R., *Plague in seventh-century England*, cit.
[110] Sellar, A.M., *Bede's Ecclesiastical History of England*, *A Revised Translation, With Introduction, Life, and Notes*, Oxford, London George Bell and Sons, 1907

The time of the year is consistent with the Justinian plague: indeed, it usually appears in late spring and becomes more virulent in summer, when fleas reproduce[111]. Interestingly, in the same year 665, the Annals of Tigernach (Ireland) record a great mortality[112] .

After the outbreak of 664, Bede records other bursts: according to John Maddicot there was one in the Deiran monastery between 666 and 669, following which the pestilence headed southward[113]. In chapter XXXIII of *Vita St. Cuthberti*, Bede states that:

> "at the same time the plague made great ravages in those parts, so that there were scarcely any inhabitants left in villages and places which had been thickly populated, and some towns were wholly deserted."[114]

According to William MacArthur, this outburst coincided with the so called *Mortalitas Puerorum*, the mortality of children in Ireland, which is labelled "the third mortality" by the Annals of Inisfallen[115]: this might be a reference to the fact that it was the third outburst of the same pestilence.

It has been said that the brevity of such information given by the chronicles of the time might lead to think that the Justinian Plague never reached Ireland or that the density of population was not sufficient to spread of the disease[116]; this is why authors like Gene Haley are trying to find evidence of the plague in the *tamlachta*, that is to say in the mass burials found in Ireland. Moreover, as for the issue of demography, he argues that at least in certain locations, could "have been higher than is usually envisioned"[117]. Findings of exotic pottery and jewellery and metallurgy in an area in which there are several mass burials, seem to confirm the link between trade and diffusion of the plague. Ports and commercial towns could have seen outbursts of the Plague. Effectively, we have to say that the only clear proof that the plague ever arrived in the British Isles has been found in a mass burial, in Edix Hill, near Cambridge. New research and analysis of the people buried in the *tamlachta* could possibly reveal new insights on the spread of the Justinian Plague[118].

Moreover, many authors argue that there could be a link between the possible arrival of the plague in Ireland and the spread of the so called "ringforts"[119]; remarkably, this kind of fortification was extremely rare in the Irish Iron Age and began to reappear during the fourth and the fifth century[120]. Differently from the rest of Europe, there were no social tensions and invasions in Ireland; the sudden and large construction of fortifications has been therefore interpreted as a response or as an attempt to protect from a mysterious and

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[111] Maddicot, J.R., *Plague in seventh-century England*, cit
[112] Crawford, M., *Famine and Disease in Ireland*, edited by A. Clarckson and Margaret Crawford, Tayor and Francis Ltd, 2005
[113] Maddicot, J.R., Plague in seventh-century England, Past & Present, cit
[114] Seller, A.M., Bede's Ecclesiastical History of England, A Revised Translation, With Introduction, Life, and Notes, cit.
[115] MacArthur, W., The Identification of Some Pestilences Recorded in the Irish Annals
[116] Haley, G.C., Tamlachta: The Map of Plague Burials and Some Implications for Early Irish History, cit
[117] *Ibidem*
[118] Keller, M., Spyrou, M.A., et al., Ancient Yersinia pestis genomes from across Western Europe reveal early diversification during the First Pandemic (541–750), cit.
[119] See Haley, G.C., Tamlachta: The Map of Plague Burials and Some Implications for Early Irish History, cit and Lynn, C.J., *Settlement and Disease: a plague on your raths* in *Archaeology Ireland*, 19,4, 14–7, 2005
[120] Haley, G.C., Tamlachta: The Map of Plague Burials and Some Implications for Early Irish History, cit.

widespread mortiferous disease[121]. Others suggested that they could have also been either a way to demonstrate a certain status or the beginning of a social reorganization following the death of a great part of the population[122]. Indeed, no evidence of change of warfare have been detected so far. This interpretation is also consistent with the structural abandonment of settlements witnessed in the seventh-century England by Christopher Taylor, as reported by Maddicot[123] and testified by Bede, as previously said. However, this has also been interpreted as a proof of the demographic decline following the pandemic[124].

1.1.3 What about Northern Europe?

A separate chapter is needed to address the issue of the spread of the Justinian Plague in Scandinavia. On this topic, indeed, there is no wide agreement[125], but several hypotheses have been made so far. First of all, while for the rest of Europe we can speculate on the presence of the Plague analysing several hints given by the chronicles, this is not the case of Northern Europe: we completely lack written sources[126]. Therefore, historians' approach was to seek proofs of possible outbreaks of the Justinian Plague, such as mass burials and depopulated settlements, as in the rest of Europe.

Interestingly, there is evidence of population decline all across northern Europe in the years following the outbreak of the Justinian Plague: according to the historian Daniel Löwenborg, all over Scandinavia "there are indications of a dramatic and perhaps sudden societal, economical, ecological as well as demographic downturn, or at least extensive change. This shift has caused Swedish archaeologists to make a distinction between the Early and the Late Iron Age at this time. The turning point is usually set at year CE 550[127]". For instance, the two historians Graslund and Price report that in Southern Norway there was a decrease in the number of burials around the middle of the 6th century[128], while Daniel Löwenborg states that the clearest evidence of a general abandonment can be found in central Sweden, in the village of Hälsingland, where palynological analysis showed a drastic decline in pollen and cereals and other vegetations related to human activities[129]. Same observations have been made relatively to the islands of Gotland – where signs of abandonment of at least 1900 structures are reported – and Oland, where in addition to a structural

[121] *Ibidem*
[122] Lynn, C.J., *Settlement and Disease: a plague on your raths*, cit.
[123] Maddicot, J.R., *Plague in seventh-century England*, cit
[124] *Ibidem*
[125] *Plague and the End of the Antiquity*, *The pandemic of 541-750,* Edited by Lester K. Little, Cambridge University Press in association with The American Academy in Rome, 2007
[126] Seger, T., *The plague of Justinian and other scourges : an analysis of the anomalies in the development of the iron age population in Finland,* Journal of Swedish Antiquities, 1982
[127] Löwenborg, D. *An Iron Age Shock Doctrine – Did the AD 536-7 event trigger large-scale social changes in the Mälaren valley area?*, Journal of Archaeology and Ancient History, 4, 1-29, 2012
[128] Graslun, B., Price, N., *Twilight of the gods? The 'dust veil event' of AD 536 in critical perspective*, Antiquity, 86(332), 428-443, 2012
[129] Löwenborg, D. *An Iron Age Shock Doctrine – Did the AD 536-7 event trigger large-scale social changes in the Mälaren valley area?,* cit.

abandonment, some bodies seem to have been burnt too[130]. Moreover, fortified settlements were are also peculiar of that period, thus confirming that social tensions were widespread in Europe in the Migration Period[131]. Moreover, a shift in burial customs in Scandinavia seems to be part of a general European modification in funeral habits[132]. New research should investigate the possibility that this might be related to the spread of the Plague. In Finland, for instance, a general low burial continuity between the 6th and the 7th century – particularly evident in Ostrobothnia – has been interpreted as an evidence of the presence of the Plague, also considering the two mass burials found in the Ostrobothnian waters, containing at least 60 individuals.[133]

On the other hand, critics of this hypothesis argue that the species considered the main vector of the plague so far, *Rattus rattus* (grey mice), was not present in Scandinavia until around 1050 CE[134]; isolated findings were made in Poland, (dated to the eight century) and near Berlin, in Waltersdorf[135] (Roman period). However, apart from the latter and except some discoveries made by the border of the Roman Empire in modern day Hungary[136], grey mice seem to have not crossed the former *Limes* of the Roman empire; at least not until the 10th century. Indeed, according to the paleobiologists Audoin-Rouzeau and Vigne, the grey mouse is a "sedentary rodent"[137] and only moves if transported by the man. This would confirm the spread of the Justinian Plague as limited to the nearabout of commercial roads, explaining why some cities were not touched by it. However, new research and discoveries are undermining this interpretation.

While we are sure that the Black Death spread all over Europe (apart from some defined areas), according to Zoology Professor David Davis, we lack certainty that this was possible thanks to the action of *Rattus rattus*: rapidity of spread could have also been possible through contact or fleas[138]. This is also the thesis of researchers Anne Karin Hufthammer and Lars Walløe, who argue that there are no findings of black rats in Norwegian rural areas in Medieval times and they are limited even in harbour cities[139]. According to the research, this is also true for the other Nordic countries. Therefore, considering *Rattus Rattus* as the only intermediate host of *Yersinia Pestis* would be problematic, given the proved effects of the Second Plague Pandemic in

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[130] Flink, G., *Ölands stensträngsområden och den justinianska pesten*, Nordic Journal of Settlement History and Built Heritage, 11, 21–135, 1986

[131] Löwenborg, D. *An Iron Age Shock Doctrine – Did the AD 536-7 event trigger large-scale social changes in the Mälaren valley area?,* cit

[132] *Ibidem*

[133] Seger, T., *The plague of Justinian and other scourges : an analysis of the anomalies in the development of the iron age population in Finland*, cit.

[134] Davis, E.D., *The Scarcity of Rats and the Black Death*: An Ecological History, The Journal of Interdisciplinary History, 16, 3, 455-470, 1986

[135] Audoin-Rouzeau, F., Vigne, J., *The black rat (Rattus rattus) in Roman and Medieval Europe: The commercial roads and the spread of plague*, Anthropozoologica, 1997

[136] Kovács, Z.E., *Dispersal history of an invasive rodent in Hungary – subfossil finds of Rattus Rattus,* Acta Zoologica Academiae Scientiarum Hungaricae 58, 4, 379–394, 2012

[137] Audoin-Rouzeau, F., Vigne, J., *The black rat (Rattus rattus) in Roman and Medieval Europe: The commercial roads and the spread of plague*, cit.

[138] Davis, D.E., *The Scarcity of Rats and the Black Death: An Ecological History,* cit.

[139] *Hufthammer, A.K.,Walløe, L., Rats cannot have been intermediate hosts for Yersinia pestis during medieval plague epidemics in Northern Europe*, Journal of Archaeological Science, Elsevier, Volume 40, 4,1752-1759, 2013

Scandinavia[140] . This is not to say that there is not a link between plague and *Rattus Rattus*[141]; nonetheless, their presence seems not strictly linked to the one of bubonic plague. Another clear example is provided by the bubonic plague of London, where no rats are mentioned[142]. Moreover, even when mice's presence is given, studies are not sure about the effective link between rodents and plague: territories of groups of rats are larger than a house and this does not fit with circumstances in which plague was confined to a single house[143]. Hufthammer and Walløe's conclusion is worth being reported as it probably solves the long-standing dispute regarding the spread of the Justinian plague:

> "Both the epidemics during the Justinian pandemic (542-767) and the European epidemics from 1347 onwards were plague epidemics, in other words caused by *Y. pestis*. During these epidemics in Europe, plague was transmitted directly from human-to-human by an insect ectoparasite vector, without a mammalian vector such as the black rat. The only potential candidates that were widely distributed in large numbers in all European countries appear to have been the human flea *P. irritans* and the human louse *P. humanus*. There were probably very large numbers of fleas and lice in people's clothes and bedding in the Middle Ages and early modern times. Over longer distances, plague was carried by people making journeys or in the goods they transported. Infected human fleas can survive for long periods without feeding, and could therefore have been trans-ported in clothing, wool and many other types of goods. This trans-mission model, unlike the rat model, can also explain the rapid spread of plague epidemics. It also explains why all members of one household in a town might become plague victims while neighbouring households escaped. Many such cases were observed, and they cannot be explained by the rat model"[144]

Interestingly, a 2014 study confirmed that *Pulex irritans* can transmit *Yersinia Pestis* between humans[145]. However, this does not mean that all the European regions during the Justinian Plague Europe should have been equally hit by the Pandemic: towns and territories that were excluded from the trade routes could have been sparred as well. On the other hand, even though Northern Europe was outside the former borders of the Roman Empire, it was fully included in the trade routes of the time[146]. There were three main commercial itineraries connecting Southern and Central Europe to Scandinavia: the eastern one, which connected the Eastern Mediterranean to the Baltic via the Russian steppes; the central one, linking Germany to Northern

[140] According to Harrison, author of *Stora döden: den värsta katastrof som drabbat Europa,* the disease killed as much as 60-65% of the population in the Nordic country and was brought by ship from England.
[141] *Hufthammer,* A.K.,Walløe, *L., Rats cannot have been intermediate hosts for Yersinia pestis during medieval plague epidemics in Northern Europe,* cit.
[142] *Ibidem*
[143] Davis, D., The characteristics of rat populations, The Quarterly Review of Biology, pp. 373-401, 1958 in Hufthammer, A.K.,Walløe, L., *Rats cannot have been intermediate hosts for Yersinia pestis during medieval plague epidemics in Northern Europe*, cit.
[144] *Hufthammer, A.K.,Walløe, L., Rats cannot have been intermediate hosts for Yersinia pestis during medieval plague epidemics in Northern Europe,* cit.
[145] Ratovonjato, J., Rajerison, M., Rahelinirina, S., Boyer, S., *Yersinia pestis in Pulex irritans Fleas during Plague Outbreak*, Madagascar, Emerg Infect Dis., 20,8, 1414–1415, 2014
[146] Jankuhn, H., *Trade and Settlement in Central and Northern Europe up to and during the Viking Period*, The Journal of the Royal Society of Antiquaries of Ireland , 112, 18-50, 1982

Europe, where traders mainly transported fur and gold; the western one, where goods travelled from Gaul across the North Sea[147].

In conclusion, another recent – and unexpected[148] – discovery seem to confirm Hufthammer and Walløe's thesis: a 2018 study revealed the presence of *Yersinia Pestis* in a Neolithic settlement in Sweden. The genomic analysis carried out by the scientists demonstrated that the bacterium's strain predated all the "modern and ancient strains of this pathogen"[149]. This means that the bacterium spread throughout Eurasia during the Neolithic decline[150]. Moreover, since no *Rattus Rattus* skeletons have been found earlier than Viking Age in Scandinavia, this proves that *Yersinia Pestis* could have been present anyway. Further studies on the skeleton remains dating to the Migration Period are therefore needed.

1.1.4 The socio-economic effects of the Justinian Plague

We already dealt with the descriptions given by the historians about the abandonment of the territories: these crude images give the idea of a widely depopulated Europe but also raise the issue of the long-term effects of the Plague on a society. The European society of the time, indeed, was already facing historical changes such as the end of the Roman rule, the collapse of written knowledge and the incoming migrations of Northern European tribes: we have, therefore, to investigate and classify the effects of the Plague.

In his essay *The plague pandemic and the Slavic expansion in the 6th-8th centuries,* Arkadiusz Sołtysiak, University of Warsaw, divided the effects of the Plague in "Physical" and "Psychological", arguing that we could identify primary, secondary and ternary effects. We could therefore find different impacts on the individual point of view, as well as on the demographic, economic, political, and social ones[151].

We will follow this approach, looking for evidence in the historical sources as well as in the archaeological findings.

First of all, we can investigate the effect on the single individuals: we have already mention that John of Ephesus used to say that he wondered whether he would live to see the evening[152] . Pseudo-Dionisius, for instance, narrates about a man carrying tablets with his names so that, if he died, his family would know it[153]. These two narrations give the idea of a common sense of uncertainty. Moreover, Pseudo-Dionisius gives a wide description of the overall individual effects too, arguing that the Plague's impact came:

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[147] *Ibidem*

[148] Zhang, S., *An Ancient Case of the Plague Could Rewrite History*, The Atlantic, 6 December 2018

[149] Rascovan, N., Sjögren, K., et al., E*mergence and Spread of Basal Lineages of Yersinia pestis during the Neolithic decline*, Cell, Volume 176, 1–2, 295-305, 2019

[150] *Ibidem*

[151] Sołtysiak, A., *The plague pandemic and the Slavic expansion in the 6th-8th centuries,* Archaeologia Polona, Institute of Archaeology and Ethnology Polish Academy of Sciences, 44,2006

[152] Meier, M., *The 'Justinianic Plague': An "Inconsequential Pandemic"? A Reply,* cit.

[153] Pseudo-Dionysius of 'Tell-Mahre', Chronicles, cit.

> "over corpses which split open and rotted on the streets with nobody to bury (them); over houses large and small, beautiful and desirable which suddenly became tombs for their; inhabitants and in which servants and masters at the same time suddenly fell (dead), mingling their rottenness together in their bedrooms, and not one of them escaped who might remove their corpses out from within the house; over others who perished falling in the streets to become a terrible and shocking spectacle for those who saw them, as their bellies were swollen and their mouths wide open, throwing up pus like torrents, their eyes inflamed and their hands stretched out upward, and (over) the corpses rotting and lying on comers and streets, with nobody to bury (them); over ships in the midst of the sea [which] became tombs for their captains and they continued adrift on the waves carrying the corpses of their owners; over other (ships) which arrived in harbours, were moored by their owners, and remained (so), never to be untied by them again; over palaces which groaned one to the other; over bridal chambers where the brides were adorned (in finery), but all of a sudden there were just lifeless and fearsome corpses; over virgins which (had been) guarded in bedchambers and (now) there was nobody to carry them from (these) bedchambers to the tombs; over highways which became deserted; over roads (on) which (the traffic) was interrupted; over villages whose inhabitants perished all together; over many things of this kind, which defeat all who have the power of speech in (their skill with) words and stories."[154]

This description effectively depicts the impact of the Plague on every member of the society. Moreover, since there was no more control,

> "If somebody said that in that shop there were only 1000 pounds of gold and silver, it would still be (as if) nothing. So […] people entered and took freely. They looked and were astonished. They cast their eyes on many things, especially on gold, and took (it) and wished to leave"[155]

This is something that is reported by Procopius too, though in his description we see how people changed their conduct, many forgetting their belonging to a certain faction, others only to start behaving as they already had once the Plague was passed:

> "At that time all the customary rites of burial were overlooked. For the dead were not carried out escorted by a procession in the customary manner, nor were the usual chants sung over them, but it was sufficient if one carried on his shoulders the body of one of the dead to the parts of the city which bordered on the sea and flung him down; and there the corpses would be thrown upon skiffs in a heap, to be conveyed wherever it might chance. At that time, too, those of the population who had formerly been members of the factions laid aside their mutual enmity and in common they attended to the burial rites of the dead, and they carried with their own hands the bodies of those who were no connections of theirs and buried them."[156]

These descriptions not only make us imagine how the individual microcosm was changed, but they also give the idea of how the macrocosm was hit too; Ps. Dyonisius, indeed, mentiones "ships", "highways", "roads" and "villages", as well as the problem of the burials. The State's response is narrated by John of Ephesus, copied by the same Ps.Dyonisius:

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[154] Ps.Dyonisius in Rosen, W., Justinian's Flea, Plague, Empire, and the Birth of Europe, cit.

[155] John of Ephesus in Ps. Dyonisius of Tel-Mahre, *Chronicle, Part III,* translated with notes and introduction by Witold Witakowski, Liverpool University Press, 1996, p.74-98

[156] Procopius, Book II. 22., *translation of. H. B. Dewing,* cit.

> Also "the empire was sitting in sorrow", as it is written, for (the authorities) learned that the hands of the people who were bringing out the corpses grew weak because they also became fewer and (began to) disappear. The city stank with corpses as there were neither litters nor diggers and the corpses were heaped up in the streets. Thus when the merciful emperor, in whose days these things took place, learned of it, he stirred himself up with zeal and showed diligence, giving orders for 600 litters to be produced. He appointed a man, his referendarius, whose name was Theodore, who was also zealous in good deeds, and gave him instructions to take and spend as much gold as should be necessary for supervising these matters and for encouraging people with great gifts not to be negligent but to dig large ditches and to fill them by piling up the corpses. This man proceeded with application. […] He took along many people, gave them much gold and had very large pits dug, in every one of which 70, 000 (corpses) were put. […] He himself was ordered to fill every grave he could find, to whomsoever it might belong. Thus, by his application the city was gradually rid of the corpses. Everyone who had many corpses (to be buried) went to inform him and he would have them removed."[157]

The secondary obvious effect of these deaths was the demographical decline, which we had analysed yet. This demographic decline is reflected for instance in the lack of people to bury the dead. However, as we have already seen that in their chronicles, both Paul the Deacon and John of Ephesus claim that fields were left deserted[158], the demographic decline also had repercussions in the economy. Increasing evidence, indeed, are confirming that field were actually abandoned: this is demonstrated by the palynological analysis and by various research which reveal a growth of the forests in that period[159]. Moreover, this is also confirmed by the abovementioned tax, the *epibolè,* which reallocated fiscal duties which were present on deserted fields[160]. Interestingly, the historian Peter Sarris argues that demands made by agricultural workers successfully obtained a rise of salaries[161]: on the other hand, an edict issued in the April of 545 – which was conceived to have effect on all the Eastern Roman Empire – ruled that "building, agricultural and other group of workers"[162] should not be given a rise in salaries; in the same bill, Sarris reports that Justinian complains that, following the arrival of the Plague, "tradesmen, artisans and agricultural workers" were demanding "twice or three times the prices and wages"[163]. This definitely confirms the general lack of labour at the time. As we can see from the edict, trade was affected too; in fact, there is evidence for a general decrease in trade all over Europe: in Spain, trade between the Peninsula and Africa diminished after 560[164], as well as the one with the Eastern Empire[165]; in France, towns along the Bay of Biscay experienced a decline in the same period[166]; in Britain,

[157] John of Ephesus in Ps. Dyonisius of Tel-Mahre, *Chronicle, Part III,* cit.
[158] See page 17
[159]Graslund, B., Price, N., *Twilight of the Gods? The 'dust veil event' of AD 536 in critical perspective*, cit; Sallares,R., Ecology, Evolution, and Epidemiology of Plague, cit; Harrison, D., Plague, Settlement and Structural Change at the Dawn of the Middle Ages, cit.
[160] Sarris, P., *Bubonic plague in Byzantium,* in Little, K.L. (ed), Plague and the end of antiquity, the pandemic of 541-750, cit.
[161] *Ibidem*
[162] *Ibidem*
[163] *Ibidem*
[164] Kulikowski, M., *Plague in Spanish Late Antiquity,* cit.
[165] *Idibem*
[166] *Ibidem*

after the year 600 there is evidence of imitation of the Byzantine gold *solidi*[167], the currency of the Empire, probably due to a local shortage of it; in the islands of Gotland, Oland and Bornholm in the Baltic sea, the large amount of gold Byzantine *solidi* dating to the 6th century, "breaks off […], after mid-century"[168]; actually, the historian Jankuhn confirms that the route which connected Southern to Northern Europe is interrupted around 560[169]. The reduction of trade would have certainly been linked to a general decrease in wealth: this is showed again by Peter Sarris, who observes that the "fraility of the state finances is evident from the copper coinage [whose] weight […] declined by some 23%"[170]. Moreover, he also reports that Procopius describes a reduction in the State's expenditure on pensions and a reduction of the military budget. We will deal later on the probable effects of this cut. However, we could hypothesise that famine and shortages followed the decrease in trade and in the agricultural production.

These economic changes would in turn have repercussion in the social organization: for instance, Dick Harrison, making reference to the work of the Historian Montanari, argues that the "agricultural economy of the Roman times [reverted to] a more silvo-pastoral structure"[171]. Paul the Deacon argued that in Italy many had fled both the cities and the countryside[172]; we have already seen how evidence of depopulation is the same in many settlements of Europe, from Ostrobothnia[173] to Britain[174] and Spain[175], but it is worth recalling it in order to suggest a possible reshape of the way of living. Indeed, we found that, along with evidence of depopulation, we witnessed a general "fortification" of settlements: this was true for the ringforts in Ireland, the fortifications in the Baltic as well as for the "hilltop settlements" in southern Italy[176] and the one of the Lombards in Northern Italy[177]. People who were not affected by the Plague decided anyway to migrate in response to the disease, looking for new accommodations: this is evident, for instance, in Britain, as Maddicot suggests[178]. The countryside's landscape changed: the roman *villa*, a rural settlement, gave way to the better defendable villages in the mountains or in the Alpine valleys[179]: as Harrison claims, this was true from Gaul to Bulgaria[180]. We can therefore argue that this was true both for the turbulence of the Migration Period and for the need to protect from a mysterious disease linked to trade and contact.

[167] Jellema, D., *Frisian trade in the Dark Ages, Speculum,* The University of Chicago Press, 30, 1, 15-36*,* 1955
[168] *ibidem*
[169] Jankuhn, H., *Trade and Settlement in Central and Northern Europe up to and during the Viking Period*, cit.
[170] Sarris, P., *Bubonic plague in Byzantium*
[171] Harrison, D., *Plague, Settlement and Structural Change at the Dawn of the Middle Ages*, cit.
[172] Paul the Deacon, *Historia Langobardorum,* Foro Barbarico, cit
[173] Seger, T., *The plague of Justinian and other scourges : an analysis of the anomalies in the development of the iron age population in Finland*, cit.
[174] Maddicot, J.R., *Plague in seventh-century England*, cit
[175] *Ibidem*
[176] Harrison, D., *Plague, Settlement and Structural Change at the Dawn of the Middle Ages,* cit.
[177] Interview with Professor Lucarelli, University of Oslo
[178] Maddicot, J.R., Plague in seventh-century England, cit
[179] Harrison, D., *Plague, Settlement and Structural Change at the Dawn of the Middle Ages,* cit.
[180] *Ibidem*

The constant depopulation of the countryside had also important geopolitical effects: we have previously seen how the State military budget was reduced: along with the depopulation of the countryside, this would provide a strong incentive for bordering population to settle in those inhabited territories. This is, at least, the thesis of several historians, who connect the expansion of the Slavs in the Balkans[181] and the one of the Arabs[182] to the plague pandemic. Nonetheless, as we are focusing on Europe, we will only analyse the migration of the Slavs. According to Sołtysiak, the Slavic expansion has been connected to the disinterest for the defence of the northern frontier or to the agricultural over-taxation but not to the spread of the plague, notwithstanding the coincidence between the first Slavic raids and the outbreak of the Plague. However, we could add that both the over-taxation and the disinterest for the northern frontier could be interpreted as caused by the Plague too: indeed, as already seen, the loss of revenues due to the depopulation of the countryside made the Emperor raise the *epibolè* tax; on the other hand, the same loss of revenues led to a reduction of the military expenditure, with important consequences at the border in an already turbulent period. Slavs had already entered the *Limes,* though it is only in the 40s that they besieged several strongholds in *Illyricum* and *Thracia*[183], as far as Epidamnus, in modern day Albania[184]. Procopius adds that these once "reputed strong places" were now "quite undefended"[185]. In the following years, Byzantium basically lost control of the Balkans, while the Slavs took control of the villages, forcing people to leave or abducting them[186]. On the other hand, according to Procopius, many farmers, desperate because of the *epibolé,* even fled into the lands of Barbarians[187]. Justinian too, according to the historian, not being able to pay adequately the Army in the Balkans, preferred to pay the Barbarians and expected them to become his allies against the Ostrogoths[188].

However, in order to restore the control of these lands, Justinian's successors started to resettle and colonise the abandoned territories of the Empire: the Slavs were thus deported in Peloponnesus, Bithinia and Cyprus, sometimes even voluntarily[189]. They were also recruited in the Army and the situation seemed to improve, as evidenced by Harrison[190]. Anyway, we will further deal with the migration of the Slavs in the following chapter.

Lastly, the Plague left also psychological effects and changed the habits of the people of the time; Michael Morony reports John of Ephesus' account in which he argues that "everyone was in perturbation and doubt and confusion."[191] . People fled and sought refuge in other cities, probably spreading the Plague[192], but, according to Michael the Syrian, those who remained in the cities started to behave like dogs or "attacked one

[181] Sołtysiak, A., The plague pandemic and the Slavic expansion in the 6th-8th centuries, cit.
[182] Little, L.K., Life and Afterlife of the First Plague Pandemic, cit
[183] Sołtysiak, A., The plague pandemic and the Slavic expansion in the 6th-8th centuries, cit.
[184] Procopius, *History of the Wars 7 Vols., trans. H. B. Dewing,* cit.
[185] *Ibidem*
[186] Sołtysiak, A., The plague pandemic and the Slavic expansion in the 6th-8th centuries, cit.
[187] *Ibidem*
[188] *Ibidem*
[189] *Ibidem*; Harrison, D., *Plague, Settlement and Structural Change at the Dawn of the Middle Ages,* cit.
[190] Harrison, D., *Plague, Settlement and Structural Change at the Dawn of the Middle Ages,* cit.
[191] Morony, M., '*For Whom Does the Writer Write?*' in Plague and the End of Antiquity : The Pandemic of 541-750, cit.
[192] *Ibidem*

another"[193]; John of Ephesus claim that "a sane person could no longer be found easily"[194]. The same author, indeed, describes phenomenon of mass hysteria such as the one during which Constantinople's inhabitants started to throw pottery in the street, convinced that by doing this the Plague would have ended. In the city of Amida, which is said to have lost 30.000 people during the pandemic and was in the eight year of famine, people started to behave like sheep and dogs once they received the – false – information that the Persians were coming to conquer their territory. Furthermore, Procopius argues that the cities that were left untouched "were seized with disorder". These reactions were probably triggered by years of wars, famine, and pandemic's outbreaks, which had completely changed the society of the time: it is sufficient to say, for instance, that people started to treat "human corpses like the carcasses of animals"[195] and were now "speechless […], beyond mourning, their hearts grown mute"[196]. People had to accept the multiple burials and the increasing division between the intramural city of the living and the suburban necropolis (literally, the "city of the dead"). Old burial habits were abandoned and multiple burials, as we have seen, appeared all over Europe[197]; people had to accept that they could not have a grave for their loved ones, and this was probably a shock as we can sense from the episode of the man carrying a tablet with his name just to let his relatives whether he had died. Yet, we can only imagine the effect that smelling the bodies piled up in the towers had on the inhabitants of Constantinople, as narrated by Procopius:

> "And when it came about that all the tombs which had existed previously were filled with the dead, then they dug up all the places about the city one after the other, laid the dead there, each one as he could, and departed; but later on those who were making these trenches, no longer able to keep up with the number of the dying, mounted the towers of the fortifications in Sycae, and tearing off the roofs threw the bodies there in complete disorder; and they piled them up just as each one happened to fall, and filled practically all the towers with corpses, and then covered them again with their roofs. As a result of this an evil stench pervaded the city and distressed the inhabitants still more, and especially whenever the wind blew fresh from that quarter."[198]

Burying the dead became the only occupation in Constantinople[199], thus "no one dared pay any attention to public buildings; there were no public lights in any city, nor any entertainment for the citizens. For the theatres, hippodromes, and circuses […] were all discontinued"[200]. It is not surprising, therefore, that in 556, after a second outbreak of the epidemic, a three-months-long shortage of bread was followed by riots. Indeed, as Jo Hays clearly points out in *Historians and Epidemics*, pandemics pose a challenge to authorities[201]: for instance, in the seventeenth's century Italian cities this included resistance to quarantine rules, isolation in pest houses, and sanitary cordons, as well as briberies and corruption[202]. On the other hand, pandemics are also instrumental

[193] Micheal the Syrian, in Rosen, W., *Justinian's Flea, Plague, Empire, and the Birth of Europe*, cit.
[194] Incerti auctoris, 2:107; CZ, 112 in Morony, M., '*For Whom Does the Writer Write?*, cit.
[195] Morony, M., 'For Whom Does the Writer Write?, cit.
[196] *Ibidem*
[197] Hays, J., *Historians and Epidemics*, in Plague and the End of Antiquity: The Pandemic of 541-750, cit.
[198] Procopius, History of the Wars, Book II.22, cit.
[199] Rosen, W., *Justinian's Flea, Plague, Empire, and the Birth of Europe,* cit.
[200] Procopius, The secret History, 26, in Sołtysiak, A., The plague pandemic and the Slavic expansion in the 6th-8th centuries, cit.
[201] Hays, J., *Historians and Epidemics* in Plague and the End of Antiquity : The Pandemic of 541-750, cit.
[202] *Ibidem:* Corruption was aimed, for example, at ensuring that loved ones were not buried in mass graves.

to strengthening of power[203]. Interestingly, we can find evidence of both challenges to authorities and strengthening of power at the time of the Justinian Plague. The abovementioned riots in Constantinople, were contemporary to the worst crisis within the ruling class of the Goths in Spain and many even argue that the effects of the pandemic could have posed the basis for the collapse of the Visigoths' rule in Spain.[204] Moreover, in 560s, when it was rumoured that Justinian was dead, there happened to be "bread riots" and criticism against the Emperor began to spread. Therefore, according to Mischa Meir, as a response, Justinian tried to strengthen his power also by making Procopius emphasize his important results.

Finally, as we are dealing with a pandemic, we should also mention the relationship between men and the disease, as well as the advancements made in medical science. According to William Rosen, the sixth century medicine was not so different from the one of the beginning of the nineteenth century in treating plague[205]. Galen (129-201) had claimed that the outbreaks of the epidemics were caused by malignant air, the *miasma*, and this would continue to be the official explanation throughout the Middle Ages[206]; however, others also insisted on astrological explanations[207]. Moreover, according to Stathakopoulos, the evident presence of talismans suggest that they could have been used against this mysterious disease, as well as magic spells. Indeed, little was known about how to treat the Plague, though, for instance, health tactics such as the use of quarantine were widespread[208]. However, as the episode of Bishop Nicholas of Sion (? – 564) demonstrates, it was difficult to put them in practice: when he tried to prevent the farmers to enter his city, he was misunderstood and accused of trying to starve the citizens.[209] In the 7th century, Anastasius of Sinai argued that flight to a location with "healthier airs" could save from the Plague[210] (an evident reference to Galen): in premodern times, indeed, once there were famines and shortages, people fled to the cities, while, on the other hand, when there was an epidemic outbreak, they fled from it[211] . When the plague arrived in Myra, for instance, the farmers refused to bring their products there, fearing the contagion. We can argue, therefore, that they cannot be properly defined as "measures of quarantine", rather as actions motivated by the observation that the pestis spread through contact. We must wait the Second Plague Pandemic for the modern concept of quarantine[212].

On the other hand, healthcare generally benefitted from the Plague, in the sense that new funds were given to medicine: for instance, we know that by 542 the status and the salaries of the doctors had increased[213]. Moreover, even if the reform of the healthcare (the transfer of civic physicians to ecclesiastical hospital) was

[203] *Ibidem*
[204] Kulikowski, M., Plague in Spanish Late Antiquity, cit.
[205] Rosen, W., *Justinian's Flea,* cit.
[206] Stathakopoulos, D., *Crime and Punishment,* in Plague and the End of Antiquity, cit.
[207] *Ibidem*
[208] Rosen, W., *Justinian's Flea,* cit
[209] *Ibidem*
[210] Stathakopoulos, D., *Crime and Punishment,* in Plague and the End of Antiquity, cit.
[211] *Ibidem*
[212] Quarantena, in Treccani.it – Vocabolario Treccani on line, Istituto dell'Enciclopedia Italiana
[213] Atkinson, J., *The Plague of 542: not the birth of the clinic*, cit.

actually enacted ten years before the Plague[214], the Plague certainly gave an incentive to create new facilities of this kind. However, there is no agreement on the "birth of the clinic" in this period: indeed, John Atkinson claims that Plague invented the "clinical gaze" but did not take benefits to the scientific medicine. On the other hand, professor Timothy Miller claims that hospitals, in the age of Justinian, provided free specialized care to the sick[215] and Atkinson too agree on the point for which the Plague probably incentivised the Emperor to develop health-care facilities[216]: later on, the hospitals would have also become medical schools. However, at the time of Justinian, according to the interpretation of Atkinson of Procopius's word, the *xenones* were at the same time "hostels, poorhouses and hospices/hospitals"[217]: those who could have afforded it, indeed, would were treated in their own houses[218].

In conclusion, we cannot be sure that the Plague gave the impetus to the spread and development of – what would become – hospitals, though it is somehow revealing that the spread of the hospitals in Europe followed the outbreak of the Plague: among the first hospitals we can include the one founded in Montecassino (Italy) by Benedict of Nursia around 540; in France the first one was started in Lyon in 542 and in Paris in 660[219]; in Spain the Catholic Bishop Masona established the first Spanish hospital in Merida[220].

1.1.5 The mystery of the end and of the origin of the Justinian Plague

Three years after the first outbreak of the Plague, On March 23, Emperor Justinian declared the end of Plague[221]. Actually, the epidemic would come back in Constantinople fourteen years later, in 558, and then again in 573/4[222]. Between 541 and 750, eighteen outbreaks were recorded all over Europe: Evagrius indicates a periodicity of fifteen years[223], which is actually more or less the time between an outbreak and another[224]. Then, around 750, the Plague mysteriously disappears[225]. There is no wide agreement on its disappearance, and it seems that the same hypothesis made for the end of the Black Death cannot apply for the Justinian Plague: neither quarantine measures, as seen before, were widely applicated, nor another species of mice seems to have replace the *Rattus Rattus* (in the case of the Second Plague Pandemic, it was the *Rattus norvegicus*)[226]. At the same time, no use of rat poisons, no changes in the human diet and no shifts in the construction techniques are recorded[227]: this makes Sallares argue that a possible explanation – though, not the definitive

[214] *Ibidem*
[215] Miller, T., *The Birth of the Hospital in the Byzantine Empire,* Johns Hopkins University Press, 1997
[216] Atkinson, J., The Plague of 542: not the birth of the clinic, cit.
[217] *Ibidem*
[218] *Ibidem*
[219] *Hospital*, Encyclopaedia Britannica Online
[220] Risse, Guenter B., *Mending Bodies, Saving Souls: A History of Hospitals*. Oxford University Press, 1999
[221] Stathakopoulos, D., *Crime and Punishment,* in Plague and the End of Antiquity, cit.
[222] *Ibidem*
[223] Evagrius, *Ecclesiastic History*, IV, 29, cit.
[224] Stathakopoulos, D., *Crime and Punishment*, in Plague and the End of Antiquity, cit.
[225] Sallares, *Ecology, Evolution, and Epidemiology of Plague*, cit.
[226] *Ibidem*
[227] *Ibidem*

one – could be the herd immunity among rodents[228]; on the other hand, McCormick claims that a possible explanation could be the diminished virulence[229]. Moreover, he introduces the hypothesis for which the ancestor of the bacteria *Yersinia Pestis*, could provide immunity to it[230]; "*yersinia pseudotuberculosis*, […], *yersinia enterocolitica*, *yersinia pseudotuberculosis* and *yersinia. enterocolitica*"[231], indeed, are naturally overcame by healthy people and cause gastrointestinal disorders. New discoveries seem to confirm that in regions in which gnawers and pigs are affected by the other *yersinia* disease are more resistant to *yersinia pestis* than those in which *Y. enterocolitica or Y. pseudotuberculosis* have not been detected [232]. Therefore, according to McCormick, research should look for presence of these non-mortal forms of *yersinia* infections in territories from which the Plague disappeared in the eighth century. Nonetheless, both McCormick and Sallares agree on the necessity of further research in order to explain the vanishing of the Justinian Plague.

Even more mysterious is the origin of the First Plague Pandemic. We know that it appeared in Pelasium in 541, but nothing more. However, new studies are disclosing new evidence and are helping historians and scientists solving one of the most mysterious issues of the medical history.

According to Evagrius, "*It took its rise from Aethiopia, as is now reported, and made a circuit of the whole world in succession*"[233]; Michael the Syrian, reporting John of Ephesus's account, adds something more, arguing that "*It began at first among the peoples inland of the countries of the south-east of India, that is, of Kush, Himyarites, and others; then to the regions of the West*". In order to understand more about the spread of the Pandemic, we have to analyse why it could have arrived in the port of Pelusium: Tsiamis, Poulakou-Rebelakou and Petridou, indeed, argue that *Yersinia Pestis* could actually have arrived first in the port of Clysma, which at the time had a close trade relation with Pelusium[234]. It is problematic, though, to explain why it arrived only later in Egypt's main port (and not for instance, contemporaneously), that is to say Alexandria[235]. It has been suggested that the Plague could have arrived, on the other hand, via the Silk Road[236], though this not explain why we only have later accounts of its outbreaks in Persia or Mesopotamia[237]. Evidence, therefore, seem to indicate that it could have travelled along the *maritime* Silk Road, which connected India to the Mediterranean[238]. However, before going on, we must say that at the time the two superpowers of the time – Byzantium and the Persian empire – were engaged in a clash for the control of the Red Sea; Byzantium exercised influence on the Axumite kingdom, while the Persians on the Himyarites,

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[228] *Ibidem*
[229] McCormick, *Toward a Molecular History of the Justinianic Pandemic*, cit.
[230] *Ibidem*
[231] *Ibidem*
[232] *Ibidem*
[233] Evagrius, *Ecclesiastic History,* IV, 29, cit.
[234] Tsiamis, C., Poulakou-Rebelakou, E., Petridou, E., *The Red Sea and the Port of Clysma. A Possible Gate of Justinian's Plague*, Gesnerus 66,2, 209–217, 2009
[235] As the author states, the port of Pelusium was "overshadowed by Alexandria"
[236] Wagner, D.M., et al., *Yersinia pestis and the Plague of Justinian 541–543 AD: a genomic analysis*, Lancet Infect Disease, 14: 319–26, 2014
[237] Shahraki, A.H., Carniel, E., Mostafavi, E., *Plague in Iran: its history and current status*, Epidemiology and Health, 38, 2016
[238] Boulnois, L., *La Via della Seta,* Bompiani, Milano, 2005

located on the opposite shore of the sea, in modern Yemen[239]. Since the Himyarites had no complete control over the Sea, the Axumite were able to trade as far as Ceylon, where Byzantine coins have been found[240].

Until a few years ago, historians claimed that there was no need to investigate as far as India: they argued that the Plague originated in Central Africa and spread from the Horn of Africa to Yemen and then to the Mediterranean[241]. It was believed, indeed, that the Region of the Lakes was the most ancient plague reservoir, and that the close contacts between the Axumite kingdom and Byzantium could have led to First Plague Pandemic out of Africa[242]. This assertion was based on the studies made by the Belgian Medical Officer René Devignat, who claimed that the pathogen was carried along the trade routes to Africa before 541 and then spread back from the Region of the Lakes[243]. However, new studies from 2013 onwards confirmed an Asian origin[244]. In particular, one of these studies, published in 2018, fruit of the cooperation between scientists from all over the world, went as far as suggesting that the Huns were responsible of the spread of the Justinian Plague. Indeed, analysis carried out on a "Hun from the Thian Shan mountains dating approximately CE 180"[245] revealed the genome of a strain of *Yersinia Pestis* which "branches off from the most basal one"[246] . Interestingly, the most basal one has been found in Xinjiang, very close to the Mountains of Tian Shan[247]. A 2017 study had previously concluded that the same strains later found in the 180 CE's Hun, 0.ANT5, "are ones of the most closely related to the *Y.pestis* strain responsible for the Justinian Plague"[248] Further analysis concluded that the strain found in the individual dating to CE 180 had "full bubonic capability and flea transmissibility"[249]. The authors of the 2018 study thus concluded that the Bubonic plague was took to the West either through the Silk Road or thanks to the westward movement of the Huns [250]. However, if this is true, it does not explain the above-mentioned problem, that is to say why we don't have accounts of previous outbreaks of the Justinian Plague in the countries along the Silk Road or in the southern Steppe. Huns, indeed, arrived in Crimea by 395[251], but no outbreaks of the Plague are recorded north of Constantinople before 542. Indeed, if the Plague outbroke before 542 in territories near to the Huns settlements, it would have previously

[239] Tsiamis, C., Poulakou-Rebelakou, E., Androutsos, G., *The role of the Egyptian Sea and Land routes in the Justinian plague: the case of Pelusium,* Medicine and healing in the ancient Mediterranean world, edited by Demetrios Michedelis, Oxbow Books, 2014

[240] Tsiamis, C., Poulakou-Rebelakou, E., Petridou, E., *The Red Sea and the Port of Clysma. A Possible Gate of Justinian's Plague,* cit.

[241] Keller, M., Spyrou, M.A., et al., *Ancient Yersinia pestis genomes from across Western Europe reveal early diversification during the First Pandemic (541–750)*, cit.; Sussman G., *Scientists Doing History: Central Africa and the Origins of the First Plague Pandemic*, Journal of World History, 26, 2, 325-354, 2015

[242]Sussman, G., *Scientists Doing History: Central Africa and the Origins of the First Plague Pandemic*, cit.

[243] *Ibidem*

[244] Harbeck M, Seifert L, Hanasch S, Wagner DM, Birdsell D, et al., *Yersinia pestis DNA from Skeletal Remains from the 6th Century AD Reveals Insights into Justinianic Plague*, cit.; Damgaard PB, Marchi N, Rasmussen S, et al. *137 ancient human genomes from across the Eurasian steppes*, cit; Eroshenko G., Nosov N., Krasnov Y., Oglodin Y., Kukleva L., Guseva N., et al., *Yersinia pestis strains of ancient phylogenetic branch 0.ANT are widely spread in the highmountain plague foci of Kyrgyzstan*,cit.

[245] Damgaard PB, Marchi N, Rasmussen S, et al. 137 ancient human genomes from across the Eurasian steppes, cit.

[246] *Ibidem*

[247] *Ibidem*

[248] Eroshenko GA, Nosov NY, Krasnov YM, Oglodin YG, Kukleva LM, Guseva NP, et al., *Yersinia pestis strains of ancient phylogenetic branch 0.ANT are widely spread in the highmountain plague foci of Kyrgyzstan,* cit

[249] Damgaard PB, Marchi N, Rasmussen S, et al. *137 ancient human genomes from across the Eurasian steppes*, cit.

[250] *Ibidem*

[251] Heather, P., *La caduta dell'Impero romano: una nuova storia*, Garzanti, Milano 2006

hit there. Again, therefore, evidence seem to suggest that we must focus on the *maritime* Silk Road. Interestingly, as in 525, the Kingdom of Axum conquered the lands of the Hymiarites[252] there were no more obstacles to the trade between the Indian Ocean and Axum (and therefore, to Byzantium). Meanwhile, in the Indian Subcontinent, the Hephthalites Huns gained control of the "most important section of the Silk Road", the one stretching from the Tarim Basin to the port of Bharuch by the Indian Ocean[253]. The origin of the Hephthalites is still debated: according to Procopius, the Hephthalites were "of the stock of the Huns in fact as well as in name; however, they do not mingle with any of the Huns known to us"[254]; his contemporary, Agaphius of Myrinae states that "the Hephthalites are a Hunnish people"[255]. Interestingly, in the Chinese "History of the Northern Kingdoms", dated to 644, it is reported that "they originated from the north of the Chinese frontier and came down south from the Jinshan mountain"[256]. Moreover, they practiced the deformation of the head, a custom typical of the Huns[257].

The Hephthalites established their dominion in a period of intense instability, testified by the decline of irrigation, urban centres and pottery[258]: archaeologist found several deserted towns dating to the 4th-5th century and many speak about a social decline typical of the 4th-6th centuries[259]. Interestingly, several researchers linked this sudden abandonment to the spread of a contagious disease, possibly the Plague[260]. Moreover, Procopius reports about collective burials of the Hephthalites[261]. We have already seen that this is typical of contagious diseases; according to Ilyasov, indeed, the Chinese chronicle "Liangshu" accounts that Hephthalites were buried in the coffins, therefore the collective burials were not their typical burial custom. Unfortunately, we cannot verify the assertion of the Byzantine historian, nor hypothesise that he was not referring to ceremonial mounds, for instance. However, it is rather interesting that a nomadic population, contemporary to the first outbreak of the Justinian Plague, borders both an important maritime port of the maritime Silk Road and one of the natural foci of the Plague, the Tarim Basin, from where we now know that the First Plague Pandemic originated. The Plague might have moved from the mountains of Tian Shan in the first decades of the 6th century, arrived in India and then reached the shores of the Red Sea by maritime trade. Remarkably, Northwest India is still nowadays one of the natural foci of the Plague among roditors, along

[252] "Ḥimyar", Encyclopaedia Britannica online
[253] Harmatta, J., *Annexation of the Hephthalite vassal kingdoms by the western Turks* in History of Humanity: From the seventh century B.C. to the seventh century A.D, edited by Joachim Herrmann and Erik Zurker, UNESCO, 1996
[254] Procopius 1914 - I, 12-15, in Kurbanov, A., The Hephthalites: archaeological and historical analysis, Berlin Freie Universität Berlin, 2010
[255] Гафуров 1972, 206 in Kurbanov, A., *The Hephthalites: archaeological and historical analysis*, cit.
[256] Бичурин Н.Я. (Иакинф) 1950, 205; Vaissière 2003, 125 in Kurbanov, A., *The Hephthalites: archaeological and historical analysis*, cit.
[257] Kurbanov, A., *The Hephthalites: archaeological and historical analysis*, cit.
[258] *Ibidem*
[259] *Ibidem*
[260] Schamiloglu, U., *The Plague in the Time of Justinian and Central Eurasian History: An Agenda for Research* in O. Karatay, & I. Zimonyi (Eds.), Central Eurasia in the Middle Ages: Studies in Honour of Peter B. Golden, Turcologica, 104, Harrassowitz Verlag
[261] Ilyasov 2003, 143., in Kurbanov, A., *The Hephthalites: archaeological and historical analysis*, cit.

with Central Asia[262]. Alternatively, it has been suggested that the plague came first to Ethiopia, where it would have been one of the causes of the Axumite Kingdom's decline, and from there to Egypt[263]. Importantly, according to Robert Sallares:

> "To produce human epidemics of bubonic plague, a triad of organisms is needed: plague itself, the black rat (Rattus rattus), and the rat flea Xenopsylla cheopis. An Asian origin is still possible for plague itself, while the rat came from southern Asia. However, the flea X. cheopis is thought to be native to northeastern Africa. Consequently, it is possible, and indeed quite likely, that Egypt or East Africa is where these three organisms came together for the first time. It is not surprising that the Justinianic Plague began in Egypt."[264]

Therefore, according to Robert Sallares, the so called "spill-over" might have took place in Egypt: from being a rodent's disease, the Plague first became a human disease. Then, from Pelusium, the Plague spread all over the Mediterranean and beyond. This would also explain why the Plague seems to have arrived in the Sasanid Empire from the West (Egypt) rather than from the East (India). However, according to the new interpretation previously mentioned, the Plague might have also spread "human to human" thanks to the actions of the human flea such as *P.irritans*: therefore, in order to verify the hypothesis of Sallares, we should know the geographic distribution *at the time* of the *Xenopsylla cheopis* and of *Pulex irritans.*

In conclusion, as for now and until new research and discoveries, the origin of the First Plague Pandemic remains a mystery. We only know that it originated in Central Asia, but we don't know how it arrived in Europe, whether due to the wandering of the Hephthalites from the Tamir Basin to the Indian Ocean or via the trade routes of the time. Great changes were taking place at the time: the Huns, were moving from the inner Asia, probably taking the Plague with them and provoking a *domino effect* which would have led the Germanic populations into the Roman Empire, triggering the end of an era.

1.2 Migrants at the turn of the Middle Ages: The Barbarian invasions

There is no agreement on defining the time limits of the *"Migration period"*: according to several sources, indeed, it could be a synonym of the Early Medieval period[265], while for others it is limited to the 6th century[266]. However, as we are focusing on the issue with a *longue durée* approach, we argue that we should adopt the first definition: in our view, indeed, the Migration Period must be seen as an era of intense social changes and upheavals of people which, for different reasons, migrated into the territory of the Roman Empire.

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[262] Bazanova, L.P. et al., *Natural foci of plague in India: epizootological characteristics*, Meditsinskaia Parazitologiia i Parazitarnye Bolezni, July 2009

[263] Gebre Selassie, Y., *Plague as a Possible Factor for the Decline and Collapse of the Aksumite Empire: a New Interpretation*, Northeast African Journal of Social Sciences and Humanities, 1, 2011

[264] Sallares, R., *Ecology, Evolution and Epidemiology of Plague,* cit.

[265] "*Migration period*". Encyclopedia Britannica

[266] Drake, B., Lee, C*hanges in North Atlantic Oscillation drove Population Migrations and the Collapse of the Western Roman Empire*, Sci Rep, 7, 1227, 2017

Since the eighteenth century, the so called "barbarian invasions" have been regarded as ones the main causes of the collapse of the Roman Empire[267]; this explanation is still accepted nowadays, though many other historical trends are being stressed. These include, for instance, economic and demographic reasons[268]. Nonetheless, we will not focus on these explanations, as we will mainly analyse the process of departure and settlement of the Germanic tribes in Western Europe, stressing how, rather than "invasions", this process should be seen as a centuries-long mass migration[269] which were pushing northern tribes "down upon earlier emigrants to the south"[270] and were triggered by several causes on which we will focus our attention.

1.2.1 The migratory movements

A first movement took place around 1000 BC: at the time, the Germanic Peoples of Scandinavia, Denmark, and northern Germany started to move southwards, displacing the Celts[271]; then, between 600 and 300 BC, a second group moved from Scandinavia to the southern shores of the Baltic, in modern Poland. J.B. Bury designates the former as "Western Germans" and the latter as "Eastern Germans". In his *De origine et situ Germanorum,* Tacitus enumerates the different Germanic tribes' names which, however, will disappear in later times[272]. Tacitus's importance, however, lies in the fact that he is the only "surviving ethnographic treatise from the ancient world concerned only with the northern barbarians"[273]. Moreover, according to J.B. Bury, in the century between Cesar's account (*De Bello Gallico*, I BC) and Tacitus's one (II CE), the Western Germans changed their habits, and became an "agricultural" population from being a "pastoral" and "migratory" one[274]. On the other hand, the eastern Germans, being not constrained by the incoming Romans, did not abandon their pastoral way of living.

These two distinct processes were not the only ones that took place in *Barbaricum*, as the Romans defined the lands beyond the *limes,* the border. The growth of the population, which had previously made the Germanic peoples move from their original homeland, was now reducing the distance between the tribes[275]. Once separated by rings of forest, the different communities were becoming closer than ever: thus, the birth of the political confederations such as the *Alemanni* ("all men"[276]), a composition of the Suevian tribes in the Upper Rhine, the Franks (the "free" ones), a "loose conglomerate" in the lower Rhine[277], the Saxons, in modern-day Schleswig-Holstein, and the Thuringians, the ancient Hermunduri[278]. This federating process also saw the birth

[267] Middleton, G.D., *Understanding Collapse: Ancient History and Modern Myths*, Cambridge University Press, 2018
[268] Heather, P., *La caduta dell'Impero Romano: una nuova storia*, cit.
[269] Vogt, J., *The decline of Rome,* Richard Thornton Books*,* London, 1967
[270] Goffart, W.A., *Barbarians and Romans, A.D. 418-584: The Techniques of Accommodation*, Princeton University Press, Princeton 2020
[271] Bury, J.B., *The Invasion of Europe by the Barbarians*, Jovian Press, ebook, 2017
[272] *Ibidem*
[273] James, E., *Europe's Barbarians AD 200-600*, Taylor and Francis, ebook, 2014
[274] Bury, J.B., *The Invasion of Europe by the Barbarians,* cit.
[275] *Ibidem*
[276] Meeson Beck, F.G., *Alemanni,* Encyclopaedia Britannica, Volume 1, 1911
[277] Bury, J.B., *The Invasion of Europe by the Barbarians,* cit.
[278] *Ibidem*

of a warrior aristocracy, which will evolve in the later feudal nobility[279]. Several research argue that this process was also favoured by the proximity of the Empire, whose organization and status provided an example to be followed[280].

Meanwhile, the Eastern Germans were slowly moving throughout Eastern Europe, probably down to the Black Sea, where we find a first group of them, the Goths, in 214 CE [281]. Interestingly, they almost certainly followed the same route the Varagians/Swedish Vikings will follow later. Probably because of the distinction between newcomers and earlier comers[282], the people, once united within a single confederation[283] started to perceive themselves as two divided groups, the Visigoths and the Ostrogoths[284]. We will briefly introduce the migration of the Goths so to describe several patterns that were typical of the period.

This mass migratory movement of the Goths from Scandinavia did not stop on the shores of the Black Sea; from there, indeed, the Goths became the first Germanic tribe to settle within the Empire. After having terrorized the regions south of the Danube and raided the coast of modern the Roman Black Sea as well as the Aegean ones[285], they settled in Dacia in 256 CE and in 332 they were granted the status of *foederati*, that is to say they accepted to protect the Empire and to provide soldiers to the Imperial Army in exchange for subsides and lands; Dacia thus became nominally part of Constantine's Empire, though occupied by the Visigoths[286]. Actually, this process of federation became the norm for the Germanic tribes that pushed at the borders of the Empire[287]. Interestingly, the movement of the Goths had previously been at the origin of the first barbarian wars and the prelude of the great migrations of the Germanic tribes: the Marcomannic Wars fought by Marcus Aurelius. Both Bury[288] and Goffart[289], indeed, agree on the fact that Goths' movement displaced the tribes bordering the Empire, which, because of the lack of places to resettle, were forced to enter the lands of the Empire. Importantly, this process of pushing populations into the Empire will be a constant of the following centuries. However, the view for which the migrations of the Germanic tribes should be only related to the push of other peoples, has been recently challenged by Goffart[290]: in his vision, we should also look to the relationship between both sides of the borders of the *limes* and focus on the invitation of settlement made by several roman authorities throughout the Migration Period. Therefore, in order to better analyse these political

[279] Ruffolo, G., *Quando l'Italia era una superpotenza*, Einaudi, Torino, 2004
[280] Halsall, G., *Barbarian Migrations and the Roman West, 376–568,* Cambridge University Press, Cambridge 2007
[281] Bury, J.B., *The Invasion of Europe by the Barbarians,* cit.
[282] *Ibidem*
[283] Southern, P., *The Roman Empire: from Severus to Constantine*, Londra & New York, Routledge, 2001
[284] As Jordanes states in the *Getica,* "Ostrogoths and Visigoths, were united" (Jordanes, *The origin and the deeds of the Goths*, translated by Charles C. Mierow)
[285] Halsall, G., *Barbarian Migrations and the Roman West, 376–568,* cit.
[286] Bury, J.B., *The Invasion of Europe by the Barbarians,* cit.
[287] *Ibidem*
[288] *Ibidem*
[289] Goffart, W.A., *Barbarians and Romans, A.D. 418-584: The Techniques of Accommodation*, cit.
[290] *Ibidem*

changes, we will briefly describe the migratory movements that changed the history of Europe between the III and the 6th-7th centuries.

1.2.1.1 The Gothic Crisis: Italy, Gaul, and the Iberian Peninsula

What is commonly known as "Gothic crisis" describes the settlement and the revolt of the abovementioned Goths within the border of the Roman Empire: pushed by the arrival of the Huns from the Oriental steppe[291] the Visigoths begged to be allowed to safety enter the Roman borders. Curiously, Halsall describes them as "refugees",[292] and, effectively, the given description resembles familiar images. According to Amminius Marcellinus:

> "In the meantime, a report spread far and wide through the nations of the Goths, that a race of men, hitherto unknown, had suddenly descended like a whirlwind from the lofty mountains, as if they had risen from some secret recess of the earth, and were ravaging and destroying everything which came in their way. And then the greater part of the population resolved to flee and to seek a home remote from all knowledge of the new barbarians; and after long deliberation as to where to fix their abode, they resolved that a retreat into Thrace was the most suitable for these two reasons: first of all, because it is a district most fertile in grass; and secondly, because, owing to the great breadth of the Danube, it is wholly separated from the districts exposed to the impending attacks of the invaders. Accordingly, under the command of their leader Alavivus, they occupied the banks of the Danube, and sent ambassadors to the emperor Valens, humbly entreating to be received by him as his subjects. They promised to live quietly, and to furnish a body of auxiliary troops if necessary."[293]

The response of Rome was to accept the asylum seekers and:

> "as soon as they had obtained permission of the emperor to cross the Danube and to cultivate some districts in Thrace, they poured across the stream day and night, without ceasing, embarking in troops on board ships and rafts and on canoes made of the hollow trunks of trees…"[294]

However, the Visigoths would have later rebelled because of the lack of food and once they were moved southwards, another German tribe, the Greuthungi, crossed the Danube and gathered troops of deserters from the Roman army, miners, and slaves, starting to raid the territory up to Constantinople[295] . The Empire was then forced to come to a treaty and the Goths were settled – and divided – among the Balkans and the gave up their ambition to self-rule themselves. However, these people, warriors, but also women and children, revolted again in 395, under the lead of Alaric, who, in an attempt to force the Roman into a new peace[296] first came down to Athens and then, once he failed to obtain new settlements in Moesia and Macedonia, moved the Visigoths to Rome, trying to come to an agreement with the General Stilicho. Even after the famous sack of Rome in 410, Alaric continued to ask for lands in Noricum and Dalmatia, as well as the title of *magister*

[291] Halsall, G., *Barbarian Migrations and the Roman West, 376–568,* cit.
[292] *Ibidem*
[293] Marcellinus Ammianus in Robinson, J.H., *Readings in European History,* Boston, New York, Ginn and co., 35-39, 1905
[294] *Ibidem*
[295] James E., Europe's Barbarians AD 200-600, cit.
[296] *Ibidem*

militum[297], that is to say "General". This clearly demonstrates that Barbarians were not willing to destroy the Empire, rather to be accepted in it and achieve the same status of its citizens. Alaric even tried to do what Odoacer later did: ask the Senate to replace the Emperor with someone keener to the Goths. Then, having obtained nothing, the Visigoths moved to Gaul and then to Spain; meanwhile, Alaric's brother, Ataulf, married Galla Placidia, daughter of the Emperor Theodosius. According to James, indeed, Ataulf wanted to sustain the Roman Empire through the strength of the Goths[298]. However, they were granted a settlement in the Garonne valley in Gaul only in 418, after having been recognized as *foederati* in exchange for their commitment to fight against the Alans and the Vandals in *Hispania*. This would become the starting place of their kingdom over southern Gaul and the great part of the Iberian Peninsula; the Goths managed to establish good relations with the Roman aristocracy in the area and protected it from other barbarian incursions until the arrival of the Franks, which would put an end to their kingdom in modern-day France in 507[299]. The Visigoth's kingdom in the Iberian Peninsula, on the other hand, was only destroyed by the Arabs in 711[300].

In Spain, the Visigoths defeated the Vandals, the Alans and the Suebi which had left the Lower Danube to cross the border around 400. Even though Procopius claims that the three tribes migrated due to the famine, Merrills argue that their reason was the same of the Visigoths' movement: the arrival of the Huns[301]. MacDowwall compares the Vandals, the Alans and the Suebi to the modern migrants crossing the Mediterranean, given their being so desperate and impoverished to risk a migration in the middle of the winter[302]. After having encountered a Frankish army sent by the Empire, this conglomerate of people moved southwards without encountering resistance up to Spain, where they settled. It is disputed whether they received the status of *foederati* once arrived in *Hispania*[303]. However, they only remained in peace less than a decade, and then they were forced to move in North Africa: Between 50.000 and 80.000 people, including men, both young and old, women, children, and slaves[304] left the southernmost point of Spain in 429. An entire population which had left the forests of Central Europe only twenty-five years before, was now entering the sandy costs of the Roman province of *Mauretania.*

1.2.1.2 From Gaul to France: The Franks, the Huns and the Franks again

As in the other parts of the Empire[305], the Third century saw a general crisis in France, testified by the build of walls far away from the borders and the large findings of gold hoards, which reveal fear and displacement

[297] *Ibidem*
[298] *Ibidem*
[299] *Ibidem*
[300] Halsall, G., *Barbarian Migrations and the Roman West, 376–568*, cit.
[301] Merrills A, *Vandals, Romans and Berbers: New Perspectives on Late Antique North* Africa, Taylor and Francis, ebook, 2017
[302] MacDowall, S., *The Franks*, Pen and Sword, Barnsley, UK, 2018, 2018
[303] Sivan, H., *On Foederati, Hospitalitas, and the Settlement of the Goths in A.D. 418,* The American Journal of Philology, 108, 4, 759-772, The Johns Hopkins University Press, 1987
[304] Merrills A, *Vandals, Romans and Berbers: New Perspectives on Late Antique North* Africa, cit.
[305] Halsall, G., *Barbarian Migrations and the Roman West, 376–568,* Cambridge University Press, cit.

of people[306]. In this period the inhabitants of Gaul felt abandoned by an Empire which was concentrating his forces to defend the East and Italy; meanwhile, it is in this very period that we hear about the first raids of the Franks, like the one which started in Lower Rhine and ended in Africa, pretty much as the later one of the Vandals[307]. However, with the arrival of Maximianus as co-ruler of Diocletian in the West, the Empire was able to restore order in this region, thanks to the fleet used to patrol the English Channel and the Rhine. In the fourth century, the Franks were based in the Lower Rhine, while the Alamanni in the east bank of the Upper Rhine; these tribes alternatively both joined the the Romans against other tribes and fought the Empire. However, in the second half of the fifth century, a part of the Franks (the *Salii* one) became *foederati* within the Empire, providing military help against the incursions of the other Germanic tribes (as they did against the abovementioned Alans and Vandals)[308]. The Franks would later divide themselves between those who invaded Gaul with the forces of Attila and those who defended the province under the lead of General Aetius[309]; Jordanes, indeed, in his *Getica*, writes:

> "On the side of the Romans stood the Patrician Aëtius, on whom at that time the whole Empire of the West depended; a man of such wisdom that he had assembled warriors from everywhere to meet them on equal terms. Now these were his auxiliaries: Franks, Sarmatians, Armoricians, Liticians, Burgundians, Saxons, Riparians, Olibriones and some other Celtic or German tribes.[310]"

This Asiatic people, the Huns, which were now threatening Gaul, were born as Xiong-Nu in the Far East, from which they moved during the first centuries of the first millennium. While wandering throughout Eurasia this tribe transformed itself in a conglomerate of peoples[311] and finally reach Europe around 370 CE, when it was responsible of the domino-effect which pushed Germanic tribes into the Roman Empire. Indeed, according to H.J. Kim, it was the arrival of the Huns that provided the Goths and the other Germanic tribes with new military skills that made them able to win over the Romans[312]. Indeed, while some people decided to submit themselves to these powerful newcomers, other decided to flee: some Alans, for instance, were absorbed in the Huns, while others fled westwards[313]. Moreover, once arrived in the Danubian region around 380, the Huns pushed other Germanic tribes into the Empire; this was the case of the Suebic Juthungi, for instance, which moved into Gaul but were repelled by the Empire and were finally defeated by the Alamanni[314]. Interestingly, when some Goths left the Huns for Italy in 405, a Hun leader, Uldin, allied with the Roman General Stilicho to punish this secessionist attempt: again, according to Kim, this willing to cooperate with both the Western

[306] MacDowall, S., *The Franks*, Pen and Sword; cit.
[307] *Ibidem*
[308] *Ibidem*
[309] *Ibidem*
[310] Jordanes, *The origin and the deeds of the Goths*, cit.
[311] Brosseder, U. B., *Xiongnu and Huns*, Archaeological Perspectives on a Centuries-Old Debate about Identity and Migration in Empires and Exchanges in Eurasian Late Antiquity Rome, China, Iran, and the Steppe, ca. 250–750, edited by Nicola di Cosmo, Institute for Advanced Study, Princeton, New Jersey, Michael Maas, Rice University, Houston, 2018
[312] Kim, H.J., *The Huns*, Taylor and Francis, ebook, 2015
[313] *Ibidem*
[314] *Ibidem*

Roman Empire and with the Eastern one must be related to the process of consolidation in the Hun confederation, as well as to the need to concentrate on the expansion into western Germany. Remarkably, it was in the same period, during 405/6 that the Alans, the Suebi and the Vandals left *Barbaricum* for Gaul. However, Huns would prove useful to General Aetius, who regained control of Gaul thanks to the alliance with them. Aetius also made use of the Germanic tribes, who became *foederati* and were settled in Gaul: Alans and Burgundians were indeed used to suppress several riots also known known as *bacaudae.* However, this process of settlement was damaging the control of the Empire, though, according to Ravegnani, another solution was not possible, since the Romans were not able to stop the arrivals of these Germanic tribes[315] - arrivals which were ultimately triggered by the Huns, Romans' allies, as seen before. Then, after coming to an agreement with the Franks, which had invaded Gaul in 446[316], Aetius managed to defeat the former allies Huns, which, led by their new leader Attila, had invaded modern-day France[317]. According to Kim, it was the very treaty with the Franks, which both Aetius and Attila regarded under their sphere of influence, to deteriorate the relationship between the two leaders[318]. Indeed, according to the same historian, the Huns wanted to use the Germanic tribes both as a defensive ring to the Hun core and as a threat to the Roman Empire, in order to subject it to vassalage and payment of tributes, as Huns' ancestors Xiong-Nu had done with the Han Empire in China[319]. Even more interestingly, is the fact that decades of migrations had actually made the two armies similar: on both sides there were German tribes, Gallo-romans, Goths (Visigoths in the Empire's army, Ostrogoths in Attila's one) and even the Huns (some of them had collaborated with the Romans in the previous years)[320].

Aetius' victory, however, did not prevent the Roman dominion to survive in Gaul[321]; the *baucaudae* did not stop and areas not in control of the Empire began to widen. Eventually, some Britons, fleeing the Saxons in *Britannia*, came to settle in Armorica and joined the insurgents. In the following years, Gaul became divided between different warlords, in a situation of increasing social disorder; after the deposition of Romulus Augustulus by Odoacer, emerged Childeric among the Franks, and by the end of his life in the 480s, he had posed the basis of the Frankish kingdom and gained the support of some of the Gallo-Romans[322]. His son Clovis would defeat the last Gallo-Roman warlord and from that point onwards, the rule over Gaul would have been a matter between Germanic tribes[323].

[315] Ravegnani, G., *La caduta dell'Impero Romano*, Il Mulino, Bologna 2012
[316] *Ibidem*
[317] Kim, H.J., *The Huns*, cit.
[318] *Ibidem*
[319] *Ibidem*
[320] *Ibidem*
[321] MacDowall, S., *The Franks*, cit.
[322] *Ibidem*
[323] *Ibidem*

1.2.1.3 *Britannia:* the Anglo-Saxons' arrival and the flee of the Romans

Bede is widely considered the main historical source for the arrival of Jutes, Angles and Saxons in *Britannia*[324]; in his comment of Book I, chapter 15 of the *Ecclesiastic History*, he states that these people were among the strongest of *Barbaricum*[325]. A huge debate, however, took place in the last decades on the issue of the numbers and the origin of the migrants that arrived in modern-day England[326]: should we consider it a mass migration, or a movement limited to a few small groups? New studies, based on technological analysis, are revealing that the one of the Anglo-Saxons was probably a large-scale immigration[327]. Nonetheless, the beginning of this process is still a mystery: findings from Anglo-Saxon's cemeteries seem to point in the direction of the arrival of these Germanic tribes as *foederati* or at least as mercenaries employed by the Romans[328] and this seems to be confirmed by the fact that their initial settlements were close to the Romans' one[329]. However, it is difficult, at least for the first settlements, to claim that only the three abovementioned tribes moved to *Britannia:* the majority of the first inhumations, indeed, are not only "Jutish, Anglian or Saxon", but also "Frankish, Alamannic, Thuringian"[330] and even "Scandinavian"[331]. Moreover, it is also difficult to isolate the early archaeological evidence of the Saxons from the ones of the Franks in Continental Europe, for instance; furthermore, while we know enough about the Danes, on the other hand, we know almost nothing of their contiguous Jutes and Angles[332]. Equally obscure are the reasons that led these tribes to leave for *Britannia.* The Byzantine historian Zosimus claims that while the Emperor Constantine III – a British – in 407 left *Britannia* for Gaul in order to cope with the invasion of Vandals, Alans and Suebi, which were advancing up to the English Channel, Britain saw the arrival of "barbarians from beyond the Rhine"[333] and a Gailic Chronicle adds that the country was "devasted by an incursion of Saxons"[334]. Again, we are dealing with a migration of a Germanic tribe in the crucial years 405/6, during which the Huns were moving within *Barbaricum*. Archaeology confirmed that previously inhabited settlements along the Frisian and North German coasts were abandoned during the fifth century and in the meantime the Archaeologist Hawkes claim that we find "evidence for the appearance of cremating peoples, from continental Anglia and Saxony, in parts of eastern and midland England during the early years of the century". That is why the same archaeologist call these migrants "boat people"[335] rather than raiders: Britain, indeed, had faced maritime raids of the same Germanic

[324] Wood, I., *Before and after the Migration to Britain in The Anglo-Saxons From the Migration Period to the Eight Century*, an ethnographic perspective, edited by John Hines, Boydell Press, Woodbridge, 2007
[325] *Ibidem*
[326] Harke, H., *Anglo-Saxon Immigration and Ethnogenesis*, Medieval Archaeology, 55, 2011
[327] *Ibidem*
[328] Jones, M.U., *Mucking and Early Saxon rural settlement in Essex,* in Archaeology in Essex to AD 1550, Edited by D.G., Buckley, CBA Research Report, 1980
[329] Myres, J. N. L., *The Anglo-Saxon Settlements,* Oxford University Press, 1969
[330] Wood, I., *Before and after the Migration to Britain* in The Anglo-*Saxons From the Migration Period to the Eight Centurym,* cit.
[331] *Ibidem*
[332] *Ibidem*
[333] Zosimus, vi.5.2 f in Hawkes, S.C., *Anglo-Saxon Kent c 425-725*, in Archaeology in Kent to AD 1550: in memory of Stuart Eborall Rigold, Edited by D.G., Buckley, CBA Research Report, 1982
[334] Hawkes, S.C., *Anglo-Saxon Kent c 425-725*, in Archaeology in Kent to AD 1550: in memory of Stuart Eborall Rigold, cit.
[335] *Ibidem*

people in the 3rd century; however, as the Vikings would do centuries later, these tribes ended up settling there – though for different reasons. Interestingly, according to Todd Morrison, the very name "*Saxons"* is too widespread in Late antiquity to indicate only a tribe: he claims, therefore, that this name should be rather seen as a synonym for "pirate". These pirates from different tribes would have later formed a confederation, known as "Saxons", which would have then started settling in other lands[336]. Again, this would be the same for the *Vikings.*[337]According to one theory, indeed, the very name "*Saxon shore"* – that is to say, the system of fortifications on both sides of the English Channel – could derive its name both from the raids of the said population and from their earlier settlement; moreover, the same Saxons could have been settled in northern Britannia and used as mercenaries against the Picts, posing the basis for the later mass movement[338]. Indeed, according to Gildas, they were settled in order to "repel the northern nations"[339].

As for the numbers of the migrants, new studies based on the analysis of the DNA argue that between 100.000 and 200.000 migrants might have arrived in Britain during the fifth century: this would imply that the estimated proportion of the newcomers to natives might have been around 10%[340]. According to Harke, this is in line with the numbers of the Alans and Vandals moving to Spain (80.000) and of the Ostrogoths leaving the Balkans for Italy (100.000).

This process took place contemporary to the departure of the Romans from *Britannia*; in the same year 406, indeed, the Roman troops in Britannia elected their own Emperor, Marcus, who was soon replaced by a town councillor, Gratian, and again by the above-mentioned Constantine[341]. Actually, in 383, the Commander of the Roman legions in Britain, Maximus Magnus Clemens, had induced his troops to proclaim him Emperor[342]. This alternance of rulers gives the idea of a general instability, also triggered by the situation in Europe – for which the newly elected Constantine almost immediately left Britain – and by the continuous raids of the said Saxons and even of the northern tribes of the Scots and the Picts, as narrated by Marcellinus Ammianus in his chronicles[343]. With the Emperor gone, and facing the barbarian threat, the Romano-Britons rebelled and expelled the Roman officials[344]. It is dubious, however, whether the Britons rebelled against Rome because of the usurpers of the previous decades, or the Roman Empire left Britain due to the urgency to cope with the

[336] Morrison, T., *Britain and the Anglo-Saxons in Late Antiquity,* University of Mexico Digital Repository, 2016
[337] According to many studies, the name *Vikings* comes from "vik", bay, thus being a way to indicate mariners or pirates. However, it would become a name to indicate an historical period and, even though incorrectly, a population.
[338] Elverhøi, Y. A., *Germanic piracy in Roman Britain*, A Thesis Presented to The Department of Literature, Area Studies and European Languages, University of Oslo, 2010
[339] Gildas, The Ruin of Britain, cit.
[340] Harke, H., *Anglo-Saxon Immigration and Ethnogenesis*, cit.
[341] Johnson, S., *Later Roman Britain*, Taylor and Francis, ebook, 2014
[342] Shearman, J.F., *The Celto-Britons of Armorica-Maximus Clemens, Emperor of Britain, Gaul and Spain; The British Legions; Conan of Merladog, His Descendants Kings of Britagne: Continued Intercourse with the Mother – Country*, Armorican Saints and Ecclesiastics; *Their Connexions with Great Britain and Ireland in the Fifth and Sixth* Centuries, The Journal of the Royal Historical and Archaeological Association of Ireland, 5, 49, 597-630, 1882
[343] *Le Storie di Ammiano Marcellino*, tradotte da Francesco Ambrosoli, Antonio Fontana editore, Milano, 1829
[344] Johnson, S., *Later Roman Britain,* cit.

increasing Barbarian threats[345]. Generally, the process of settlement of the Anglo-Saxons was accompanied by another process of migration: the one of the Britons, which left the east coast of Britannia, fleeing the arrival of the newcomers[346]. This period of social turmoil, indeed, made some of the native Britons move to *Armorica*, thus renaming this land in *Brittany*[347]. This event is also recorded by the contemporary Procopius, who states:

> "The island of Brittia is inhabited by three very numerous nations, each having one king over it. And the names of these nations are Angili, Frissones, and Brittones, the last being named from the island itself. And so great appears to be the population of these nations that every year they emigrate thence in large companies with their women and children and go to the land of the Franks. And the Franks allow them to settle in the part of their land which appears to be more deserted, and by this means they say they are winning over the island. Thus it actually happened that not long ago the king of the Franks, in sending some of his intimates on an embassy to the Emperor Justinian in Byzantium, sent with them some of the Angili, thus seeking to establish his claim that this island was ruled by him. Such then are the facts relating to the island that is called Brittia.[348]"

Other Britons are said to have reached even Galicia, in modern-day Spain; this is proved by the presence of a bishop named Mailoc – a Celtic name – representative of a *Britonensis Ecclesia* at the second council of Braga in 572, as well as other representatives for this diocese, recorded in 633, 646, 653 and 675[349].

Furthermore, the migration of the Anglo-Saxons and the emigration of the Britons were not the only people's movement which took place in Britannia; we already mentioned, indeed, the contemporary raids of the Picts and of the Scots, an Irish tribe. According to some studies, these invasions must be seen as earlier stages of settlements, at least for what concerns the Irish tribes[350]. Philip Rance, indeed, recalls the appearance of the *Attaccotti* tribe among those which raided Britain in the 360s, among the Roman Army and, later, in the settlements in Western Britain of the "*aithechthuaata*"[351]. We lack knowledge about the extent of the settlements, as well as about duration of this process or the role these troops had in the defence of the Empire; however, this is perfectly in line with the general process which saw border tribes welcomed in the Empire as *foederati*, as seen above. On the other hand, despite the previous raids, the Picts generally remained in their territories, and did not manage to establish themselves south of the Adrian's Wall[352].

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[345] Jones, M., *The end of Roman Britain,* Cornell University Press, Ithaca, New York, 1998

[346] Dark, K.R., *Large-scale population movements into and from Britain south of Hadrian's Wall in the fourth to sixth centuries AD*, Reading Medieval Studies, 29, 31-49, University of Reading, 2003

[347] "Brittany". Encyclopedia Britannica online

[348] The Wars of Procopius, cit., Book VIII, chapter XX

[349] Tovar, A., *Un obispo con nombre británico y los orígenes de la diócesis de Mondoñedo,* Habis, 3, 155–158, 1972

[350] Rance, P., *Attacotti, Déisi and Magnus Maximus: The Case for Irish Federates in Late Roman Britain*, Britannia, Society for the Promotion of Roman Studies, 32, 243-270, 2001; Dark, K.R., *Large-scale population movements into and from Britain south of Hadrian's Wall in the fourth to sixth centuries* AD, cit., Rance, P., *Epiphanius of Salamis and the Scotti: New Evidence for Late Roman-Irish Relations, Britannia*, The Society for the Promotion of Roman Studies, 2012

[351] Rance, P., Attacotti, Déisi and Magnus Maximus: The Case for Irish Federates in Late Roman Britain, cit.

[352] Halsall, G., *Barbarian Migrations and the Roman West, 376–568*, cit.

1.2.1.4 From the Ostrogoths to the Lombards: the end of the Migration Period?

After the Sack of Rome of 410 by the Visigoths, Italy had to face the invasion of the Huns in 452[353], and three years later, of the Vandals, coming from Carthage[354]. Indeed, arrived in Africa from Central Europe, the Vandals came back in the European continent, conquering Sicily, Sardinia, and Corse and raiding Rome for two weeks: then they came back to Africa [355]. Still, the Roman imperial authority resisted and so did the social and cultural structure, despite the growing importance of the barbaric influence in the Army: indeed, due to the military power, the Germanic tribes were becoming more and more able to have a say on the political decisions[356]. Indeed, it was a Germanic leader of Germanic mercenaries, Odoacer, to depose the last Roman Emperor, with the aim to obtain lands where to settle[357]; he didn't want to overthrow the Empire, and he even adopted a policy of pacification, seeking a peaceful coexistence between the Germanic armies and the Roman moral and political authority[358]. We don't know exactly Odoacer's origin, but he is described by the ancient authors as being indifferently a Sciriian, a Rogian, a Torcilingian a Herul or a Goth[359]; this gives the idea of the fragmentation and of the ethnic confusion triggered by the migrations of that period. For instance, a group of the Heruls, whose Odoacer is described as the king, is said by Procopius to have moved from Central Europe to "Thule" – probably Scandinavia, from which the Heruls probably came from, as revealed by the episode narrated by Procopius in which another group of Heruls moves there to ask the "royal house" for a new leader. Interestingly, other groups were also present in Illyricum and other even attacked via sea north-west Spain in 455[360].

Meanwhile, the Ostrogoths, based in the Balkans, under the leadership of Theoderic the Amal, were granted land south of the Danube by the Emperor Zeno of the Easter Roman Empire, but in 486 they rebelled, raiding Thrace and threatening Constantinople[361]. The Eastern Emperor, therefore, came to an agreement with Theoderic: the Ostrogoths moved from the Balkans to the Italian peninsula, which meant more independence from the Eastern Empire and a more secure settlement for his warriors and their families[362] . According to the studies, indeed, the number of the Ostrogoths might have been around 200-250.000 people, including 20-30.000 warriors and their families[363]. Moreover, the occupation of Italy was organized so that every family

[353] Kim HJ. *The Huns*, cit.
[354] Merrills A, editor. Vandals, Romans and Berbers: New Perspectives on Late Antique North, cit.
[355] *Ibidem*
[356] *Dall'Impero Romano a Carlo Magno*, La Storia, La Biblioteca di Repubblica, 2004
[357] Goffart, W.A., *Barbarians and Romans, A.D. 418-584: The Techniques of Accommodation*, cit.
[358] Dall'Impero Romano a Carlo Magno, cit.
[359] Macbain, B*., Odovacer the Hun?,* Classical Philology, 1983
[360] James E. Europe's Barbarians AD 200-600, cit.
[361] Gwynn D.M., *The Goths: Lost Civilizations*, Reaktion Books, 2017
[362] *Ibidem*
[363] Aimone, M., *Romani e Ostrogoti fra integrazione e separazione: il contributo dell'archeologia a un dibattito storiografico,* Reti Medievali Rivista, 13, 1, 2012

ruled over a land and was in contact with the Amal court: nonetheless, we don't know about the relationship between the occupants and the native population[364].

At the time, Europe was thus divided between the Visigoths kingdom in southern France and Spain, the Ostrogoth one in Italy and the Balkans, the Franks in norther Gaul and Western Germany and the Burgunds, once *foederati* and then rulers of their own kingdom, located in the Upper Rhine.

Then, in 568, another Germanic people moved into Italy: the Lombards. This ancient tribe had moved from the lower Elbe, where Tacitus places them in his *De origine et situ Germanorum*, dated to 98 CE; the very first contacts with the Romans, however, took place around 5 CE[365]. According to Paul the Deacon they originated in Scandinavia, which he describes as an island[366]. From there, during the social changes that took places in *Barbaricum* during the third century, they moved to the Upper Danube and even tried to enter Pannonia[367] at the time of the Marcomannic wars (171-175), during which several tribes were settled in the Empire. From then, their name disappears from the Roman records and their moves are difficult to detect; James Bury thus affirms that they probably wandered somewhere north of the Danube and were possibly included in the Empire of Attila[368]. Then, with the victory of Odoacer over the Rugians (487), they occupied the territory of this population, a territory facing *Noricum*; however, two decades later they were subdued by the abovementioned Heruls, whose movements are as difficult to detect as the Lombards' ones[369]. Forced in the lands between the Danube and the Theiss, they rebelled in 508; the remnants of the defeated Heruls were settled in Moesia by the Eastern Roman Emperor and found refuge in the lands of the Gepids, the Lombards' new antagonists. Indeed, in order to counterpoise this population, the Lombards were granted the status of *foederati* by Justinian and settled in Noricum and Western Pannonia[370]. Then, they allied with the Avars, an Asiatic population ethically linked to the Huns which was determined to continue to move westwards and managed to annihilate the Gepids in 567[371]. Soon afterwards, the Lombards made another agreement with the Avars: if the Lombards would have conquered Italy, their lands would be inherited by the Avars, otherwise, if they failed, they would returned to them. According to Bury the Lombards were little in number[372], and this probably both explains why they decided to move and why they took with them a Saxon contingent with their families (20.000 people)[373]. Interestingly, the Saxons were their late neighbours, settled in Lombards' original homeland – the upper Elbe – and they had probably maintained contacts with them, though, once conquered

[364] *Ibidem*
[365] Tacito, *La Germania,* I classici del pensiero libero Greci e Latini, BUR, Milano 2012
[366] Paolo Diacono, Storia dei Longobardi, Edizione Italiana, Foro Barbarico, cit.
[367] Bury J.B., *The Invasion of Europe by the Barbarians*, cit.
[368] *Ibidem*
[369] *Ibidem*
[370] *Ibidem*
[371] *Ibidem*
[372] *Ibidem*
[373] *Ibidem*

Italy, not willing to subdue to their allies, they decided to come back north[374]. The Lombards, on the other hand, never fully conquered the peninsula, probably due to their small numbers and even because of their unskillfulness in building a fleet; even though they had lived at the mouth of the Elbe, they were not a maritime people[375].

Sometimes, the conquest of Italy (568) is considered the end of the Migration Period[376]; this date could certainly work as a watershed date in the sense that no other major migration movement took place after it. Moreover, the Lombard's one is the last Germanic tribe's movement of the period. On the other hand, meanwhile, another great population movement had begun, the one of the Slavs, which continued to migrate and settle in Eastern Europe from the fifth to the ninth century[377].

1.2.1.5 Ending an era: the Avars' and the Slavs' migration

In 558 an embassy arrived in Costantinople: as referred by the historian Theophanes, the whole city gathered to see newcomers, the Avars, dressed like Huns but with very long hair, tied with ribbons[378]. According to the genetic studies, indeed, this new population was coming from the Far East, like the Huns[379], and was "in flight from its country", in Theophanes's words[380]. The Avars were pleading for peace, and they came to an agreement with Emperor Justinian, who managed to ally with them against the other northern tribes[381]. Tributaries of the Turks, they were probably escaping them, profiting of their engagement in a war against the Hephthalites. In 561/2 they were offered the lands of Pannonia by Justinian, but not to settle in the Empire as *foederati*. Then, in 567, the Avars made the abovementioned agreement with the Lombards and managed to obtain the dominion on the Carpathian Basin, which they would maintain until the ninth century. Then, after years of expansion in this region, they would be crushed by the Franks, and the remnants of this once huge population would be absorbed in the Hungarian State[382].

The Avars' evolution is deeply linked with the one of the Slavs; actually, the first mention of this population predates the Avars: in 508, indeed, Procopius claims that once they settled that year in Pannonia, they contacted their royal family in the island of Thule. Afterwards, in 537, the Slavs were mentioned among the Byzantine reinforcements and again, they are mentioned with the Lombards in the Carpathian Basin but are not precisely

[374] *Ibidem*
[375] *Ibidem*
[376] Halsall, Guy. Barbarian Migrations and the Roman West, 376–568, cit.
[377] Kazanski, M., *Archaeology of the Slavic Migrations,* Encyclopedia of Slavic Languages and Linguistics Online, 2020
[378] Pohl W., *The Avars: A Steppe Empire in Central Europe, 567–822*, Cornell University Press, Ithaca, New York, 2018
[379] Neparáczk, E., et al., *Y-chromosome haplogroups from Hun, Avar and conquering Hungarian period nomadic people of the Carpathian Basin*, Scientific Reports, Sci.Rep.9,1, 16569, 2019
[380] Pohl W., *The Avars: A Steppe Empire in Central Europe, 567–822,* cit.
[381] *Ibidem*
[382] Neparáczk, E., et al., *Y-chromosome haplogroups from Hun, Avar and conquering Hungarian period nomadic people of the Carpathian Basin*, cit.

located[383]. On the other hand, Jordanes, in his Getica, argues that they came from north of the Vistula[384]. Actually, the archaeological findings are confirming that these tribe probably originated in the area between the Pripyat' basin and the Baltic, but when the Goths moved due to the Hunnic invasion, they left Eastern Europe too[385]. In the sixth century we can identify several archaeological cultures with the Slavs, which we label "Early Slavs"[386]. From the lower Danube basin, they moved to the Carpathian Basin and then southwards again, in modern-day Transylvania, around 568 CE. A century later another Slavic population moved in this region and another one in the eight century; probably, these migratory waves arrived under the control of the Avars[387] . The Slavs indeed, had started to raid the Easter Balkans first, but the Avars immediately took control over them, once arrived in the area and changed their attitude: before their arrival, they were neither organized in tribes nor they had a strong leadership[388]. By the end of the century, they had reached Greece, Peloponnese, the Aegean island and Asia Minor. As already mentioned, Soltyasik suggested that the advance and the settlement of the Slavs in the Balkans was favoured by the effects of the Plague of Justinian[389]. Moreover, even though the Slavs are described as fierce people, once arrived in the southern lands they dedicated themselves to agriculture[390].

The Slavs arrived in the Germanic lands in the course of the sixth century – or even before, according to a recent research[391] - and reached the Elbe estuary in the eighter century in the north and Bavaria in the south, where they were stopped by the Franks: the Germanic-Slav border would not change for more than three centuries[392]. The Slavs had taken the lands left by the Germans, but also the Balkans; the Emperor Justinian was not able to redirect them to the West, as the Byzantines had made with other tribes, as tried to contain them making them *foederati*[393]. The different Slavic tribes would have later formed the backbone of the States that emerged in the following centuries in Eastern Europe: there, they would meet another Germanic Population that would give the name to the following historical period, the Norsemen, improperly also known as Vikings[394]. Indeed, the conventional date which closes the Migration Period is 793, the year of the Vikings' first raid in England[395].

[383] Pohl W., *The Avars: A Steppe Empire in Central Europe, 567–822,* cit.
[384] *Ibidem*
[385] Kazanski, M., *Archaeology of the Slavic Migrations,* cit.
[386] Dolukhanov P. *The Early Slavs: Eastern Europe from the Initial Settlement to the Kievan Rus*, Taylor and Francis, ebook, 2014
[387] *Ibidem*
[388] Soltyasik, K., *The plague pandemic and the Slavic expansion in the 6th-8th centuries,* cit.
[389] *Ibidem*
[390] *Ibidem*
[391] Machacek, J., *Runes from L´any (Czech Republic) - The oldest inscription among Slavs. A new standard for multidisciplinary analysis of runic bones*, Journal of Archaeological Science, 127, 2021
[392] Dolukhanov P. *The Early Slavs: Eastern Europe from the Initial Settlement to the Kievan Rus*, cit.
[393] Procopius, History of the Wars, cit.
[394] Forte, A., Oram, D., et al., *Viking Empires,* Cambridge University Press, Cambridge, 2005
[395] Barret, J., *What caused the Viking Age?*, Antiquity, 82, 2008

1.2.2 Explaining people's movements: what caused the Migration Period?

Several hypotheses are usually made to explain the migration of people: research usually distinguish between "push" and "pull" factors, arguing that there are elements that both attract populations into a territory and drive them out of their original homeland[396]. The analysis of the Migration Period, in this sense, is not an exception to this approach. Nonetheless, the issue is probably complicated by the relationship between these movements of people and the Roman Empire, as can be seen by the common identification of the so called "Barbarian invasions" as the cause of the fall of Rome[397]. However, new studies are challenging the interpretation for which these movements were the lone cause of the fall of Rome. Moreover, as we have seen throughout the current analysis, the pluriannual process of settlement of Germanic tribes as *foederati* makes it difficult to determine a real date for the end of the Roman Empire and some studies even argue that the Caracalla's reform of citizenship in 212 can be seen as a major change that became a relevant factor of attractiveness[398], thus being a sort of beginning of the transformation of Europe into a Roman-Germanic continent. Actually, this is demonstrated by the fact that, once arrived in the former Roman Empire, these Germanic people did not apply their rules, but continued to use Latin as the language of culture and of the administration, Roman culture continued to be a literary and artistic model, Roman law continued to be used as the law of the land and up to the ninth century, in the Frank kingdom the "Roman citizenship" continued to mean "the right to make a will, to give testimony, to buy, to sell the right to make a will, to give testimony, to buy, to sell"[399], as it was in the Roman period[400]. This could take us further into the discussion of the transformation of the Roman Empire, but as we are only dealing with the causes of the Migration Period, we will highlight what is becoming evident: the power of the attractiveness that led the Germanic tribes to adopt the laws and the culture of the people they once fought against and on which they were now ruling. Interestingly, when analysing the area of the Carpathian Basin as the strategic area of departure of the Germanic tribes, the historian Pohl argues that this frontier zone, during the Migration Period, saw the formation of several barbarian military aristocracies looking for the opportunities that the Roman Empire could offer (and the tribal life could not), such as richness, prestige, and power[401]. We can probably extend this analysis to all the frontier zones between the Roman Empire and *Barbaricum.* Indeed, Halsall mentions the role of the Roman Empire in creating the bases for the

[396]Schoorl, J., et al., *Push and pull factors of international migration A comparative report,* European Commission, 2000

[397] Napier, W., *The Memory Remains: Why the Migration Period and the Fall of Rome Continue to be Mischaracterized as a Barbarian Invasion,* Electronic Theses and Dissertations, 2020

[398]Ţepelea, M., *Migration and Integration of Barbarians into the Roman Empire,* In Vertreibung, Flucht, Migration, Bern, Switzerland, 2016; Mathisen, R., *"Becoming Roman, Becoming Barbarian": Roman Citizenship and the Assimilation of Barbarians into the Late Roman World,* Migration and Membership Regimes in Global and Historical Perspective, Studies in Global Social History, 13, 2, 2013; Mathisen, R., Peregrini, Barbari, and Cives Romani: Concepts of Citizenship and the Legal Identity of Barbarians in the Later Roman Empire, The American Historical Review, 111, No. 4, 1011-1040, 2006

[399] *Formulae Arvernenses 27: MGH, Formulae 30, cf. 141, 172, 182, 246, 257–8, 311–3, 518, and throughout* in Mathisen, R., *"Becoming Roman, Becoming Barbarian": Roman Citizenship and the Assimilation of Barbarians into the Late Roman World*, cit.

[400] Mathiesen, R. "Becoming Roman, Becoming Barbarian": Roman Citizenship and the Assimilation of Barbarians into the Late Roman World, cit.

[401] Pohl W., *The Avars: A Steppe Empire in Central Europe, 567–822,* cit.

confederations that rose in the third century: the increasing internal weakness and stability provided a stimulus for the non-Roman rulers which had become dependant on the Roman prestige and gifts and "raised the stakes in barbarian politics"[402]. Therefore, we should see the formation of confederations and alliances as the Alamanni as not only the result of a growing population, as mentioned before, but also as the result of the attractiveness exercised by the Roman Empire. Which is the perfect definition of "pull factor".

On the other hand, we should also consider the "push factors". First of all, it is widely agreed that the Huns caused a major change in the European geopolitics of the time: indeed, their arrival pushed the Germanic tribes into the Empire[403]. We have already seen how the Goths begged for permission to enter the Roman Empire, fleeing the Huns. Warriors and their families were settled within the borders, after they crossed the Danube with all the means possible, including trunks[404]. At the same time, we also regarded Saxons, Jutes, and Angles as "boat people" leaving their lands rather than invaders and we linked the arrival of the Vandals, Alans and Suebi to the Huns too. Interestingly, the revolt that took place after the death of Attila under the leadership of Ardaric could be an hint to the poor conditions of the Germanic tribes subdued to the Huns; Jordanes, indeed, writes:

> "Ardaric, king of the Gepidae […] became enraged because so many nations were being treated like slaves of the basest condition, and was the first to rise against the sons of Attila. […] For by his revolt he freed not only his own tribe, but all the others who were equally oppressed; since all readily strive for that which is sought for the general advantage. They took up arms against the destruction that menaced all and joined battle with the Huns in Pannonia, near a river called Nedao […] The cause of Ardaric, king of the Gepidae, was fortunate for the various nations who were unwillingly subject to the rule of the Huns, for it raised their long downcast spirits to the glad hope of freedom. Many sent ambassadors to the Roman territory, where they were most graciously received by Marcian, who was then emperor, and took the abodes allotted them to dwell in […]."[405]

Nonetheless, other factors probably drove the German populations into the Empire. Relatively to the bordering territories, Halsall claims that internal wars could be the explanation for the migration of tribes such as the Saxons, the Vandals, the Burgundians, the Lombards, and the Heruls, all located in the region behind the frontier people[406]. Halsall's work, *Barbarian Migrations, and the Roman West, 376–568* is a point of reference to understand the changes that took place outside the Empire; in his opinion, indeed, the ongoing collapse of the Empire had different effects on the different tribes, forcing some to flee into the Empire, some to seek a future in *Britannia* and some to move southwards in *Barbaricum*[407]. The Elbe-valley, as the Carpathian basin, seems therefore to have played a significant role in the Migration Period, being probably the starting point of a migratory route: the Heruls, the Saxons descending in Italy with the Lombards, and the Lombards

[402] Halsall, G., *Barbarian Migrations, and the Roman West, 376–568*, cit.
[403] Heather, P., *The Huns and the End of the Roman Empire in Western Europe*, English Historical Review,110, 435, 1995
[404] Halsall, G., *Barbarian Migrations, and the Roman West, 376–568*, cit.
[405] Jordanes, *The Origin and Deeds of the Goths*, cit.
[406] Halsall, G., *Barbarian Migrations, and the Roman West, 376–568, cit.*
[407] *Ibidem*

themselves, might have followed this itinerary[408]. Moreover, it probably played a role in the expansion of the Thuringian power too: this tribe's hegemony is possibly connected with the movement of the Lombards and of the Heruls and was due to the Frankish pressure[409]. In north-west Germany, signs of a profound crisis have been detected and related to the migration to Britain and the formation of the Thuringian confederation. Meanwhile, north of this region, in the same period a new elite started to develop, probably at the expenses of populations such as the aforementioned Heruls; it is probably no coincidence, according to Halsall, that at the time we find the first Danish King, Chlochilaich[410]. Meanwhile, in Ireland, huge transformations were taking place as well, in society, in politics, and economics; these changes, linked to the movement of the Scots to Britain, probably involved a shift to a new order from the previous provincial kingships one[411]. According to Halsall, we can find an explanation in the island's chronicles, in which the outmigrants are considered the exiles from the struggles that took place on the island and which led to the end of several local dynasties. Dramatic changes here probably started from the beginning of the fourth century.

To sum up, new political units were probably "push factor" that drew populations within the political vacuum represented by the collapsing Roman Empire, the "pull factor". Nonetheless, if we broaden the picture, we will see that important changes were taking place in the southern Mediterranean too: during the Migration Period, new polities such as the Islamic caliphates began to appear. The Huns certainly had a role in changing the political situation in *Barbaricum,* tough they cannot have effects on distant populations such as the Arabs – at least, not directly – not to talk about the movement of the Scots out of Ireland. Moreover, this process for which new elites were being shaped by the changed political situation within the Empire was contemporaneous in several parts of Europe and started around the late third century, with the "*Third century crisis"*[412]: this gives the idea of a global process which might have had several causes. Internal causes including economic and social reason have already been analysed by several research[413] and we won't focus on them; we also dealt with the Plague Pandemic, and its effect on a contemporary society already affected by the political changes that took place during the Migration Period. It is time, therefore, to introduce another variable that could help linking these historical changes: the climate variations.

[408] *Ibidem*
[409] *Ibidem*
[410] *Ibidem*
[411] *Ibidem*
[412] Alföldy, *The Crisis of the Third Century as Seen by Contemporaries,* Greek, Roman, and Byzantine Studies, 15, 89-111, 1974
[413] Jones, A.H.M., *The decline and fall of the Roman Empire,* History, 40, 140, 209-226, 2005; Piganiol, A. *The causes of the fall of the Roman Empire*, The Journal of General Education, 5,1, 62-69, 1950

1.3 The Environmental link

1.3.1 The Roman Climate Optimum and its end

A first mention of a possible migration due to environmental causes in Roman times is found in in Strabo's *Geography:* we are told that "Poseidonios" – a 2nd century BC philosopher and historian – conjectures that the migration of the Cimbri and their relatives from their native land occurred because of an advancing of the sea which did not take place suddenly"[414]. This population lived between modern day Northern Germany and the Jutland peninsula[415] and became known to the Romans because of their incursion in Roman Italy in 101 BC[416]. Even though Strabo is dubious about the truthfulness of such event, new insights are revealing that there could be a kernel of truth in his account; not only were found scientific evidence of floods in the original homelands of the Cimbri, but also archaeological ones, as the first dikes to protect the cultivations were being built at the time of the Cimbric migration[417]. Moreover, another research, published by *Nature,* revealed a shift in the North Atlantic Oscillation (NAO) – a weather phenomenon over the North Atlantic Ocean of fluctuations in the difference of atmospheric pressure at sea level – consistent with a period of drought and famine[418]. Indeed, a positive NAO oscillation brings more rain to the Northern European region and drought to the Mediterranean, while a negative NAO has the opposite effect, thus bringing humidity in the southern European region and arid climate in Northern Europe. Interestingly, NAO+ conditions have also been related to increasing heights of sea waves[419]. One of the first Germanic migration might be therefore connected to a change of climatic conditions; the abovementioned research published by Nature, indeed, went even further, claiming a possible link between other Germanic migrations and past climate changes[420]. Nonetheless, before going on, we have to consider the fact that we lack historical sources relatively to the Germanic lands, as already stated for the Justinian Pandemic; we must rely on indirect proof such as dendrological and palynological data or analysis of glaciers. It should be said, however, that in recent year there has been an increasing interest towards the analysis of a possible link between the age of Germanic migrations and negative weather conditions[421].

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[414] Compatangelo-Soussignan R*., Poseidonios and the original cause of the migration of the Cimbri: tsunami, storm surge or tides?* Revue des études anciennes, Revue des études anciennes, Université Bordeaux Montaigne, 2016

[415] *Ibidem*

[416] "*Cimbri*", Encyclopedia Britannica online

[417] Compatangelo-Soussigna, R., *Poseidonios and the original cause of the migration of the Cimbri: tsunami, storm surge or tides?,* cit.

[418] Drake, B.L., *Changes in North Atlantic Oscillation drove Population Migrations and the Collapse of the Western Roman Empire,* cit.,

[419] Hurrell, J.W., et al., *The North Atlantic Oscillation: Climatic Significance and Environmental Impact*, American Geophysical Union as part of the Geophysical Monograph Series, 134, 2013

[420] Drake, B.L., *Changes in North Atlantic Oscillation drove Population Migrations and the Collapse of the Western Roman Empire*, cit.

[421] Mc Cormick, M., *Climate Change during and after the Roman Empire: Reconstructing the Past from Scientific and Historical Evidence*, Journal of Interdisciplinary History, 43, 2, 169–220, 2012

Even though we are predominantly focusing on the Migration Period, it was interesting to mention the Cimbric migration not only because this is one of the first recorded Germanic migration and it can be linked to adverse climatic conditions, but also because, according to the Historian McCormick's study, it was the last migration before the so-called *Roman climate optimum* or *Roman warm period*, a period of exceptional climatic stability[422]. During this period, which has been set between 100 BCE and 200 CE[423] certain regions enjoyed favourable conditions: glaciers retreated and Rome's breadbasket, Egypt, produced cereals in abundance[424]. Nonetheless, it should be said that there is no wide agreement on the fact that this period of climate warming was a global-scale phenomenon[425]. However, studies focusing on Europe essentially agree on the effective prosperity of the European climate during this period; this is confirmed by oceanic sedimentation analysis[426], temperature reconstruction from ice cores, lake productivity and dendrochronological analysis[427], published by authoritative sources such as Nature and Science.

The Roman Warm Period has been therefore linked to the emergence of the Roman Empire: between 100 BCE and 200 CE, indeed, Rome was able to impose its rule all over the Mediterranean, reaching its maximum expansion in 117, under Trajan[428]. There were no volcanic eruptions during the period between 44 BCE and 169 CE – and we will see later how a major volcanic eruption will change the European world – solar irradiance was elevated, Spain and Italy were well-watered, and the Roman Empire was able to feed every citizen, despite its huge population growth: indeed, no famines were recorded in the high Roman Empire[429]. Thus, given the exceptional climatic stability and the incredible Roman ability to rule all over that immense area, it is tempting to link these two factors. And this becomes even more tempting if we consider that the Roman Empire fall happened during a period of "exceptional climate variability"[430].

Historian Kyle Harper labelled the interval between the Roman Warm Period and the Little Antique Ice Age – or *Dark ages cold period*, a period of general cooling, as we will see later – "Roman Transitional period", which he sets between 150 CE and 450 CE[431]. Another research confirmed, indeed, that already in the third century, the frequency of the Nile floods and lake productivity declined, contemporary to the period of high turnover in the Empire leadership, known as Third century crisis[432]. The low frequency of the Nile had

[422] *Ibidem*
[423] *Ibidem*
[424] *Ibidem*
[425] Neukom, R., No evidence for globally coherent warm and cold periods over the pre-industrial Common Era, Nature, 571, 550–554, 2019
[426] Bianchi, G., McCave, I., *Holocene periodicity in North Atlantic climate and deep-ocean flow south of Iceland*, Nature 397, 515–517, 1999
[427] Drake, B.L., *Changes in North Atlantic Oscillation drove Population Migrations and the Collapse of the Western Roman Empire,* cit.
[428] Hammond, Mason. "Trajan". Encyclopedia Britannica online, 15 Dec. 2020
[429] Harper, K., *The Environmental fall of Rome,* Daedalus 145, 2,101-111, 2016
[430] Bungten, U., et al., 2500 Years of European Climate Variability and Human Susceptibility, Science, 311, 2011
[431] Harper, K., *The Fate of Rome: Climate, Disease, and the End of an Empire*, cit.
[432] Drake, B.L., *Changes in North Atlantic Oscillation drove Population Migrations and the Collapse of the Western Roman Empire,* cit.

extremely negative effects on the crops of the Roman Breadbasket: evidence of extreme dryness and desertification, abandonment of villages, as well as economic difficulties, irrigation issues and upheavals have been linked to changing climatic conditions during the third and fourth centuries[433]. Moreover, historian Sabine Huebner related the reduced rate of floods of the Nile to a shift of the African Monsoon in the region of the source region of the river[434]. Indeed, after the peak of the second century, records of Nile floods show

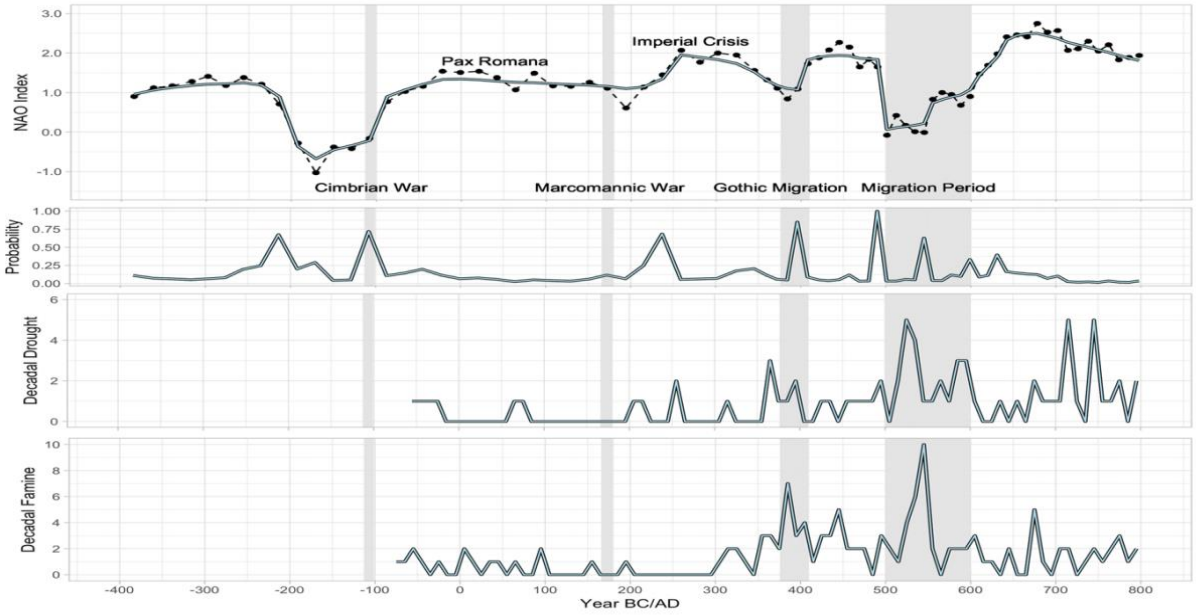

Figure 1: NAO index compared to the droughts and famines in *Drake, B.L., Changes in North Atlantic Oscillation drove Population Migrations and the Collapse of the Western Roman Empire, cit*

an abrupt decrease (Figure 1) in the third century with a negative record between the fourth and the eight centuries[435].

On the other hand, while the Mediterranean Region was experiencing these drought phenomena, Northern and Central Europe were under increasing heavy rains, as revealed by the dendrochronological analysis[436]. This was possible due to the different impact of the abovementioned North Atlantic Oscillation Phenomenon, which, as said, has different effects on these two European regions[437]. In the meantime, populations of inner Asia, in the years between 350 and 370 saw the "worst multidecadal drought event of the last two millennia", as Kyle Harper states[438]. However, the view for which the Huns, coming from inner Asia, would have been driven by that period of megadroughts, also supported by paleo-environment Professor Edward R. Cook[439],

[433] Climate Change in the Breadbasket of the Roman Empire. Reconstructing Nile Floods for the Roman Period, Conference Report, Conference organized by the *Istituto Svizzero di Roma,* 23-24 January 2020
[434] *Ibidem*
[435] Drake, B.L., *Changes in North Atlantic Oscillation drove Population Migrations and the Collapse of the Western Roman Empire*, cit.
[436] *Ibidem*
[437] *Ibidem*
[438] *Ibidem*
[439] Cook, E. R., *Megadroughts, ENSO, and the Invasion of Late-Roman Europe by the Huns and Avars*, in The Ancient Mediterranean Environment between Science and History. Leiden, The Netherlands, Brill, 2013

has been challenged by Archaeologist Susanne Hakenbeck, who argued that these droughts did not affect the Huns, which were already in Europe by that time[440]; however, they might have affected other Asian populations in their movement towards Europe: indeed, according to Priscus, an eastern Roman diplomat, the Avars were forced to leave their country due to mysterious "great clouds and mists"[441]. Interestingly, Kyle Harper argues that the great drought had similar effects to the American "Dust Bowl"[442]. McCormick too agrees on the fact that fifth century drought might have led Asian populations such as the Hephthalite Huns to invade the Sassanian Empire and links the sixth century dry conditions in the Eurasian steppe to the Avars' movement[443].

While disagreeing on the possible effects of climate change in Asia on the Huns, Hakenbeck claims that a series of very dry summers connected to an increased aridity took place in the first decades of the fifth century in the Carpathian Basin; in her opinion, this might have led to a socio-economic reorganization of the Huns, pushing them to demand gold from the Roman provinces, similarly to what had happened with the Xiong-Nu and the Chinese Empire[444]. This view seems to be confirmed by the analysis carried out by University of New Mexico Researcher Lee Drake and published by Nature, which confirmed a positive North Atlantic Oscillation in 375 CE, also proven by textual evidence making reference to drought and famine; Drake thus link the effects of the climate shift in this region to the migration of the Huns and of the Goths, given the effect of the NAO on the Carpathian basin region[445]. Another study based on the palaeobotanical analysis confirmed that in this geographical area, climate had been warm during the Roman Climate Optimum, enough for peaches and figs to grow (and probably even vine); however, things changed with the Migration Period[446]. Indeed, from the late fourth century – thus consistent with the Gothic/Huns migration – temperatures in Carpathian basin fell and climate became dryer[447]. These studies are therefore demonstrating that major climate changes occurred in the period of the end of Roman Empire in an area crucial for the future of the Empire. We must therefore focus on the other regions bordering the Empire too.

We have already mentioned the increasing level of precipitation in modern-day France and Germany (see Figure 2); moreover, isotopegeochemical methods applied on peat deposits such as the one in Durres Maar, in

[440] Hakenbeck, S., *The Role of Climatic and Environmental Factors in the Hunnic Phenomenon in South-east Europe*, SocArXiv, 2019
[441] Howorth, H.H., *The Avars, The Journal of the Royal Asiatic Society of Great Britain and Ireland, Oct., New Series, 21, 4, 721-810, 1899*
[442] Harper, K., *The Fate of Rome: Climate, Disease, and the End of an Empire,* cit.
[443] McCormick, *Climate Change during and after the Roman Empire: Reconstructing the Past from Scientific and Historical Evidence,* cit.
[444] Hakenbeck, S., *The Role of Climatic and Environmental Factors in the Hunnic Phenomenon in South-east Europe*, cit.
[445] Drake, B.L., *Changes in North Atlantic Oscillation drove Population Migrations and the Collapse of the Western Roman Empire,* cit.
[446] Vadas, A., Rácz, L., *Climatic Changes in the Carpathian Basin during the Middle Ages. The State of Research,* Global Environment 12, 198–227, 2013
[447] *Ibidem*

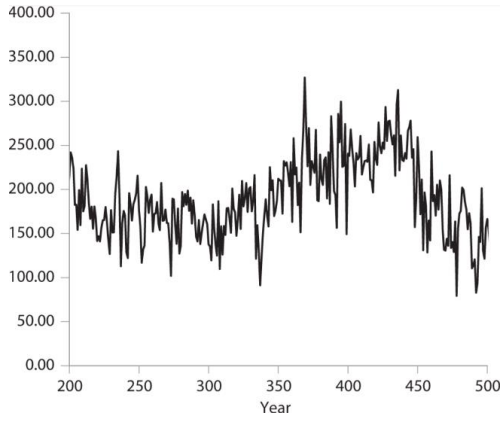

Figure 2: Precipitation's data in France and Germany (data from Bungten et al. 2011) in Harper, K., The Fate of Rome, Climate, Disease, and the End of an Empire, cit.

north-western Germany, confirmed that the period from the fourth and seventh century was a cold and wet phase[448]. Again, a cooler climate is confirmed by dendrochronological and fossil analysis carried out in Northern Finland and Sweden: here temperature decreased from the half of the third century, with minimums – among the lowest in the past 2000 years – in the first decades of the third century, in the first half of the fourth century, and also during the fifth century and in the sixth century, when was recorded one of the three lowest point of the past two millennia (see Figure 3)[449].

However, according to Lutherbacher et al., European summers in general were colder from 300 to 600 CE, not only in specific regions[450]. This is consistent with the data showing reforestation in many areas of Europe: indeed, palynological studies are confirming that the abovementioned increased precipitations and lowering temperatures were accompanied by decline of agriculture and a general reforestation in north-west and north-central Europe, in northern Poland, in the Baltic States, Southern Sweden, and along the Baltic coast from the fifth century onwards[451]. Increasing human impact in the Eastern Baltic, indeed, is detected again only around the tenth century[452]; furthermore, in north-west and north-central Europe the forest reversal, caused by the Roman settlements, came to an halt following

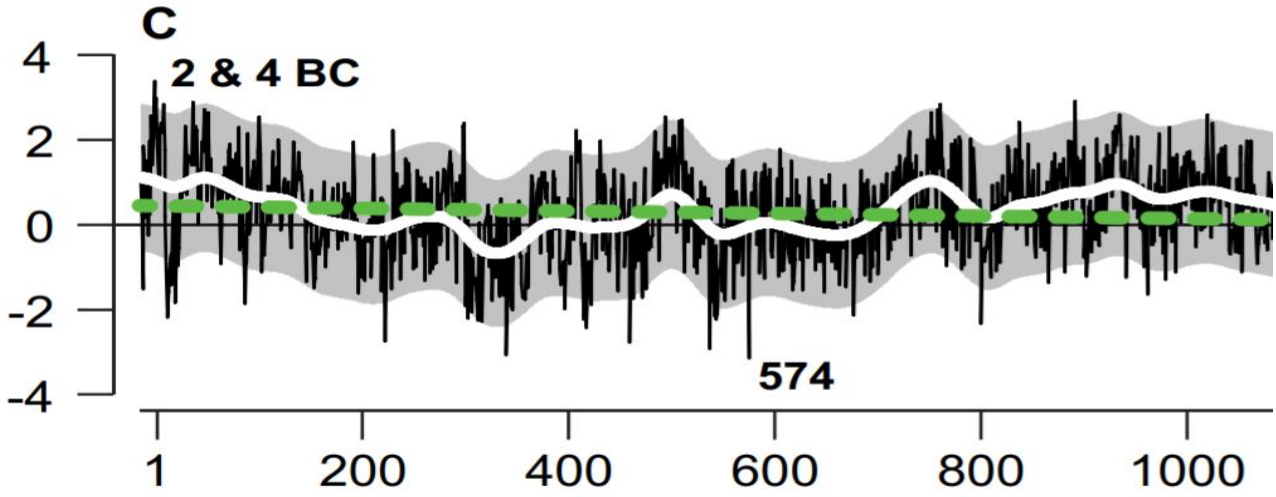

Figure 3: Reconstruction of Northern European temperatures variation from 1 CE to 1000 CE: 2, 4, and 547 are respectively the two maximums and the minimum of the period. In Esper, J., et al., Northern European summer temperature variations over the Common Era from integrated tree-ring density records, Journal of Quaternary Science (2014) 29(5), 487-494

[448] Moschen, R., et al., Temperature variability at Dürres Maar, Germany during the migration period and at high medieval times, inferred from stable carbon isotopes of Sphagnum cellulose, Clim. Past Discuss., 7, 535–573, 2011

[449] Esper, J., et al., *Northern European summer temperature variations over the Common Era from integrated tree-ring density records*, Journal of Quaternary Science, 29, 5, 487–494, 2014

[450] Lutherbach et al*., European summer temperatures since Roman times*, Environmental Research Letters, 11, 2016

[451] Gaillard, M., et al., Causes of Regional Change—Land Cover, Second assestment of climate change for the Baltic Basin, The BACC II Author team, Springer Open, Regional Climate Studies, 2015

[452] Brown, A., Pluskowski, A., *Medieval landscape transformation in the southeast and Eastern Baltic: paleoenvironmental perspectives on the colonisation of frontier landscapes*, Archaeologia Baltica 20, Frontier Societies and environmental change in northeast Europe, Klaipeda, 2013

the collapse of the Roman Empire, though this trend is not homogeneous in Europe[453].

Data coming for south-west Sweden confirm a contraction of agriculture which started almost 1500 years ago and are similar to those coming from contemporary *Britannia*[454]. Indeed, in his book *The end of Roman Britain*, Historian Michael Jones argues that a shift to colder weather occurred around 400 CE in *Britannia* and it even get colder around half the century: increased rainfall, probably caused floods and aggravated soil erosion due to the deforestation and expanding agriculture[455]. Jones's conclusions are interesting since they probably describe what happened in other parts of Europe too; deteriorating climate conditions and increased precipitations possibly led to reduced fertility of fields and more bogs; moreover, reduced temperatures might have lowered the elevation level at which grains grows, and might have reduced the growing season, thus also making more difficult to sustain animals during the winter[456]. Interestingly, Jones argues that conditions might have been even worse for the northern populations such as the Picts and the Scots, hence driving them south. Again, it is tempting, therefore, to connect the contemporary and huge migrations into the former Roman Empire to the worsening climate conditions; has we have seen throughout this analysis, indeed, raids and circumscribed migrations occurred before the fourth century too, but it is only in the period between the end of the fourth century and the eight century – the Migration Period – that migrations become a large-scale phenomenon, in conjunction with the abovementioned deteriorating climatic conditions. A link between the two phenomena has therefore been suggested by the various abovementioned research[457]. It should be said, however, that due to the said inverse effects of the NAO, situation was worse than before in the Mediterranean region too: for instance, decreasing solar insolation in the Northern Hemisphere and cooler air temperature in Greenland had also effects in Spain. This is proved by a decline in the riverine influence in the Algerian-Iberian basin, by lower lake levels in Spain, by cooling events in the Balearic basin, as well as by forest regression episodes and decreased river activity in Southern Europe in general[458]. Spatial heterogeneity was, however, a characteristic of the time in Southern Europe, as in the same Iberian Peninsula the northern region experienced humid and cold conditions; two different lakes for instance, reveal extreme dryness and wet conditions in the same period[459]. Nonetheless, as we are focusing on a possible link between Germanic tribes'

[453] Woodbridge-Fisher, J., et. Al., *Vegetation and land-use change in northern Europe during late antiquity: a Regional-scale pollen-based reconstruction*, Late Antique Archaeology, 11, 1, 2015

[454] De Jong, R., Lageras, P*., Exploring the patterns and causes of land use changes in south-west Sweden*, Veget Hist Archaeobot, 20:15–27, 2011

[455] Jones, M., *The End of Roman Britain*, cit.

[456] *Ibidem*

[457] Drake, B.L., *Changes in North Atlantic Oscillation drove Population Migrations and the Collapse of the Western Roman Empire,* cit.; Moschen, R., et al., Temperature variability at Dürres Maar, Germany during the migration period and at high medieval times, inferred from stable carbon isotopes of Sphagnum cellulose, cit., Vadas, A., Rácz, L., *Climatic Changes in the Carpathian Basin during the Middle Ages. The State of Research,* cit., Bungten, U., et al., 2500 Years of European Climate Variability and Human Susceptibility, cit.

[458] Nieto-Moreno, V., et al., *Tracking climate variability in the western Mediterranean during the Late Holocene: a multiproxy approach*, Climate of the Past, 7, 1395–1414, 2011

[459] Sanchez-Lopez, G*., Climate reconstruction for the last two millennia in central Iberia: The role of East Atlantic (EA), North Atlantic Oscillation (NAO) and their interplay over the Iberian Peninsula*, Quaternany Science Reviews 149, 135-150, 2016

movements and Climatic Changes during the Migration period, we will only concentrate on Northern and North-eastern Europe, from which these tribes came.

Professor of Geography Ellsworth Huntington was one of the first to hypothesise a link between climate change and Germanic migrations in 1907; however, this approach has been lacking in further research, which insisted on other explanations[460]. It was only recently that research started to consider climatic variability as a possible cause of the Migration Period. A major contribution was given by Professor of Geography David Holt, who focused its attention on the relation between dendrochronological data – used to reconstruct climate variability – and the major events in *Germania,* that is to say in the region comprised between the Rhine, the Vistula and the Danube; Dacia was included in the survey too[461]. Another important study was the one of Armin Volkmann, who concentrated on the Oder region. Both studies came to the same results and argued that climatic variability might have been one of the causes of the Germanic tribes' movements. Interestingly, according to David Holt, in the years between 274 CE and 374 CE 59 out of 61 Germanic peoples' movement, attacks or settlements in the Roman Empire, occurred in years with low agricultural growth rates: a percentage of 97%. Moreover, the data are consistent with records of droughts in the – few – written documents: for instance, archaeological data coming from Netherlands reveal that in 320 CE a cold period ended, and in 348 a multiyear drought affected the Visigoths' lands; both events are confirmed by the dendrochronology analysis (N for Netherlands and A for the Visigoth King, Athanaric, in the figure). On the other hand, it is reported that Dacia experienced a high crop productivity in 357 and two years later the Burgundians became sedentary; again, this is consistent with the prosperous period emerging from the tree analysis (D and B in figure 4).

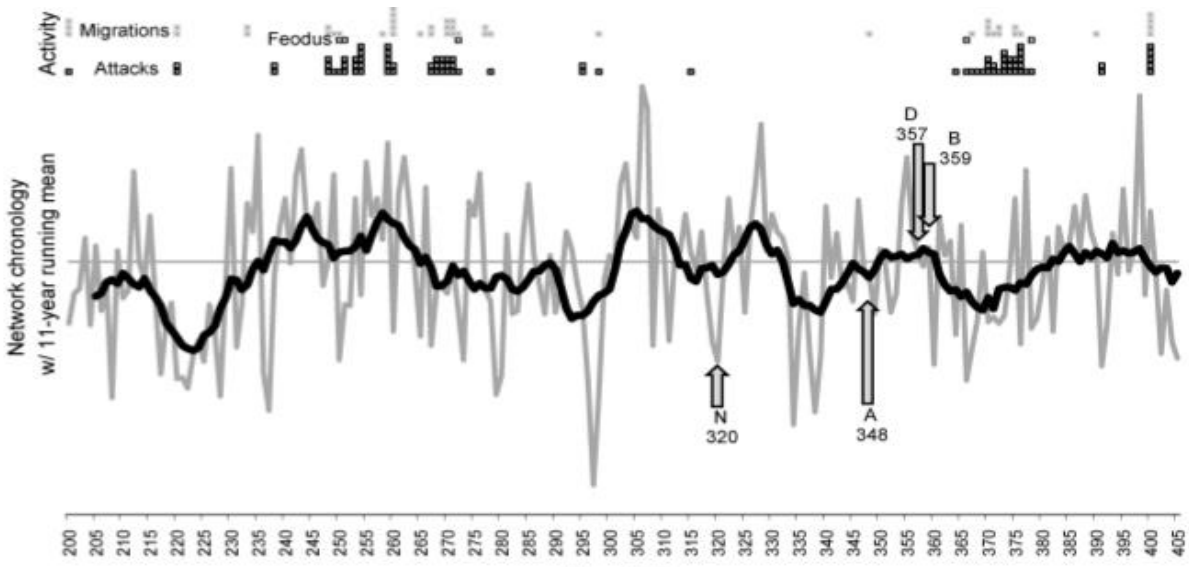

Figure 4: "Activity in and around Germania for the 3rd and 4th centuries A.D. as it compares to the network chronology by year and periodicity. Activity is divided into migrations, feodus (treaties), and attacks, and is ranked by number of each (as per number of squares), with a maximum of six different tribes for migration and five different tribes for attacks. The letters "A" and "N" are recorded droughts and the letters "D" and "B" are recorded prosperous times". In *Holt, D.H., Germania and Climate Variability in 3rd and 4th Centuries A.D.: A Methodological Approach to Dendroclimatology and Human Migration, Physical Geography, Volume 32, Issue 3, 2011*

[460] Holt, D.H., *Germania and Climate Variability in 3rd and 4th Centuries A.D.: A Methodological Approach to Dendroclimatology and Human Migration*, Physical Geography, 32, 3, 2011
[461] *Ibidem*

Volkmann's analysis instead, focused on the Oder region and on the analysis of the settlements. In the early migration period, the climate shifted to colder and drier conditions, as in other parts of Northern Europe; this clearly had effects on the land cultivation and on the animal husbandry[462].

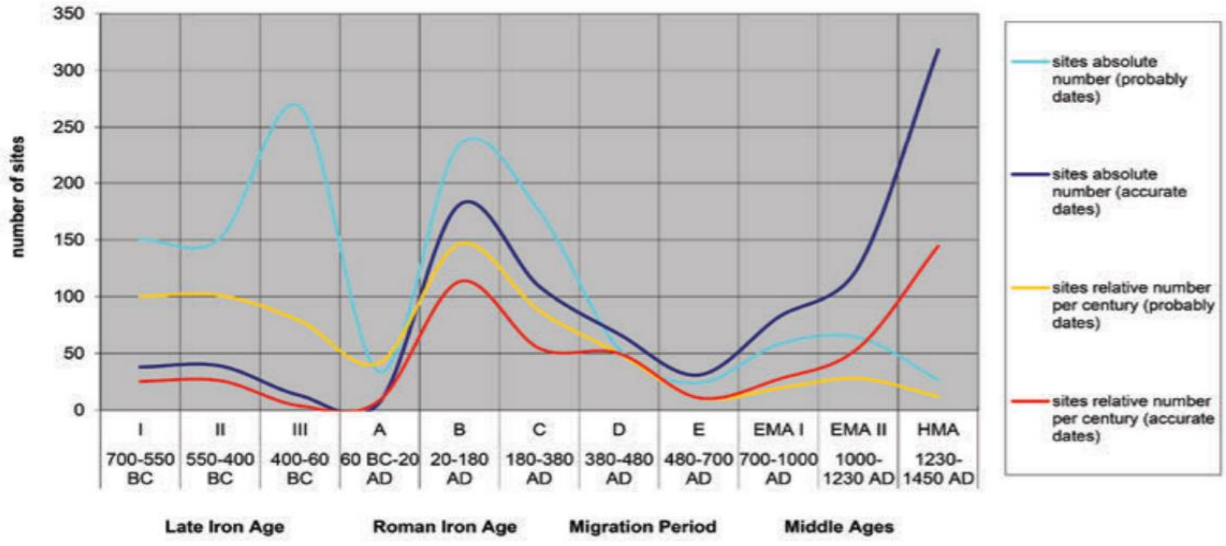

Figure 5: Numbers of sites under investigation in the Oder region. In Volkmann, A., Climate change, environment and migration: a GIS-based study of the Roman Iron Age to the Early Middle Ages in the river Oder region, European Journal of Post-classical Archaeologies, volume 5, 2015.

Archaeological evidence shows indeed dramatic processes taking places in this area; while the Roman Period saw intensive settlement of the region, there was a decay with the Migration Period, as shown in Figure 5.

Volkmann therefore suggests that the migrations from this area, which started before the cooling period, might have been provoked by several factors: first of all, during the climate optimum, by the political weakness of the Roman Empire during the third century. There is evidence, indeed, that individual groups took valuable pieces back to their homeland. Then, the worsening of climate, affecting the bases of the subsistence economy, made the inhabitants leave their homes, with a peak in migration in the fifth century, as also testified by the sudden high density of the settlements in the Spree-Havel region, an intermediate step in the tribes' southward movement. The contemporary military and political weakness of Rome certainly provided another stimulus – or pull factor – for the Germanic tribes, which were also experiencing periods of droughts followed by periods of heavy rains[463]. Deprived of the youths and therefore of the labour force and facing the reforestation and the

[462] Volkmann, A., *Climate change, environment and migration: a GIS-based study of the Roman Iron Age to the Early Middle Ages in the river Oder region*, European Journal of Post-classical Archaeologies, 5, 2015
[463] *Ibidem*

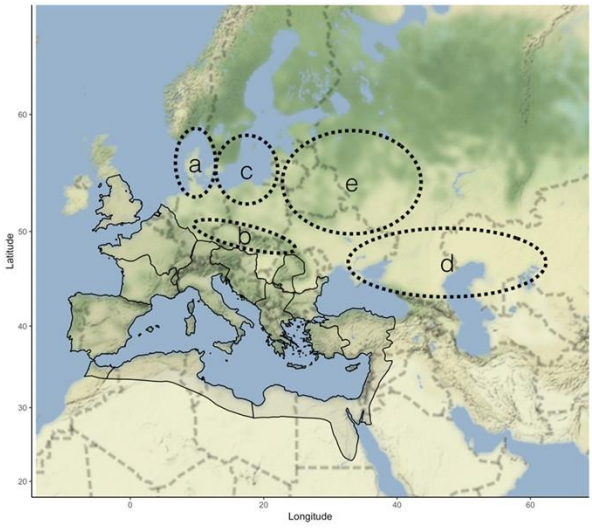

Figure 6: *Map showing the locations are highlighted for (a) the Cimbri and Teutones before 117 B.C., (b) the Marcomanni and Quadi before 160 A.D., (c) hypothesized location for tribes which would eventually become the Goths before 370 A.D., (d) possible migration path of the Huns around 400 A.D., and (e) Slavic-speaking groups prior to the Migration Period (500 A.D.). In Drake, B.L., Changes in North Atlantic Oscillation drove Population Migrations and the Collapse of the Western Roman Empire, cit.*

desertification of the agricultural lands, the remaining part of the population had no choice but to leave; interestingly, even though this might have been a land of contact between the Germanic tribes and the Slavs, there is no evidence that contacts between the two populations occurred, as the land seems to have been deserted for about a century[464]. Volkmann's interpretation has been indirectly confirmed by the study of Lee Drake, which argued that a NAO shift, linked to drought conditions, occurred between 500 and 600 CE, as previously mentioned. Moreover, a settlement contraction is also recorded for the Rhone Valley in the same period: archaeologist Fredric Cheyette showed how the number of settlements in this area significantly decreased from the second century: while there were 565 occupied sites between 100 and 200 CE, this number fell to 224 and 188, respectively in the fourth and in fifth century[465]. Moreover, new studies are demonstrating that the Anglo-Saxon migration occurred in a period of increasing sea levels in the North Sea[466]: thus, the loss of lands might have led the migrants to leave their lands.

1.3.2 The 536 CE event and the LALIA/DACP

While it is becoming evident that the climate change which occurred in the Migration Period was a general and prolonged climatic shift that took place throughout several centuries, 536 is being remembered as turning point year which had nonetheless huge effects for the generations to come. Indeed, contemporary chronicles all across Eurasia make reference to a "dust veil event": Procopius writes that "during this year a most dread portent took place. For the sun gave forth its light without brightness […] and it seemed exceedingly like the sun in eclipse, for the beams it shed were not clear"[467]. Cassiodorus also claim that the sun was weak:

> "The Sun, first of stars, seems to have lost his wonted light, and appears of a bluish colour. We marvel to see no shadows of our bodies at noon, to feel the mighty vigour of his heat wasted into feebleness, and the phenomena which accompany a transitory eclipse prolonged through a whole year. The Moon too, even when her orb is full, is empty of

[464] *Ibidem*
[465] Cheyette, F., *The disappearance of the ancient landscape and the climatic anomaly of the early Middle Ages: a question to be pursued*, Early Medieval Europe, 16, 2, 127-165, 2011
[466] Simmons, I.G., *Margins of the East Fen: Historic Landscape Evolution*, Durham University, Appendix 2.1.A Weather, Climate, Sea level and floods in Medieval Times, https://www.dur.ac.uk/east-lincs-history/investigations/the-saxon-shore-the-vikings-and-domesday-book/appendix-2.1.a/
[467] Procopius, History of the Vandalic Wars Volume 2, Books III and IV, William Heinemann London, England, 1916, p. 329,

her natural splendour. Strange has been the course of the year thus far. We have had a winter without storms, a spring without mildness, and a summer without heat. Whence can we look for harvest, since the months which should have been maturing the corn have been chilled by Boreas?[468]„

Now we know that this event was caused by a volcanic explosion, as demonstrated by data coming from glaciers in Greenland and Antarctica[469]; the volcano was probably located in a tropical or subtropical region[470] or in the Northern Hemisphere[471] and its effects have been linked to several social changes in the following period[472]. The dust veil was possible because:

"Dry fogs appear in the atmosphere when large volcanic eruptions inject massive quantities of fine silicate ash and aerosolforming sulphur gases into the troposphere and stratosphere. Although the ash gravitationally settles out within weeks, the aerosols spread around the globe and can remain suspended in the stratosphere for years"[473]

The volcanic eruption of 536 though, was not the unique volcanic event, as it was followed by other two volcanic explosions, one in 540 – a tropical volcano, exceeding the strength of the 1815's explosion of Tambora – and another one in 547; the general cooling caused by this series of explosion was also sustained by "positive feedback loops of ocean-heat content and sea-ice extension"[474] and by a solar minimum[475].

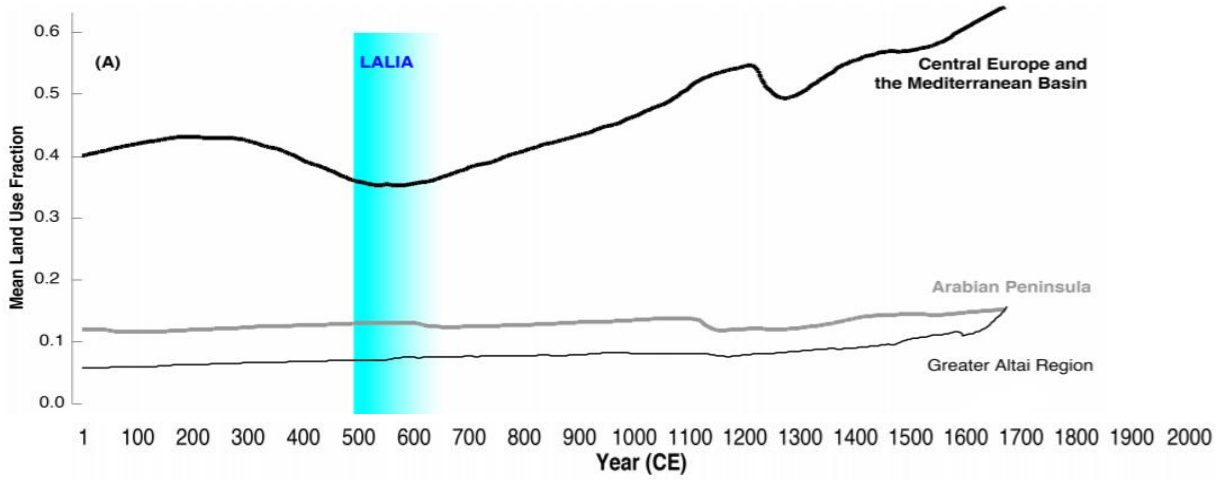

Figure 7: The mean land use in Central Europe and in the Mediterranean Basin. In Bungten, U., et al. Climate and societal change during the Late Antique Little Ice Age from 536 to 660, Nature Geoscience, 9, 231-236, 2016. We can see a general contraction corresponding to the period between 400 CE and 800 CE.

[468] *The Letters of Cassiodorus,* translation of Thomas Hogdin, printed by Horace Hart, printer to the University, Oxford, 1886 pag. 519
[469] Larsen, L.B., *New ice core evidence for a volcanic cause of the A.D. 536 dust veil*, Geophysical Research Letters, 35, 2008
[470] Stothers, R.B., *Mystery cloud of A.D. 536*, Nature, volume 306, 1984
[471] Peregrine, P., *Climate and social change at the start of the Late Antique Little Ice Age*, The Holocene, 30, 11, 1643-8, 2020
[472] *Ibidem*
[473] Stothers, R.B., *Mystery cloud of A.D. 536*, cit.
[474] Bungten, U., et al. *Climate and societal change during the Late Antique Little Ice Age from 536 to 660*, Nature Geoscience, 9, 231-236, 2016
[475] *Ibidem*

Thus, some authors label the period of general cooling as "Little Antique Ice Age (LALIA)", even though there is no wide agreement on this definition or regarding the duration of this cooling phase[476]. Indeed, this period of general cooling has also been identified as "Dark Age Cooling Period (DACP)"; confusingly, both the LALIA and the DACP overlap with the Migration Period but while the LALIA has been set between 536 and 660[477], the term DACP describes the period between 400 and 700[478]. We can therefore consider the LALIA as a period of extreme cold weather within a period of general cooling.

As mentioned above, several changes took place during this period: major upheavals were recorded in central Asia in 550, probably driving the Avars in Europe, which, in turn, could have possibly pushed the Slavs and the Lombards further into Central Europe[479]. The Slavic dialect, indeed, spread all across Easter Europe during the sixth and seventh century and the forces driving westwards this population have not been fully explained[480].

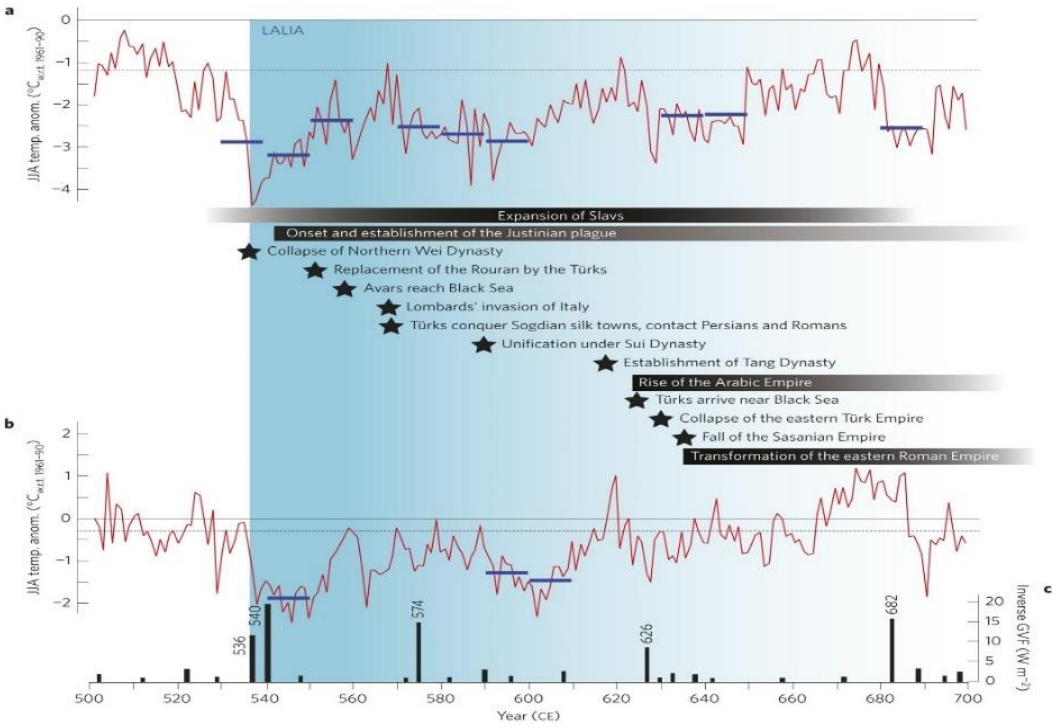

*Figure 8: Eurasian summer temperature variability. A and B describe the Altai and European temperatures, while c and respectively described Ice-core-derived global estimates of volcanic and total solar irradianc (*in light *grey).* In Peregrine, P., Climate and social change at the start of the Late Antique Little Ice Age, cit.

A link between social change and general cooling has also been postulated by anthropologist Peter Peregrine, who created an index, the *Social Change Index* which was compared to the intensity of local cooling; the questions used to determine the degree of the SCI were: "Was there a change in population size or migration? Was there a change in the frequency or intensity of famine or disease? Was there a change in the frequency or

[476] Haldon, J., et al., *Plagues, climate change, and the end of an empire: A response to Kyle Harper's The Fate of Rome (1):* Climate, History Compass, Wiley Online Library, 2018; Helama et al., *Limited Ice Age Cooling,* Nature Geoscience, 10, 242-3, 2017
[477] Bungten, U., et al. *Climate and societal change during the Late Antique Little Ice Age from 536 to 660*, cit.
[478] Helama S., et al., *Dark Ages Cold Period: A literature review and directions for future research*, The Holocene, Volume 27, 1600-1606, 2017
[479] Bungten, U., et al. *Climate and societal change during the Late Antique Little Ice Age from 536 to 660*, cit.
[480] *Ibidem*

intensity of conflict? Was there a change in the organization of communities? Was there a change in the regional organization of the society? Was there a change in the religious or ritual organization of the society?"[481] Then, he compared the results with the temperature change as seen in figure 9.

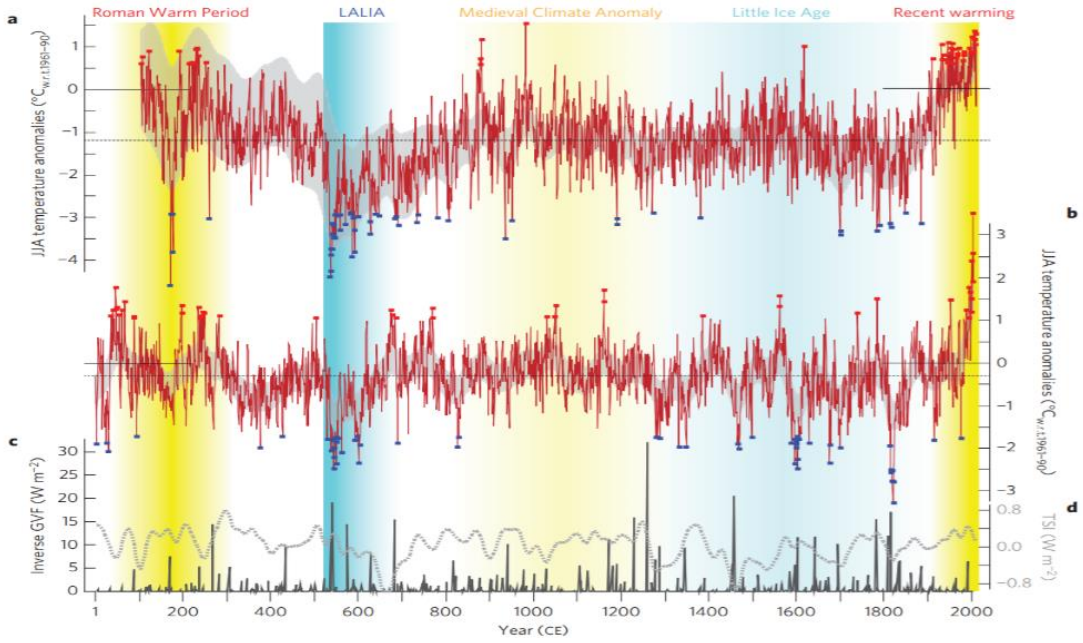

Figure 9: "Reconstructed summer temperatures from the Russian Altai (a) and the European Alps (b), together with estimated volcanic forcing (c)". Blue lines highlight the coldest decades of the LALIA. In Bungten, U., et al. Climate and societal change during the Late Antique Little Ice Age from 536 to 660, cit.

Case name (short name)	Time frame	Temperature change (degrees C)	Social change index
Europe			
Early Merovingian (Paris)	486 CE–543 CE	−0.79*	6
Ostrogothic Kingdom (Latium)	489 CE–554 CE	−0.69*	14*
Migration Period (Jutland)	500 CE–700 CE	−1.00*	10*
Brega (Ireland)	Reign of Túathal Máelgarb 533 CE–544 CE	−0.51*	6
Toledo (Spain)	Reign of Theudis 531 CE–548 CE	−0.58*	15*

Figure 10: Peregrine, P., Climate, and social change at the start of the Late Antique Little Ice Age, cit.

In his opinion, results demonstrated a link between the temperature change and social change, though they were not "predictability associated with social change among those societies that experienced the most significative cooling"[482]. Therefore, he argues that local variations in the three abovementioned volcanic explosions might have played a role: after further adjustments, he claims that there could be a predictable association between the two variables[483].

Obviously, as mentioned before by Cassiodorus, the 536 event (and the following volcanic explosions) had consequences on the cultivations; this was already evident in the same year, as the event occurred in spring[484]. Cassiodorus indeed states that the this caused the "reaper to fear a new frost in harvest, making the apples to

[481] Peregrine, P., *Climate and social change at the start of the Late Antique Little Ice Age*, cit.
[482] *Ibidem*
[483] *Ibidem*
[484] *Ibidem*

harden when they should grow ripe, souring the old age of the grape-cluster"[485]. This was also remarked by other authors such as the ones of the Irish annals, who recorded "failure of bread"[486]. Indeed, in the *Liber Pontificalis* we read that there was a famine in the "whole world" in 537[487]. Moreover, according to Samuli Helama et al., regardless of the temperature differences, the dust veil affected the photosynthesis process, with important effects on the agriculture and, therefore, on societies[488]. Therefore, we will now try to detect the effects on the European peoples of the time.

As Archaeologist Gundersen reports, senior research Stamnes demonstrated that the decrease of just one Celsius degree has considerable effects on the cultivations in Northern Europe[489]. Indeed, palynological data referring to the Migration period reveal decreases in arable land in Denmark; in Sweden, a reduction of human activity is detected in the province of Halsingland, in the island of Oland and in the northern regions, while a settlement reduction has been noted around Lake Malaren[490]. In the Uppland region, Archaeologists Price and Graslund observed a large-scale abandonment of settlements: 75% of the villages became deserted and were not founded again, while the percentage of abandonment rises to 92% in the neighbouring regions[491]. Interestingly, these were settlements that had been there even for thousands of years; the two researchers found that some of these settlements were founded in higher places, but they did not become bigger[492]. Gundersen, however, argues that while in Northern Norway there is no sign of stagnation, this is more evident in southern and western Norway[493]. According to Professor of Geography Widgren this is due to a less dependency on agriculture given the abundance of maritime resources[494]. On the other hand, in southern and western Norway, the percentage of abandonment is about 90/95% of the previous settlements[495]. Moreover, abandonment of settlements, reforestation, decrease in burials, and changes in material culture are also recorded in Northern Frisia, Schleswig-Holstein, Estonia, Latvia, and Lithuania[496], thus in the whole Northern European region. We previously interpreted this demographic decrease as an evidence of the arrival of the Plague in Northern

[485] The Letters of Cassiodorus, cit.
[486] *The Annals of Ulster,* Electronic edition compiled by Pádraig Bambury and Stephen Beechinor, CELT, https://celt.ucc.ie//published/T100001A/index.html
[487] Tvauri, A., *The impact of the climate catastrophe of 536/7 AD in Estonia and neihbouring areas,* Estonian Journal of Archaeology, 18, 1, 30-56, 2014
[488] Helama, S., et al., *Volcanic dust veils from sixth century tree-ring isotopes linked to reduced irradiance, primary production and human health*, Scientific reports, Nature, 2018
[489] Gundersen, I.M., *The Fimbulwinter theory and the 6th century crisis in the light of Norwegian archaeology: Towards a human-environmental approach*, Primitive Tider 21, 101-120, 2017
[490] Löwenborg, D. *An Iron Age Shock Doctrine – Did the AD 536-7 event trigger large-scale social changes in the Mälaren valley area?* Cit.
[491] Price N. and B. Gräslund B., *Excavating the Fimbulwinter? Archaeology, geomythology and the climate event(s) of AD 536* In: Past Vulnerability. Volcanic eruptions and human vulnerability in traditional societies past and present. Riede F., 109-132. Aarhus University Press, Aarhus, 2015
[492] *Ibidem*
[493] Gundersen, I.M., *The Fimbulwinter theory and the 6th century crisis in the light of Norwegian archaeology*, cit.
[494] Widgren, M., *Climate and Causation in the Swedish Iron Age: Learning from the Present to Understand the Past*, Geografisk Tidsskrift – Danish Journal of Geography, 126-134, 2012
[495] Price N. and B. Gräslund B., *Excavating the Fimbulwinter? Archaeology, geomythology and the climate event(s) of AD 536,* cit.
[496] Tvauri, A., *The impact of the climate catastrophe of 536/7 AD in Estonia and neihbouring areas,* cit.

Europe, but the number of abandoned settlements could be both a proof of the Plague's presence and of outmigration in response to the crop failure. This could be also proved by the fact that in northern Europe, settlement and agricultural reduction were also accompanied by changes in the society: both in Norway[497] and in Sweden[498] monumental mounds appear as well as indications of stronger upper classes[499]; the most important of them, Raknehaugen, the largest of all Scandinavia, was built between 533 and 551 (see figure 10)[500]. Contemporary changes in burial habits in Finland are being studied[501]. In Oland, there is also evidence of construction of ringforts and social tensions[502]. Moreover, Price and Berglund also detected a shift in the relationship with the sun: as agrarian societies indeed, the Northern ones were intimately linked with our star, as also witnessed by the several jewels and artistic productions; however, after two millennia, the use of sun symbols comes abruptly to an end in the sixth century[503]. This also happened in Estonia and Finland, where objects decorated with solar symbols had arrived in the third century[504]. In general, this region witnessed a complete and abrupt shift in cultural habits; it is sufficient to say that such another shift will take place in the thirteenth century[505]. Curiously, this was another period of climate change[506].

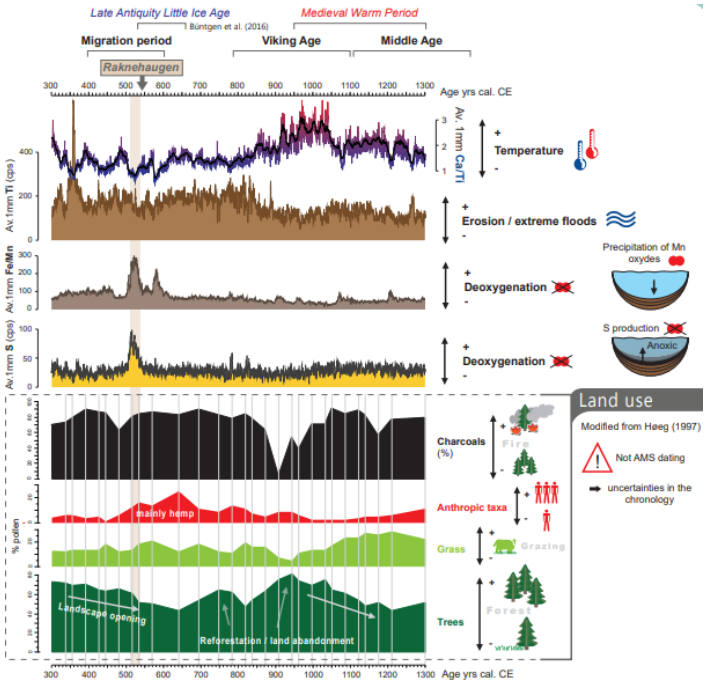

Figure 11. Bajard, M., et al., Socio-environmental dynamics and volcanic eruptions in the 500-1250 CE period in Scandinavia, cit. We can see the date of building of Raknehaugen compared to the climatic changes recorded in lake Ljøgottjern sediment sequence.

Interestingly, according to an hypothesis which has been put forward for the first time by Archaeologist Martin Axboe, the huge number of gold hoards found in Scandinavia dating to the half of the sixth century must be related to the disappearing of the Sun: the findings indeed include high-status objects, valuable, and expression of one's status[507]. Therefore, according to Axboe, they must have been deposited for a collective reason[508]; this might also be

[497] Gundersen, I.M., *The Fimbulwinter theory and the 6th century crisis in the light of Norwegian archaeology: Towards a human-environmental approach*, cit.
[498] Löwenborg, D. *An Iron Age Shock Doctrine – Did the AD 536-7 event trigger large-scale social changes in the Mälaren valley area?* Cit.,
[499] *Ibidem*
[500] Price N. and B. Gräslund B., *Excavating the Fimbulwinter? Archaeology, geomythology and the climate event(s) of AD 536,* cit.
[501] Tvauri, A., *The impact of the climate catastrophe of 536/7 AD in Estonia and neihbouring areas,* cit.
[502] *ibidem*
[503] *Ibidem*
[504] Tvauri, A., *The impact of the climate catastrophe of 536/7 AD in Estonia and neihbouring areas,* cit
[505] *Ibidem*
[506] Brooke, J., *The Global Dark and Middle Ages, AD 542–1350,* in Climate Change and the course of Global History – A rough journey, Cambridge University Press, Cambridge 2014
[507] Axboe, M., *The year 536 and the Scandinavian gold hoars,* Medieval Archaeology, 43, 1999
[508] *Ibidem*

linked to the construction of new burials, as a way in which the elite might have wanted to reaffirm its power during a crisis. Thus, in Axboe's opinion, the event that triggered such deposits might have been the 536 CE dust veil, given the effects of a darkening of the sun in Northern Europe, as previously stated too. He therefore hints to the possibility that this event might have remained in the collective memory under the myth of Ragnarök[509]. This theory was later reiterated by Price and Graslund; in their view indeed, some of the poems that compose Snorri's *Edda* can be dated up to the fifth century[510]. Interestingly, in this period not only the sun symbols disappear, but other symbols, related to the later Norse mythology, replace them; this makes the two authors argue that changes in the in relation with the sun – and therefore in the cosmologic conceptions of the people – might have occurred[511]. According to the two authors, this seems to be reflected in the late mythology, where we find reference to a mighty winter, the *Fimbulwinter,* when:

> "snow drives from all quarters, the frosts are so severe, the wind so keen and piercing, that there is no joy in the sun. There are three such winter in succession, without any intervening summer. But before these there are three other winters, during which great wars rage all over the world.[512]"

Moreover, in the Seeress's Prophecy, another Nordic poem, we are told that during Ragnarök, the sun will get dark, the stars will disappear, and the land will be covered by the sea[513]. In addition, it is also said that a huge wolf, called Moongarm, will swallow the moon and cover the sky with blood; then "the sky will get darker, the winds will grow wild […] sunshine grows black, the summer thereafter, all weather get fickle"[514]. Interestingly, these descriptions are consistent with the weather conditions that the ancient inhabitants of Scandinavia might have experienced[515]: cold summers, cold winters, famine, but also blood-red sunsets, compatible with a major volcanic eruption, just like the one that caused the "fickle weather" in the years following 536 CE[516]. Moreover, the mention of "great wars" might be a reference to the social disorders that these events might have caused and which can be possibly testified by the traces of upheavals recorded in Oland, as mentioned above. Besides, according to Professor of Quaternary Geology Berglund, the Migration Period was also a period of "rising lake levels and increasing bog growth"[517], whence probably the reference to sea covering the earth. Interestingly, Price and Graslund also note that in Kalevala, a Finnish poem which gathers material probably dating also to the Migration period, we find a figure, the Mistress of Northern Lands, which captures both the sun and the moon, preventing them from shining for several years; the authors claims that the phrase "strange to the birds of the sky" is consistent with a typical reaction to a sun eclipse[518]. However,

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[509] *Ibidem*
[510] Gräslund, B., Price, N. *Twilight of the gods? The 'dust veil event' of AD 536 in critical perspective*, cit.
[511] *Ibidem*
[512] Sturluson S. *The Younger Edda; Also called Snorre's Edda, or The Prose Edda*, Perlego, 2006.
[513] *Il Canzoniere eddico,* a cura di Piergiuseppe Scardigli, Garzanti Editore, Milano, 2004
[514] Sturluson S. *The Younger Edda; Also called Snorre's Edda, or The Prose Edda*, cit.
[515] Gräslund, B., Price, N. *Twilight of the gods? The 'dust veil event' of AD 536 in critical perspective*, cit.
[516] Price N. and B. Gräslund B., *Excavating the Fimbulwinter? Archaeology, geomythology and the climate event(s) of AD 536,* cit
[517] Berglund, B., *Human impact and climate changes—synchronous events and a causal link,* Quaternary International, 105, 1, 7-12, 2003
[518] *Ibidem*

as in Kalevala the sun and the moon are freed, in *Edda* Ragnarök is a myth of regeneration rather than a myth about the end of the world; this might be explained by the fact that after such difficulties, the cooling period ended and life returned to normality; the event thus became a myth to be remembered and that is how it arrived to us, stressing the importance of climate for the Nordic society of the time.

Even though we mainly dealt with Northern Europe, there is evidence that the cooling period also affected Southern Europe: for instance, between the fourth and the ninth century we find population decrease, land abandonment, and less impact on forests in Galicia[519], as well as in the Eastern Mediterranean too[520]. Colder conditions might have made people leave their lands as crop productivity fell; moreover, reduced harvest productivity might have also triggered social tensions. However, it is more difficult to detect evidence of these events or the effective cause of the demographic decay since in this period Southern Europe not only experienced a general cooling and the great migrations, but also the Plague of Justinian.

1.3.3 The Plague of Justinian and Climate Change: is there a link?

According to Kyle Harper, even though it complex to link climate change and pandemics, we can find some pathways to relate the two issues through several intermediate factors[521]. Although this link is difficult to prove in a definite way, it is a fact, on the other hand, that human health can be influenced by weather variability, storms, floods, droughts, and rising sea levels[522], just to mention some factors. Importantly these factors not only influence human health, but also vectors which transmit disease such as plague to humans[523]. This is possible because arthropod vectors' life and behaviour are also affected by varying temperatures, which can also influence the pathogen development within vectors, thus also determining its vectorial capacity; moreover, weather can also affect the life and the behaviour of vertebrate host species[524]. As we are dealing with the Justinian Plague, we are dealing with the two arthropods species of flea, *Xenopsylla cheopis* and the *Pulex irritans* and the rat as the vertebrate host specie. As we have seen throughout this analysis, the Justinian Plague's first outbreak was recorded in 541 CE, that is to say five years after 536 CE, when a volcano released ashes in the atmosphere covering the sun and cooling the atmosphere; notably, periods of instable weather also preceded the two other plague outbreaks. Indeed, according to Gage et al., the second (1346) and the third (1855) plague pandemics were both preceded by wetter and warmer climate. Therefore, it seems that plague outbreaks might be heavy influenced by rainfall and temperature: indeed, it was observed that epidemics came to an end when temperatures "exceeded 27 °C and saturation deficit of 0,76 cm"[525]. Moreover, 95% of the

[519] Desprat, S., et al., *Revealing climatic variability of the last three millennia in north-western Iberia using pollen influx data*, Earth and Planetary Science Letters, 213, 63-78, 2003
[520] Hirschfeld, Y., *The crisis of the sixth century: climatic change, natural disasters and the plague*, Mediterranean Archaeology and Archaeometry, 6, 1, pp. 19-32, 2006
[521] Harper, K., *Invisible Environmental History: Infectious Disease in Late Antiquity*, Late Antique Archaeology, 12, 1, 116-131, 2016
[522] Gage, K.L., et al., *Climate and vectorborne diseases*, American Journal of Preventive Medicine, 35,5, 436-50, 2008
[523] *Ibidem*
[524] *Ibidem*
[525] *Ibidem*

cases of plague were recorded in regions with "mean annual temperatures exceeding 13°C"[526]. Ultimately, high temperatures and low humidity may also affect fleas' actions, preventing them from looking for new hosts[527].

Interestingly, the period preceding the Huns' and Mongols' westward expansion saw high grass productivity: this affected the movement of these tribes, which have been related to the Plague's arrival in Europe[528].

In addition to the effects of climate changes on fleas and mice, changing weather also affects human health, as previously mentioned; indeed, the 536 CE dust veil event had a twofold impact on human wellbeing. First of all, the dust veil affected crop production because of the cold summer temperatures and – especially in the Mediterranean – it affected the growing season length and the general production, as they depend on the amount of solar radiation; indeed, the years with the highest sunlight deficiency coincides with the years of the Plague outbreak, that is to say 541-44[529]. Therefore, the death toll might have been increased by undernutrition, which was prompted by huge number of famines: indeed, according to the data, this was the period with the highest number of food shortages in the period from 100 BC to 800 CE[530]. Moreover, it is likely that the low solar radiation had also effects on the photosynthesis of vitamin D in human skin: importantly, lack of this vitamin reduces the overall wellbeing and affects the immune response[531]. Therefore, the dust veil event might have contributed to the explosion of the Plague with its effects on human nutrition and might have predisposed the contemporaries to bacterial infection; in addition, the cold weather might have also been favourable to the rat survival and flea reproduction[532]. The same cold weather probably also drove part of the countryside population into the towns, thus also overcrowding them and triggering the diffusion of the disease; furthermore, crop failure cause pex ople to accumulate, which is consistent with a rise in the rat population[533]. Interestingly, according to the chronicles, Plague's outbreaks seem to have occurred contemporary to volcanic eruptions, thus further proving a possible link between the two events[534].

Other studies, though relative to the Second Plague Pandemic, argue that there is a consistent nexus between adverse climatic conditions and plague reintroduction as it seems that the negative climatic events cause the collapse of the sylvatic rodent population, making fleas look for new hosts: a research claims that this happens 15±1 years before every plague outbreak[535].

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[526] *Ibidem*
[527] *Ibidem*
[528] McMichael, A.J., *Paleoclimate and bubonic plague: a forewarning of future risk?* BMC Biology 8, 108, 2010
[529] *Ibidem*
[530] *Ibidem*
[531] *Ibidem*
[532] *Ibidem*
[533] Newfield, T.P., *Mysterious and mortiferous clouds, The Climate Cooling and Disease Burden of Late Antiquity*, Late Antique Archaeology 12, 1, 89-115, 2016
[534] *Ibidem*
[535] *Ibidem*

Conclusion

Throughout this analysis we focused on the First Plague Pandemic and on the migrations from *Barbaricum*, their effects on a changing society, their possible interconnection and their proximate causes; however, going in depth, we saw that a possible link connecting all these variables might exist: climate changes. Nonetheless, even though temporal correlation between climate variability, societal changes and crisis is undeniable, as we will see later, a specific link has not been found yet[536]. According to David Holt for instance, especially "when comparing biological response (tree rings) to cognitive response (human behaviour) there will be always limitations", but if we try an analytical approach, we might find some connections[537].

On the other hand, recently, in light of the Covid-19 pandemic, new studies approached the issue of the nexus between climate change and pandemics, but we are still far from finding a clear link [538]; the same applies to the link between climate change and migration, even though there are several hypotheses too[539]. However, Professor of Geography David Zhang claims that we can find clear relationships between past climate changes and pre-industrial societies' responses, due to the connections between climate change, crop productivity, and society[540]; effectively, as we saw throughout the analysis, especially in the case of Ragnarök, a society heavily dependent on agriculture – and thus on weather – could have been strongly stressed by a crop failure, considering migration as the right response, maybe even after internal crisis (as the ones that seems to have taken place in the Migration Period's *Barbaricum* and Central Asia). Moreover, migration was also probably favoured by an internal crisis of the Roman Empire (which in part might also be explained by the increasing famines due to changing climatic conditions). In turn, migration could have been at the basis of the spread of the Justinian Plague too, whose spill-over might have been favoured by a changing climate, as mentioned before. Changing weather conditions in Central Asia could have led the plague into Europe via migrations that encroached the Silk Road route. As we have seen, indeed, the Huns were probably the first population to have been touched by the Plague, and therefore they might have taken it into Europe, though we have not yet found how. We only know that this population was driven out of Asia due to a series of causes, including probably climatic factors. On the other hand, even a sedentary society as the Mediterranean one might have been as undernourished as a migrating one because of the effects of the famines; people of both societies could also be vitamin D deficient due to the low solar radiation, thus being predisposed to bacterial infection. Importantly, we are not pretending that the Dark Ages Climate variability was the sole cause for the several societal changes, but that it played an important role. Indeed, such a causal chain as the one described above might be effectively possible, given what we understood in this analysis. Nonetheless, further research is needed; for

[536] Zhang, D., *The causality analysis of climate change and large-scale human crisis*, Proceedings of the National Academy of Sciences - PNAS 108, 42, 17296–17301, 2011

[537] Holt, D., *Germania and climate variability in 3rd and 4th centuries*, cit.

[538] Brock, W., Xepapadeas, A., *The Economy, Climate Change and Infectious Diseases: Links and Policy Implications, Environmental and Resource Economics*, 76:811–824, 2020

[539] Burrows, K., Linney, P.K., *Exploring the Climate Change, Migration and Conflict Nexus*, International journal of Environmental Research and Public Health, 2016

[540] Zhang, D., *The causality analysis of climate change and large-scale human crisis,* cit.

instance, we might ask ourselves whether the effects of climate change can be the same on a contemporary society or if this is already happening. Therefore, can we establish a link between climate change, migrations, and pandemics in the 21st century too? And, importantly, can we find further responses in the comparison between the contemporary era and the Migration Period? It is thus time to focus on *our* period.

II. The Contemporary Era

Pandemics, Migration and Climate change are not only peculiar of our age, as we saw in the first chapter. Throughout the *Migration Period*, indeed, these phenomena contributed to change the society of the time and paved the way for modern Europe. The Plague of Justinian, with its death toll and its consequences on agriculture and settlements, heavily impacted early-medieval Europe. Moreover, mass migrations profoundly changed the European society, shifting Europe's centre from the Mediterranean to its geographical core, modern-day Germany, from where all the Germanic people came from. And finally, the climate change, which probably influenced both the pandemic and the migrations – if not caused them – definitely marked the end of an era and the beginning of another one. Thus, an historical approach would focus on the following issue: can it happen again? Can the current climate change be the underlying factor of both the several pandemics we experienced in these last twenty years and the mass migrations we daily read of in our newspapers? Can we compare the effects of the Plague of Justinian to the ones of Covid-19, for instance? What are the forces that trigger the contemporary migrations, and can we compare them to the ones that were at the basis of the Migration Period? Ultimately, are these changes made faster by a globalized society and can we still act on them?

2.1 The 21st century pandemics and epidemics

As we write, the Covid-19 Pandemic is transforming the world's societies and the first vaccines are being delivered throughout the globe. As for now, more than 147 million cases have been confirmed, and at least 3,11 million people died[541]. At present date, Covid-19 is the second deadliest pandemics of the twenty-first century, being HIV/AIDS the first, with more than 32 million people died so far[542]. However, these two pandemics are not the only ones of our century: in the past 20 years we also witnessed other epidemics/pandemics such as the 2004's SARS epidemic[543], the 2009's H1N1 pandemic, the 2012's MERS epidemic, recently re-emerged[544], the 2015's Zika epidemic[545] and the ongoing Ebola epidemic[546].

[541] Dong, E., Du, H., Gardner L. *An interactive web-based dashboard to track COVID-19 in real time,* Lancet Inf Dis. 20,5, 533-534, 2020

[542] UNAIDS, *Global HIV & AIDS statistics — 2020 fact sheet*, accessed on 26/04/2021

[543] WHO, *Situation Updates – SARS*, Emergencies preparedness, response, accessed on 26/04/2021

[544] European Centre for Disease Prevention and Control*, MERS-CoV worldwide overview,* accessed on 26/04/2021

[545] Istituto superiore di sanità, *Zika virus,* EpiCentro, accessed on 26/04/2021

[546] WHO, *Ebola virus disease,* accesed on 26/04/2021

Given the huge amount of – contemporary – studies relative to these epidemics and pandemics, we will not focus on them from a medical point of view as we did with the Justinian Plague: differently from it, indeed, there is no need to carry out an historical investigation looking for (indirect) data to hypothesise the effective diffusion of the disease and its effects on the society. We will therefore briefly introduce the several pandemics/epidemics and we will then focus on their effects.

EVD or Ebolavirus Disease epidemic

Under the term "Ebola" we commonly describe the disease provoked by three virus members of the genus *Ebolavirus*[547]; Bundibugyo ebolavirus, Zaire ebolavirus, and Sudan ebolavirus. These three strains are responsible of the large outbreaks that took place in Africa: the first two epidemics were recorded in 1976 in Nzara, Sudan, and Yambuku, Democratic Republic of Congo, near the river Ebola, from which the disease took its name[548]. According to the World Health Organization, fruit bats are "natural hosts"[549] of the virus, which can spill-over to humans through "blood, secretions, organs or other bodily fluids of infected animals such as chimpanzees, gorillas, fruit bats, monkeys, forest antelope and porcupines found ill or dead or in the rainforest"[550]. Then, it can be transmitted between humans through bodily fluids of infected people, directly or via contaminated surfaces[551]. This makes Ebola a zoonosis, that is to say an infection that is transmitted to humans by animals.

Infected people develop malaise, fatigue, and myalgia, gastrointestinal manifestations, nausea, vomiting, and diarrhoea, substantial fluid losses, headache, conjunctival injection, abdominal pain, arthralgia, and bleeding abnormalities (in less than half of affected patients)[552].

Ebola's last outbreak was recorded in N'Zerekore, Guinea, in 2021[553] and it follows the last and largest one, which started in 2014 in the same country and moved across the borders into Sierra Leone and Liberia[554]. In the period between 2014 and 2016, 28.610 cases were recorded in the three countries, with a death toll of, 67%, 47%, and 28%, respectively in Guinea, Liberia, and Sierra Leone[555]. So far, since 1976, outbreaks took place in Republic of Congo, Sudan, Gabon, Côte d'Ivoire, South Africa, Uganda, Guinea, Liberia, Sierra Leone, Nigeria, Mali, and Senegal[556]. Recently, two vaccines have been approved by the European Medicines

[547] Campion, E., *Ebola,* New England Journal of Medicine, 382, 1832-42, 2020
[548] WHO, *Ebolavirus disease,* Fact sheet n° 103*,* 2014
[549] *Ibidem*
[550] *Ibidem*
[551] *Ibidem*
[552] Campion, E., *Ebola,* cit.
[553] WHO, *Ebola outbreak 2021*- N'Zerekore, Guinea, accessed on 26/04/2021
[554] WHO, *Ebola virus disease*, Fact sheet, 23 February 2021
[555] *Ibidem*
[556] *Ibidem*

Agency (May 2020) and the US Food and Drug Administration (January 2021)[557]; the development of a vaccine against Ebola started in 1970[558].

The AIDS/HIV pandemic

The first established case of AIDS was located in Kinshasa in 1959, though it wasn't probably the real first case, because it was discovered t75hirty years later, when processing random blood samples[559]. The effective beginning of the pandemic can be set in 1981, when the American Centre for disease control's *Morbidity and mortality weekly report* announced a new epidemic after studying the anomalous emergence of several cases of a rare infective disease, pneumocystis, in Los Angeles[560]. New outbreaks of this new disease were then recorded in the USA, in Haiti, France, and Western Europe[561].

The disease, the Acquired Immune-Deficiency Syndrome (AIDS), is caused by the Human immunodeficiency virus (HIV) and leads to the decline of the immune system, leaving the organism defenceless against external pathogens[562]. According to the research, HIV's closest relatives are viruses that causes immunodeficiency among chimpanzees (*Pan troglodytes troglodytes*) and western lowland gorillas (*Gorilla gorilla gorilla*) in west central Africa[563]; thus the hypothesis for which the transmission to human might happened due to hunting, butchering, and eating the meat of chimpanzees[564]. Therefore, as Ebola, AIDS is a zoonosis too. In addition, according to some studies, the virus emerged between the end of the nineteenth and the beginning of the twentieth century in West and Central Africa, where it evolved into a new strain in the 60s and reached Haiti, where it genetically recombined; then, probably between 1969 and 1972, it arrived in the US[565].

As the number of infections was growing, in 1994, the UN announced the creation of the Joint UN Programme on HIV and AIDS, UNAIDS, aimed to provide coordination and technically support between the different stakeholders involved in the research on the disease[566].

So far, more than 75 million people have contracted HIV, and more than 32,7 million people have died from AIDS-related illnesses[567]. However, Sub-Saharan Africa shares the largest health burden of HIV/AIDS: indeed, while in Europe the number of deaths people is less than one on 100.000, in this part of the world it reaches 200 on 100.000[568]. Globally, AIDS related death reached their apex in 2005/6 but then they started

[557] *Ibidem*
[558] Campion, E., *Ebola,* cit.
[559] Iliffe J., *The African AIDS Epidemic: A History*, Ohio University Press, Athens, Ohio, USA, 2005
[560] Visco, G., Comandini U., Franceschi, S., *AIDS,* Universo del Corpo, 1999
[561] *Ibidem*
[562] *Ibidem*
[563] Sharp, P.M., Hahn, B.H., *The evolution of HIV-1 and the origin of AIDS*, Phil. Trans. R. Soc, 2010
[564] Rogers, K., Dude, A., Siliciano, R., Dorwick, K., *AIDS*, Encyclopedia Britannica online, 2020
[565] *Ibidem*
[566] UNAIDS*, Who we are,* accessed on 27/04/2021
[567] UNAIDS, *Global HIV & AIDS statistics — 2020 fact sheet,* cit.
[568] Roser, M., Ritchie, H., *HIV / AIDS*, Published online at OurWorldInData.org. Retrieved from: https://ourworldindata.org/hiv-aids, 2018

declining, as well as the number of new infections, even though, on the other hand, the number of people living with HIV is the highest ever[569].

So far, notwithstanding the existence of several promising candidates, no vaccine for HIV has been developed yet[570].

The Severe Acute Respiratory Syndrome (SARS) epidemic

The SARS epidemic, caused by a coronavirus, first emerged in China, which recorded the highest number of cases (5327), with a fatality ratio of 7%[571]. The first documented case emerged in Foshan, in the province of Guangdong, on the 16th of November 2002, and by January 2003 it evolved in a major outbreak; the following month new cases were recorded in other seven provinces, and then in Hong Kong, from where it spread to Singapore, Canada, USA and Vietnam[572]. In total, by the end of the pandemic in 2003, 32 countries reported documented cases: 8437 people were infected and 813 died[573].

According to Feng et al., the pandemic was possible due to the limitations of the public health system in China, as functional infectious diseases surveillance was not yet available; this was also complicated by the fact that were not serological diagnostics and by the change of the definition of SARS during the epidemic[574].

The illness appeared with fever, aches, dry cough and, in some patients, respiratory difficulties made mechanical ventilation necessary[575]. As Ebola and AIDS, SARS's virus, SARS-CoV, is considered to have a zoonotic origin: this assertion is sustained by the findings of SARS-related coronavirus in masked palm civets as well by the detection of SARS-CoV infections in wet markets where these animals were sold[576].

The "swine flu" pandemic

The "swine flu" was caused by a H1N1 virus strain similar to the ones that were responsible of other flu pandemics such as the ones of 1918/9 (the "Spanish flu"), and of 1977 (the "Russian flu"); it first broke out in Mexico in 2009, then spread to the USA, and from there to the other parts of the world[577]. The clinical symptoms of the "swine flu" were similar to the ones of the normal flu[578]; moreover, the great majority of hospitalized patients had underlying conditions. According to the WHO, more than 214 countries reported

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[569] *Ibidem*
[570] European Commission - CORDIS, *A major boost for HIV vaccine identification and development*, EU research result, accessed on 28th of April 2021
[571] WHO, *Summary of probable SARS cases with onset of illness from 1 November 2002 to 31 July 2003,* 24 July 2015
[572] Feng, D. et al., *The SARS epidemic in mainland China: bringing together all epidemiological data,* Tropical medicine & international health, 14,1, 4-13. 2009
[573] *Ibidem*
[574] *Ibidem*
[575] "*SARS*", Encyclopedia Britannica online
[576] Feng, D. et al., *The SARS epidemic in mainland China: bringing together all epidemiological data,* cit.
[577] *"Influenza A H1N1"*, Encyclopedia Britannica online
[578] del Rio C, Guarner J., *The 2009 influenza A (H1N1) pandemic: what have we learned in the past 6 months*, Trans Am Clin Climatol Assoc., 121, 128-140, 2010

outbreaks of the "swine flu" and 18449 casualties were recorded globally[579], though new studies believe that the real number of deaths might have been higher (between 100.000 and 400.000 in the first year), along with the number of infected people[580]. However, the largest death toll may have occurred in South-east Asia and in Africa, that is to say in countries were the access to health care and nutritional status, as well as living conditions, are extremely different from the ones of the other parts of the world[581].

As already mentioned, it is commonly believed that the epicentre of the influenza pandemic was Mexico, where on the 24th of April 2009, the authorities adopted social distancing interventions. Subsequently, when international cooperation between NAFTA health authorities provided further information on the disease and new cases were detected around the world, the WHO raised its status from epidemic to pandemic[582].

According to the American Centre for Disease Control, the virus resulted from "reassortment", that is to say a process in which two or more influenza virus "can swap genetic information by infecting a single human or animal host"[583]. This is believed to have occurred among "North American pig herds and among Eurasian pig herds"[584], changing the previous influenza virus, thus giving individuals little or no protection against this new strain[585].

The MERS epidemic

Another coronavirus, after the one responsible of the SARS, was detected in June 2012 in a Saudi man: the man died of acute pneumonia and renal failure[586]. Soon after, in retrospective, a cluster was identified in a Jordan hospital in April 2012, and in September 2012 three cases were identified in the UK[587]. Other cases were later detected in South Korea, where a single person, returning from the Middle East, started a "nosocomial outbreak" which involved 16 hospitals and 186 patients.[588] As the disease was detected predominantly in countries of the Middle East, it was defined *Middle East Respiratory syndrome*[589]. So far, 2566 cases were confirmed, including 882 associated deaths: death toll has thus been estimated around 35%, even though this might be an overestimation due to possible misinterpretations of mild cases[590]. Twenty-seven countries have been affected so far[591].

[579] WHO, *Pandemic (H1N1) 2009 - update 112*, 2010
[580] Istituto superiore di sanità*, Influenza pandemica A(H1N1)pdm09*, 2015
[581] Centres for Disease Control and Prevention, *First Global Estimates of 2009 H1N1 Pandemic Mortality Released by CDC-Led Collaboration*, 2012
[582] del Rio C, Guarner J. *The 2009 influenza A (H1N1) pandemic: what have we learned in the past 6 months*, cit.
[583] CDC, *Origin of 2009 H1N1 Flu (Swine Flu): Questions and Answers*, 2009
[584] *Ibidem*
[585] *Ibidem*
[586] De Wit, E., et al*., SARS and MERS: recent insights into emerging coronaviruses,* Nature reviews, microbiology, volume 14, 2016
[587] *Ibidem*
[588] *Ibidem*
[589] Rogers, K, "*MERS*", Encyclopedia Britannica, 2017
[590] WHO, *Middle East respiratory syndrome coronavirus (MERS-CoV),* accessed on 26/04/2021
[591] De Wit, E., et al*., SARS and MERS: recent insights into emerging coronaviruses,* cit.

Symptomatology includes fever, cough, shortness of breath, and pneumonia; moreover, the virus appears to cause more problems to older people or people with weakened immune system, as well as to people with previously detected chronicle diseases[592].

The origin of MERS-CoV has been linked to the dromedary camels[593]: evidence of circulation of the virus among these animals dates back to 1983, since when cases were documented in Middle East, Eastern Africa and North Africa (among the animals)[594]. Even though the presence of both infected dromedary camels and infected humans seems to clarify the spill-over between the two species without the presence of an infected intermediate host, it is still unknown how the disease can effectively transit from the camel to humans[595]. Some studies claim that eating camels' flesh or drinking camels' milk might have been the cause of the splill-over[596]. MERS is another example of zoonosis.

The Zika epidemic

Zika was discovered in Uganda in 1947 from the blood of a sentinel rhesus macaque but remained practically obscure for almost seventy years; it was then identified in humans in 1952, but the major outbreak took place in 2007 in Micronesia[597]. Then, in 2015 Zika virus arrived in Brazil and spread throughout the Americas; as it became the first major infectious disease linked to human birth defects, the WHO declared a Public Health Emergency of International concern[598].

It is primarily transmitted by the bite of an infected mosquito belonging to the *Aedes* genus, but in the majority of the cases, its symptoms are mild and include fever, conjunctivitis, muscle pain, malaise and headache[599]. No vaccine is available so far[600].

The Covid-19 Pandemic

The current Covid-19 Pandemic is caused by the *Severe Acute Respiratory Syndrome coronavirus 2* (SARS-CoV-2), which presents similar characteristics to SARS-CoV, responsible of the SARS Pandemic in 2004[601]. It was reported for the first time in late 2019 in Wuhan, where the first cases were related to the local seafood

[592] WHO, *Middle East respiratory syndrome coronavirus (MERS-CoV),* cit.
[593] Azhar, E., et al., *Evidence for Camel-to-Human Transmission of MERS Coronavirus*, New England Journal of Medicine, 370, 2499-2505, 2014
[594] De Wit, E., et al*., SARS and MERS: recent insights into emerging coronaviruses,* cit.
[595] *Ibidem*
[596] Roos, R., *MERS outbreaks grow; Malaysian case had camel link,* Center for infectious Disease Research and Policy, University of Minnesota, 2014
[597] Kindhauser, M.K., *Zika: the origin and spread of a mosquito-borne virus*, Bulletin of the World Health Organization, 2016
[598] Petersen, L.R., et al., *Zika Virus*, New England Journal of Medicine, 374, 1552-1563, 2016
[599] WHO, *Zika virus in the Western Pacific*, accessed on 27/04/2021
[600] Istituto superiore di sanità, *Zika virus,* cit.
[601] van Doremalen, N., et al., *Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1*, The New England journal of medicine, 382,16,1564-1567, 2020

market[602], where animals like snakes, birds and bats were sold[603]. Symptoms includes fever, cough, headache, fatigue, and nausea, among others; however, disease severity seems associated with already present pathologies[604]. The features of Covid-19 are thus similar to those of SARS and MERS[605].

On 31st of December 2019, the Who office in China picked up a media statement by the Wuhan Municipal Health system which communicated the discovery of a "viral pneumonia"; ten days later the same IO announced that Chinese authorities had determined that the outbreak was caused by a new coronavirus[606]. On 23 of January, a travel ban was imposed on Wuhan[607]; then, universities, schools and gathering places were closed and outside activities were limited[608]. These measures would be followed by other countries in the successive weeks[609].

So far (27th of April 2021), more than a year after the first outbreak, there have been 147.539.302 reported cases of Covid-19, including 3.116.444 deaths, while 961.231.417 doses of vaccine have been administered[610].

However, we still ignore the origin and the source of the virus responsible of the pandemic[611]; moreover, even though the first detected cases of Covid-19 were related to Wuhan's seafood market, research demonstrated that patient zero, the first to develop the symptoms, had not been there and show no epidemiological links with the other cases[612]. In addition, the virus shares only less than 80% sequence identity with SARS-CoV, but it's extremely similar (96,2%) to Bat-CoV RaTG13, previously detected in a bat in the Yunnan Province[613]. Moreover, similarities have also been found with coronaviruses hosted in Malayan Pangolins[614].

WHO's final report on Covid-19's outbreak has been published on the 30th of March 2021 and concluded that the virus was already circulating in late 2019, thus calling for further analysis of the samples of possibly detected cases dating before January 2020[615].

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[602] Zhou, P., *A pneumonia outbreak associated with a new coronavirus of probable bat origin,* Nature, 579, 7798, 270–273, 2020
[603] Gouvea Dos Santos, W., *Natural history of COVID-19 and current knowledge on treatment therapeutic options*, Biomedicine & Pharmacotherapy, 129, 2020
[604] *Ibidem*
[605] WHO, *Timeline: WHO's COVID-19 response*, accessed on 27/04/2021
[606] *Ibidem*
[607] Hien, L., et al., *The positive impact of lockdown in Wuhan on containing the COVID-19 outbreak in China*, Journal of Travel Medicine, 27, 3, 2020
[608] *Ibidem*
[609] *Ibidem*
[610] WHO, *WHO Coronavirus (COVID-19) Dashboard,* accessed on 27/04/2021
[611] *WHO-convened Global Study of Origins of SARS-CoV-2: China Part*, Joint Report, 2021
[612] Huang, C., et al., *Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China,* Lancet, 395, 10223, 497–506, 2020
[613] Liu, Y., et al., *COVID-19, the first documented coronavirus pandemic in history*, Biomedical Journal, 43, 328-333, 2020
[614] *WHO-convened Global Study of Origins of SARS-CoV-2: China Part,* cit.
[615] *Ibidem*

2.1.2 Pandemics' effects on 21st century Europe' society

In light of a comparison with the Justinian's Plague, we will adopt the same approach used for the mentioned pandemic, thus focusing on the demographic, economic, political and social effects of the 21st century's diseases in Europe.

To date, 1.025.900 people died of Covid-19 in Europe; 545.000 additional deaths in the European Union have been recorded between March and December 2020; other 440.867 have been documented in the period between January and April[616]. Among the 21st century pandemics and epidemics, therefore, Covid-19 is the one with the most important impact on Europe; to date, indeed, AIDS related deaths in the period 2009-2019 were 19.484[617]; SARS related deaths were 0[618]; H1N1 deaths "did not reach levels normally seen during interpandemic influenza epidemics"[619]; Ebola cases in the EU were 2 and the associated risk has been defined "very low"[620]; some MERS cases were detected in six European countries but did not spread[621]; finally, the likelihood of local Zika transmission has been defined "moderated"[622]. Therefore, we will mainly focus on the effects of the Covid-19 pandemic.

In order to better asses the demographic effects, we should consider the excess mortality, that is to say the mortality rate that exceed the normal rate[623]. According to the data, between January and February, European Union usually records peaks of mortality rate, but in 2020 this rate was actually below the average for all EU countries; then, after the Covid-19 outbreak, peaks in the death rate were recorded in April 2020 (25%) and November 2020 (40.7%)[624]. Between January and February 2021 another peak was recorded (40% higher than normal)[625]. Since the beginning of the pandemic, Spain (79,9% in April 2020), Bulgaria (94,4% in November 2020), Lithuania (81% in December 2020) Poland (97% in November 2020), Slovenia (90% in November 2020) registered the highest excess rates; conversely, Finland's excess rate only exceeded 8% (reaching 8,1%) in April 2020. Similar results were recorded in Denmark (the excess rate went above 7% only in December 2020 and January 2021, reaching 10%). Germany (reached 30% and 22% only in December 2020 and January 2020 respectively, but never exceeded 9% in the other months), Estonia (the highest peak was 13%) and Greece (only twice above 20% but always under 10% in the other months)[626]. Denmark had the lowest excess

[616] ECDC, *Cumulative number of coronavirus (COVID-19) deaths in Europe* (as of April 18, 2021), in Statista, retrieved on April 28, 2021
[617] ECDC, *Number of deaths among people diagnosed with HIV and/or AIDS in Europe from 2009-2019*, Statista, retrieved on April 28, 2021
[618] WHO, *Summary of probable SARS cases with onset of illness from 1 November 2002 to 31 July 2003*, 2015
[619] Gauci, A. et al., *The 2009 A(H1N1) pandemic in Europe, A review of the experience*, Special Report, ECDC, 2010
[620] WHO, *Ebola outbreak in West Africa and the risk to Europe*, WHO Regional Office for Europe
[621] WHO, *Middle East respiratory syndrome coronavirus (MERS-CoV) and the risk to Europe*, WHO Regional Office for Europe
[622] WHO, *Zika virus outbreak and the risk to Europe,* WHO Regional Office for Europe, 2016
[623] Eurostat*, Excess mortality – statistics*, accessed on 28/04/2021
[624] *Ibidem*
[625] *Ibidem*
[626] *Ibidem*

rate, -12% in March 2021. On the other hand, it is worth stating that, both in the UK and in Italy, higher numbers of deaths were only recorded during the Second World War[627].

Differences in death toll have been explained by making references to "trained immunity in the population, early and fast education, rapid organization and adaptation of the hospitals and the public, preparedness for pandemics and public hygiene"[628].

Turning on the economic effect of the pandemic, we must consider that the disease triggered a contraction of the general employment, greater than the one experienced in 2009 during the financial crisis: indeed, five million fewer persons were employed in the second quarter of 2020[629]. This was due to containment measure, which restrained the demand of labour and discouraged job search[630].

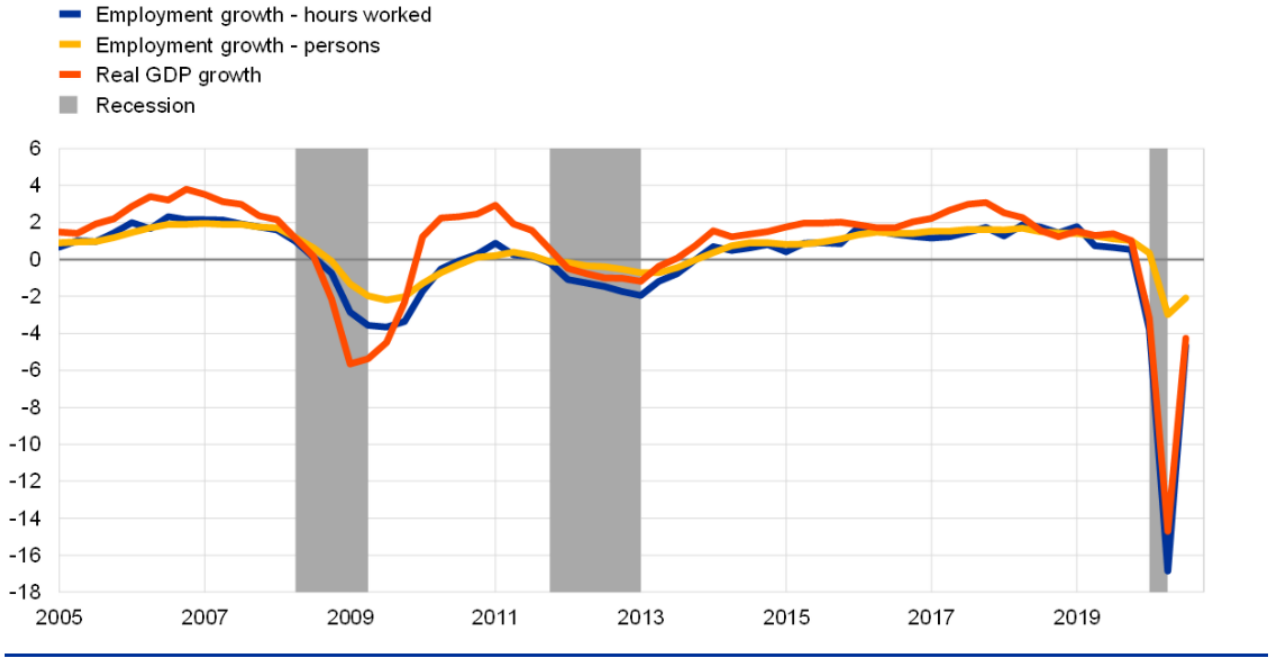

Figure 12: Employment developments in the euro area, Anderton, R. et al., The impact of the COVID-19 pandemic on the euro area labour market, ECB Economic Bulletin, Issue 8, 2020

As also evident from the figure, drops in employment rates are highly linked to GDP losses[631]; EU's GDP indeed, is projected to contract by 7,4 percent relatively to the year 2020[632], being the biggest decline following WWII[633]. However, decrease will be followed by a rebound of 4,7% in 2021[634]. As for international trade,

[627] Triggle, N., *Covid: 2020 saw most excess deaths since World War Two*, BBC, 12 of January 2021; Reuters, *Italia, 2020 ha registrato mortalità più alta da Dopoguerra a causa del Covid – Istat*, 5 of March 2021
[628] Bousquet, J., *Is diet partly responsible for differences in COVID-19 death rates between and within countries?,* Clinical and Translational Allergy, 10, 16, 2020
[629] Anderton, R. et al., *The impact of the COVID-19 pandemic on the euro area labour market*, ECB Economic Bulletin, 8, 2020
[630] *Ibidem*
[631] *Ibidem*
[632] IMF, Regional Economic Outlook: Europe, October 2020; European Commission, *Real gross domestic product growth rate forecasts in selected European countries from 2020 to 2021*, Statista, retrieved on April 28, 2021
[633] The World Bank, *COVID-19 to Plunge Global Economy into Worst Recession since World War II*, 8th of June 2020
[634] *Ibidem*

Europe witnessed a contraction in the exports, which decreased less than the imports, thus provoking a trade deficit in April 2020[635]. This is in line with the general international trade contraction[636]. In particular, imports' mean decrease was between -10% and -15%: while Luxembourg experienced the worst import reduction (-43%), Croatia and Slovenia saw an increase in imports (2% and 1%, respectively)[637]. On the other hand, as for exports, the mean range was between -5% and -10% decrease: France, Luxembourg and Greece presented the worst data (-20%, -20% and -19%, respectively), while Slovenia, Estonia and Latvia, the best ones (12%, 6% and 0,05%, respectively)[638]. So far, neither exports nor imports reached the levels of pre-crisis[639].

Retail trade dropped too due to the containment measures: actually, in the very first month of the pandemic, March 2020, food products and sales in supermarket increased, but in the following months food products' sales went down, as the non-food products; in April, total retail trade volume decreased by 11.2%[640]. Decreases in retail trade volume followed the restriction measures: the general level of sales, indeed, went up in May, June, August, October and December 2020, while it went down in April, September and November 2020; in February 2021 the general level was 97.8% of the pre-pandemic level[641].

Moreover, the pandemic also had effects on the inequality rate: indeed, according to an article published by the European think tank *Bruegel*, Covid-19 had a remarkably different effect on workers with lower educations compared to the ones with tertiary education[642]. However, while jobs for low-educated workers fell everywhere, those for tertiary-educated workers increased in fourteen countries but decreased in eleven; overall, 8% of low-educated workers lost their jobs between the end of 2019 and the first four months of 2020[643]. Meanwhile, jobs requiring university degrees increased by 3%, the same percentage of professional jobs; middle level qualification jobs, on the other hand, decreased by 5%, and so did the number of managers (4%)[644]. Teleworking made the difference too: it is reported that 70% of those who have a university degree are also able to work from home, while the percentage drops to 15% for those who did not complete secondary school[645]. Therefore, lower educate people tend to have lower incomes; thus, inequality is rising in Europe, despite the massive social spending[646]. This conclusion is consistent with another study, which argues that major epidemics in this century resulted in income inequality[647]. As for the other data, however, there are major differences among the European countries: the highest working ability during a lockdown, for instance,

[635] Eurostat*, Impact of COVID-19 on international trade by Member State*, 2021
[636] The World Bank, *How COVID-19 is changing the world: a statistical perspective Volume II*, Committee for the Coordination of Statistical Activities, World Bank Development Data, 2021
[637] Eurostat, *Impact of COVID-19 on international trade by Member State*, cit
[638] *Ibidem*
[639] *Ibidem*
[640] European Commission, *Impact of Covid-19 crisis on retail trade,* 2021
[641] *Ibidem*
[642] Darvas, Z., *COVID-19 has widened the income gap in Europe*, Bruegel Blog, 3 December 2020
[643] *Ibidem*
[644] *Ibidem*
[645] *Ibidem*
[646] *Ibidem*
[647] Furceri, D. et al., *COVID-19 will raise inequality if past pandemics are a guide*, VoxEu, 08 May 2020

is higher in countries such as Netherlands, Luxembourg, Sweden and Finland, while it is lower in Bulgaria, Hungary, Slovakia and Cyprus[648]: this clearly affects the income inequality.

Moreover, Covid-19 also increased poverty and social exclusion: in particular, the most affected ones were "self-employed workers, vulnerable children, low-income families, Roma, migrants and asylum seekers"[649], but also "elderly people"[650]. As for the latter ones, indeed, the measures of social distancing that were required to ensure the right protection of this category, often resulted in over-isolation: on the other hand, in some cases local epidemics developed in care homes too[651]; to date, according to a survey carried out in Italy, more than 60% of the care homes does not allow any visit or leaving, while no video-calling are available in little less than 50% of the cases[652]. In Finland, too, it is reported that lone elderly people with multiple diseases and physical disabilities were the most vulnerable, thus demonstrating a pan-European trend; indeed, people with disabilities and low income often remained isolated at home, with extremely negative effects[653].

Among the people who are suffering the most for the effects of the pandemic, there are the homeless: during the hardest days of the pandemic, indeed, they lacked the usual assistance and even when they had a place to stay, it was often overcrowded, thus increasing the risk of contagion to already weak persons[654]. No access to water o hygienic services was also recorded[655]. Moreover, people with temporary jobs, those who worked outside trade union coverage or self-employed persons, being already at risk of losing their jobs before the pandemic outbreak, were among the most hit too: as they were not eligible for the crisis benefits, they experienced financial problems, as well as people with low-income jobs[656]. Before Covid-19, 21% of the Europeans (92,4 million people) were at risk of poverty or social exclusion: Bulgaria, Romania, Greece and Italy scored the highest rates (32,5%, 31,2%, 30%, 27,3% respectively), while Czechia, Slovenia, Finland and Denmark the lowest ones (12,5%, 14,4%, 15,6%, 16,3% respectively)[657]. This percentages probably raised after the pandemic outbreak, as revealed by the first analysis: in Italy for instance, people that were working in the touristic sector or did not have regular jobs were among those asking for help[658]. In general, a 30% increase in the food parcels was recorded[659].

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[648] Palomino, J., et al., *Wage Inequality and poverty effects of the lockdown in Europe,* European Economic Review, 129, 2020
[649] Malgesini, G., *The impact of Covid-19 on people experiencing poverty and vulnerability,* European Anti-poverty network report, July 2020
[650] *Ibidem*
[651] *Ibidem*
[652] Sant'Egidio*, Dati e proposte per mettere fine alla "eterna zona rossa" per gli anziani ricoverati in strutture assistenziali*, 28 April 2021
[653] Malgesini, G., *The impact of Covid-19 on people experiencing poverty and vulnerability,* cit.
[654] *Ibidem*
[655] *Ibidem*
[656] *Ibidem*
[657] Eurostat, *Over 20% of EU population at risk of poverty or social exclusion in 2019*, 16th of October 2020
[658] La Repubblica, *Sant'Egidio: "Alla mensa +30% di utenti, raddoppiati i pasti da asporto. Arrivano anche nuovi poveri,* 29th of May 2020
[659] *Ibidem*

On the other hand, even though some studies claim that lockdown measures are likely to have worsened social cohesion in Europe[660], ONGs claim that the number of volunteers raised than before the disease's outbreak[661]. It must be said, however, that according to the European Parliament, especially in the first part of the pandemic, episodes of discrimination, against Asian and Italians were reported[662]; moreover, border closures were also invoked as a solution against the contagion and asylum seekers were accused of spreading the virus[663]. This was also evident in the web, were sinophobic messages were among the most shared ones[664].

Scapegoating is also consistent with the response of a population already stressed by the local lockdown; indeed, hate speech and mistrust towards the authority is also triggered by the decision to impose quarantines and general closures[665]. The pandemic of Covid-19, indeed, is changing our lifestyle and habits, from physical activity, to eating habits[666]

Social distancing measures also imposed school closures: even though the effectiveness of this policy on the virus transmission is strongly debated, almost 138 countries in the world closed schools within their territory, thus widening the gap between children with lower-income families and higher-income families; online learning, indeed, is more difficult in low-income households for a series of reasons.[667] In Europe, 7% of the children do not have access to internet, 5% do not have a proper place where to do the homework, and 5% do not have access to books at the appropriate reading level[668]. Furthermore, schools are also important for alimentary education and food security: according to Eurostat, indeed, 6,6 % of households with children in the EU cannot afford a "meal with meat, fish, or a vegetarian equivalent every second day"[669]. Moreover, families which were already relying on social assistance or school support (but even those who were not in need) were at particular risk during local lockdowns[670]. In the long run, also given the economic situation poor households are already living, this may affect the children's health, wellbeing and future learning decisions[671]. This is extremely problematic, given the statistics on early leavers from education (18-24 years) recorded before the pandemic: in 2019, indeed, 11,9% of European young men and 8,4% of European young women

[660] University of Oxford, *Poverty and inequality surge across Europe in the wake of COVID-19*, 29 October 2020
[661] Mira, A., *Pandemia sociale. Effetto Covid e nuove emergenze: a Roma la povertà mangia le famiglie*, Avvenire, 23 July 2020
[662] European Parliament, *European Parliament resolution of 17 April 2020 on EU coordinated action to combat the COVID-19 pandemic and its consequences (2020/2616(RSP)),* 17th of April 2020
[663] Devakumar, D., et al., *Racism and discrimination in COVID-19 responses,* The Lancet, 395, 10231, 1194, 2020
[664] Shild, L., "*Go eat a bat, Chang!": An Early Look on the Emergence of Sinophobic Behavior on Web Communities in the Face of COVID-19,* arXiv preprint arXiv, 2004, 04046, 2020
[665] Gaidhane, S., et al., *Depression, anxiety and stress among the general population in the time of COVID-19 lockdown: A cross-sectional study protocol*, International Journal of Research in Pharmaceutical Sciences, 11, 1, 2020
[666] Cancello, R.; Soranna, D.; Zambra, G.; Zambon, A.; Invitti, C. *Determinants of the Lifestyle Changes during COVID-19 Pandemic in the Residents of Northern Italy*, Int. J. Environ. Res. Public Health, 17, 6287, 2020; Martinez, V., et al., The assessment of lifestyle changes during the COVID-19 pandemic using a multidimensional scale, Revista de Psiquiatría y Salud Mental, 14, 1, 16-26, 2021
[667] Van Lancker, W., Parolin, Z., *COVID-19, school closures, and child poverty: a social crisis in the making,* The Lancet, 5, 5, 243-244, 2020
[668] *Ibidem*
[669] *Ibidem*
[670] Malgesini, G., *The impact of Covid-19 on people experiencing poverty and vulnerability,* cit.
[671] Van Lancker, W., Parolin, Z., *COVID-19, school closures, and child poverty: a social crisis in the making,* cit.

left the educational path[672]. The lowest numbers (relative to 2020) are recorded in Croatia (2,2%), Greece (3,8%) and Slovenia (4,1%), while the highest ones are documented in Malta (16,7%), Spain (16%), and Romania (15,6%)[673].

Social consequences of Covid-19 also include an increase in the gender gap; according to the "*2021 report on gender inequality in the EU*", the pandemic was a major challenge for the gender equality, exacerbating existing inequalities in "almost all areas of life"[674]; for instance, women obtained half as many jobs as men, women's share of unpaid work increased, and women had to cope with children care more than fathers while teleworking[675]. Moreover, pandemic also triggered a rise in domestic violence against women[676].

Clearly, the effects of the pandemic will also have demographic consequences on the European societies: Europe, indeed, is still experiencing the aftermath of 2008 financial crisis and this is more evident in Southern Europe than in the other countries of the Union[677]. Here, uncertainty for the future is associated to the lowest fertility rates of the entire EU; moreover, in this sense, the Covid-19 containment strategies will also impact countries such as Spain and Italy, where the grandparental childcare is more common[678].

On the other hand, it is a fact that Europe in general has an ageing population and low birth rates, but is also experiencing "depopulation of rural areas, internal and external migration and brain drain"[679]: thus, the current situation may have further impact on the less developed regions (already facing high unemployment) and may also affect healthcare services[680].

From the political point of view, Covid-19 had effects on democracy too: indeed, a huge debate is still going on regarding the declaration of "state of emergency" and the adoption of "emergency powers" by the States[681]. Importantly, the declaration of "state of emergency" allows a government to increase its powers, but also diminish the ones of the Judiciary and of the Parliament, negatively affecting the system of checks and balances as well as restricting human rights and fundamental freedoms[682]. Thus, the fear of citizens that these instruments might lead to an authoritarian decay, as also happened in the past[683]. However, constitutions normally foresee guarantees for the democracies to survive these periods of crisis: Parliaments must be

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[672] Eurostat, *Early leavers from education and training,* April 2020
[673] Eurostat, *Early leavers from education and training by sex and labour status*, dataset, April 2021
[674] European Union, 2*021 report on gender inequality in the EU,* 2021
[675] European Institute for gender inequality*, Covid-19 derails gender equality gains*, 05 March 2021
[676] *Ibidem*
[677] Luppi, F., Arpino, B., Rosina, A., *The impact of COVID-19 on fertility plans in Italy, Germany, France, Spain, and the United Kingdom,* Demographic Research, 43, 47, 1399–1412, 2020
[678] *Ibidem*
[679] The EU's Assembly of Regional and Local Representatives*, The Covid-19 crisis can deepen Europe's demographic decline, regions and cities warn*, 15th of October 2020
[680] *Ibidem*
[681] Marzocchi, O., *The impact of Covid-19 measures on Democracy, the Rule of Law and Fundamental rights, Policy Department for Citizens' Rights and Constitutional Affairs,* Briefing requested by the LIBE committee, Monitoring Group on Democracy, Rule of Law, Fundamental Rights, 2020
[682] *Ibidem*
[683] *Ibidem*

informed of the declaration of the state of emergency, which has an expected end, they must vote *ex ante* or *ex post* the act or decrees approved under the state of emergency, and government's activity is supervised by MPs[684].

However, among the countries of the European Union, in two cases, the adoption state of emergency, usually implemented unanimously or with the involvement of the oppositions, did not foresee guarantees for the opposition; the European Parliament, indeed:

> "deems it totally incompatible with European values both the decision from the Hungarian Government to prolong the state of emergency indefinitely, to authorise the Government to rule by decree without time limit, and to weaken the emergency oversight of the Parliament, and the steps taken by the Polish Government namely changing the electoral code against the judgment of Constitutional Tribunal and provisions laid by law to hold Presidential elections in the middle of a pandemic, which may endanger the lives of Polish citizens and undermine the concept of free, equal, direct and secret elections as enshrined in the Polish Constitution"[685].

Actually, Poland and Hungary were already accused of illiberal backslidings long before the pandemic and the European Commission had initiated the Article 7 procedure against those two countries in 2017 and 2018, respectively[686]. However, as noted by the European Parliament on the 16th of January 2020, the process "resulted in any significant progress"[687]. Moreover, the two countries belong to the so called "Visegrad group", which also includes Czech Republic and Slovakia: all of the four countries, at present date, are being ruled by populist parties[688] and all of them were facing "illiberal swerving" before the pandemic[689]. Thus, the current situation offers several opportunities to strengthen the power, as it undermines accountability by strengthening the role of the experts, it offers a great opportunity to fan the flames of the increasing social unrest and it gives leaders the possibility to weaken the civil society, the opposition and the powers of Parliaments[690]. According to PhDr Guasti, while democracy in Czech Republic and Slovakia proved to be resilient to the shock, it is not the same for Poland and Hungary. In the Baltic State, indeed, according to Guasti, the ruling Party tried to undermine the democratic rule by forcing the general vote, even if this would be dangerous for the spread of the virus[691]. The vote effectively took place in 2021. The problem laid in the fact that citizens were asked to deliver their data via mail to the Polish Post, thus violating the General Data Protection Regulation, in the opinion of Guasti. OSCE too took position against this practice, which could constitute a breach of the principles of legality[692].

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[684] *Ibidem*

[685] European Parliament, *European Parliament resolution of 17 April 2020 on EU coordinated action to combat the COVID-19 pandemic and its consequences,* cit.

[686] Michelot, M., *The "article 7" proceedings against Poland and Hungary: what concrete effects?* Institut Delors, 2019

[687] European Parliament, *European Parliament resolution of 16 January 2020 on ongoing hearings under Article 7(1) of the TEU regarding Poland and Hungary (2020/2513(RSP)),* 16 January 2020

[688] Guasti, P., *The Impact of the COVID-19 Pandemic in Central and Eastern Europe,* Democratic Theory, 7, 2, 47-60, 2020

[689] Bustikova, L., Guasti, P., *The Illiberal Turn or Swerve in Central Europe?* Politics and Governance, 5, 4, 166–176, 2017

[690] Guasti, P., *The Impact of the COVID-19 Pandemic in Central and Eastern Europe,* cit.

[691] *Ibidem*

[692] *Ibidem*

More worrying is the situation in Hungary, where the Government is accused of having transformed Hungary in an authoritarian country: in March 2020, indeed, the Parliament passed a law adopting the state of emergency without a definite end[693]. No elections or referenda can take place during the state of emergency and the Prime Minister can rule by decree; moreover, according to a new law, those who "disseminate misleading information risk five years of jail"[694].

In addition, suspensions of the rule of law have been recorded in North Macedonia and Serbia too, and violations of the privacy were documented in Montenegro and Bosnia-Herzegovina, along with accuses of intimidations by the authorities. However, both the latter countries already had a weak rule of law: the pandemic only sped up an ongoing process[695]. We can probably state that the same considerations apply both for Hungary and Poland.

Among the group of Visegrad, Slovakian Prime Minister Matovic had to resign due to a scandal related to the Russian vaccine *Sputnik:* Matovic, indeed, decided to order 2 million doses of the serum without consulting his coalition partners. Importantly, the said vaccine has not yet been approved by the European authorities[696]. Hungary too bought – and is already giving – Sputnik's doses to its citizens[697], while Germany has recently said that it will start talks to secure supplies of the serum[698]. The race for the vaccine has thus been compared to the 50s' race for the space and is dividing the European states[699]: the Russian vaccine, indeed, has been defined a "soft power tool", since Russia is also delivering it to Mexico, Philippines, India, South Korea, and Argentina, among others[700]. Another proof of the current strategic importance of the vaccine is given by the tensions between the UK and the EU regarding the reciprocity of vaccine exports: the European Union indeed exported 10 million doses to the UK, but on the other hand, UK exported zero[701], thus triggering the frictions between the two countries, which are already having problems regarding Northern Ireland in the post-Brexit[702].

The vaccine issue is also related to the fake news issue: according to many analysts, indeed, Russia and China are engaged in campaign of disinformation, pushing national media to publishing fake news in several languages and promoting Chinese and Russian serums[703]. Actually, this was also noted before the Pandemic,

[693] *Ibidem*
[694] *Ibidem*
[695] Fruscione, G., *Covid-19 in the Balkans: The Virus of Authoritarianism*, ISPI, 30 April 2020
[696] Muller, R., *New Slovak PM seeks to mollify Russia in vaccine row*, Reuters, 9 April 2021
[697] Connolly, K., *How Russia's Covid vaccine is dividing Europe,* BBC, 17th of April 2021
[698] Martuscelli, C., Gehrke, L., *Russia's Sputnik vaccine injects divisions into EU,* POLITICO, 14th of April 2021
[699] *Ibidem*; Connolly, K., *Sputnik V: How Russia's Covid vaccine is dividing Europe,* cit.
[700] Connolly, K., *How Russia's Covid vaccine is dividing Europe,* cit.
[701] Sandle, P., Chalmers, J., *EU blames AstraZeneca as vaccine battle with UK deepens,* Reuters, 22nd of March 2021
[702] Fleming, S., et al., *Tensions between EU and UK inflamed over Northern Ireland,* Financial Times, 3rd of March 2021
[703] Emmott, R., *Russia, China sow disinformation to undermine trust in Western vaccines*: EU, Reuters, 29th of April 2021

at least for Russia[704]. In June 2020, EU announced that it was taking action to stop disinformation[705], and was collaborating with the social networks to stop the spread of fake news[706]. Recently, Denmark and Italy had to make a statement defending press freedom against interferences from China and Russia[707]. Moreover, according to the *Search for Common ground'*s study, financed by the EU, "inequitable access to pandemic-related information, confusion on what information sources and channels to trust, misinformation, and rumours determined mistrust towards the European governments, as well as rising inflation and prices of basic goods, loss of jobs, divisive or politicized rhetoric, heavy handed enforcement of pandemic protocols, inequities and disparities in access to pandemic-related support, and mismanagement of pandemic relief funds[708].

Finally, as we are dealing with a pandemic, we must also include in our analysis the sanitary response of the European States as well as the health developments. First of all, we must recall that at the very beginning of the pandemic in Europe, some countries introduced limits on exports of protective medical equipment, as recently happened with vaccines[709]. Moreover, even though other countries learned important lessons from the pandemics such as SARS, H1N1 and Ebola and were therefore much prepared, the pandemic of Covid-19 highlighted the lack of preparedness of the EU and of several MS, including those that have usually efficient healthcare systems[710]. In the aftermath of the SARS epidemy, EU States had decided to create an agency dedicated to provide a pan-European response to possible pandemic event, the European Centre for Disease Prevention and Control (ECDC), which proved to work efficiently during the Zika and Ebola outbreaks[711]. However, deficiencies in cooperation between the Agency and the MS were documented; in addition, recommendations issued by the ECDC during the pandemic demonstrated the importance of a coordinated and binding approach, which was however lacking[712]. The ECDC, moreover, pays the price of the cuts on healthcare imposed by the financial crisis on the MS; this was evident, for instance, in Italy, where health investments *per capita* decreased until 2013 and only after started to slowly increase[713]. However, EU decided to invest 350 million euros to support the development of vaccines and before Covid-19 650 million euros had been destined to vaccination research[714]. Moreover, the EU also invested 5,1 billion in the EU4Health Programme, the largest health programme ever in monetary terms: the funds will be available for MS, Health

[704] Burki, T., *Vaccine misinformation and social media*, The Lancet, volume 1, 6, 258-259, 2019; Walter, D., et al., *Russian Twitter Accounts and the Partisan Polarization of Vaccine Discourse*, 2015–2017, AJPH open-themed research, 110, 5, 2020; Broniatowski, D*., Weaponized Health Communication: Twitter Bots and Russian Trolls Amplify the Vaccine Debate*, AJPH open-themed research, 108, 10, 2018

[705] European Commission, *Coronavirus: EU strengthens action to tackle disinformation,* 10th of June 2020

[706] European Commission, *Tackling coronavirus disinformation*, accessed on the 29th of April 2021

[707] Marzocchi, O., *The impact of Covid-19 measures on Democracy, the Rule of Law and Fundamental rights*, cit.

[708] Search for Common Ground, *Trust in authorities – the golden ticket to successful COVID-19 vaccine roll-out in conflict settings*, January 2020

[709] Anderson, M., *Covid-19 exposes weaknesses in European response to outbreaks*, BMJ, 368, 1075, 2020

[710] Renda, A., Castro, R., *Towards Stronger EU Governance of Health Threats*, European Journal of Risk Regulation, 11, 2, 273-282, 2020

[711] *Ibidem*

[712] *Ibidem*

[713] *Ibidem*

[714] European Commission, *EU support for vaccines*, accessed on the 29th of April 2021

organizations and NGOs and are aimed to strengthen the health systems in Europe[715]. Moreover, EU also announced the creation of a Recovery Plan, the "EU's largest stimulus package": 1,8 trillion euros that will be used to create a "greener, more digital and more resilient Europe"[716].

In conclusion, European countries were also among the most involved in the research on Covid-19: as the study of Mei Hsiu-Ching Ho and John S. Liu clearly showed, Italy and the UK were among the top five countries for quality and quantity of published research on the issue (the third and the fourth, respectively, while China and the US were the first two); France, Germany, Switzerland, Spain and the Netherlands were in the top 20 too[717]. The rapid growth of studies demonstrates the huge efforts made to find solutions for the pandemic and were extremely useful to develop vaccines and cures to fight the disease[718].

2.2 Europe's 21st century Migration Period

2.2.1 The European routes

As Bozorghmer et al. noted in their study, Europe is currently facing several crises: the Covid-19 pandemic, indeed, "converges and interacts" with the migrant crisis[719]. Actually, the pandemic did not stop the migratory fluxes, but MS nonetheless suspended asylum procedures, transfers to other countries in accordance with the Dublin Agreement and returns[720]. Moreover, the European Parliament claimed that refugees arriving in the Greek islands do not have access to health care and are thus in potential risk of contracting Covid-19[721]. The "refugee crisis", however, is not new: it is an ongoing process which already started in 2011 during the so-called *Arab springs*[722] and continued throughout the following years, with a peak in 2015[723]. In ten years, indeed, more than 5.634.600 asylum applications were documented in the EU, excluding the second time applications[724]. While we mainly associate the crisis to the Mediterranean shipwrecks, there are other migratory routes which end up in the European Union and on which we will focus. Importantly, we will mainly concentrate on the key reasons driving migrants in Europe, rather than on the European policies of admission or on the countries of settlements: our intention, indeed, is to demonstrate that these migrations must be seen as historical phenomena rather than isolated mass arrivals.

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[715] European Commission, *EU4Health 2021-2027 – a vision for a healthier European Union*, accessed on the 29th of April 2021
[716] European Commission, *Recovery plan for Europe*, accessed on the 29th of April 2021
[717] Hsiu-Ching Ho, M., Liu, J., *The swift knowledge development path of COVID-19 research: the first 150 days*, Scientometrics, 126, 2391–2399, 2021
[718] *Ibidem*
[719] Bozorghmer, K., et al., *COVID and the convergence of three crises in Europe,* The Lancet, 5, 5, 247-248, 2020
[720] Marzocchi, O., *The impact of Covid-19 measures on Democracy, the Rule of Law and Fundamental rights,* cit.
[721] *Ibidem*
[722] Lendaro, A., *A 'European Migrant Crisis'? Some Thoughts on Mediterranean Borders*, Studies in ethnicity and Nationalism, 16, 1, 148-157, 2016
[723] Eurostat, *Asylum applications (non-EU) in the EU Member States, 2008–2020*, 27 April 2021, accessed on 30/04/2021
[724] *Ibidem*

The Eastern Borders route

The Eastern Borders route is the least important of the routes leading to the European borders, and it mainly involves people not associated with migration, but with smuggling of excise goods; however, Vietnamese, along with the Afghans, Iranians, Iraqis, and Bengalese, are among the main populations that usually try to enter Europe via the Latvian-Russian border[725]. Larger numbers of Afghans, on the other hand, attempted to cross the Hungarian-Ukrainian border; so far, nearly 14.000 people tried to cross the borders[726].

The Albanian circular route

Soon after the end of the Communist rule in Albania in 1991, 300.000 Albanians left their country, and the trend continued in the following years: in 1995, 295.000 people left Albania mainly for Greece, and the following year the number raised to 428.000[727]. However, in the period between 2000 and 2008 the emigration continued but with lower numbers (40.000 in the first decade of the century)[728]. Albanians were generally employed in seasonal works after which they came home, hence the name "circular route"; however, the regularization programs made the Albanians settle in Greece.[729] Nonetheless, in 2009 the irregular border crossing began to increase again: in that year and in 2010, indeed, more than 75.500 Albanians entered the EU (in Greece)[730]. In 2010, though, the number abruptly decreased to 5269, and between 2012 and 2019, "only" 50.014 Albanians entered Greece[731].

The Eastern Mediterranean route

In addition to the migrants coming from Albania, in the past 20 years Greece, the "eastern gate of Europe", also documented arrivals from Turkey; migrants usually arrive either via sea or via land[732]. However, these two routes are complementary, since statistics show that once numbers rise in one of the two, they drop in the other one[733]. Furthermore, as we will see for Italy, geopolitical changes in the neighbouring regions (North Africa and Middle East) are reflected in the arrivals of migrants: for instance, until 2011, Syrians were no more than 6% of the asylum seekers, being Afghanis and Pakistanis the most represented ones[734]. Then, the situation changed in 2012, when Syrians became the third nationality per arrivals (12,2%); the following year

[725] Frontex, *Migratory Routes, Eastern Border Route,* accessed on 30/04/2021
[726] *Ibidem*
[727] Maroukis, T., & Gemi, E. *Albanian circular migration in Greece: beyond the state?* In A. Triandafyllidou (Ed.), Circular Migration between Europe and its Neighborhood: Choice or Necessity? Oxford University Press, 68-89, 2013
[728] *Ibidem;* Frontex*, Number of illegal border-crossings to the European Union (EU) over the circular route from Albania to Greece from 2009 to 2019,* 28 April 2020, In Statista. Retrieved April 30, 2021
[729] Maroukis, T., & Gemi, E. *Albanian circular migration in Greece: beyond the state?* cit.
[730] Frontex*, Number of illegal border-crossings to the European Union (EU) over the circular route from Albania to Greece from 2009 to 2019,* cit.
[731] *Ibidem*
[732] Triandafyllidou, A*., Migration in Greece Recent Developments in 2014,* Hellenic foundation for European and Foreign Policy, Report prepared for the OECD Network of International Migration Experts Paris, 6-8 October 2014, European University Institute, Robert Schuman Centre for Advanced Studies, 2014
[733] *Ibidem*
[734] Data from the Greek Ministry for the Protection of the Citizen

they were the 37% of the newcomers (see *Table 1*). In 2013 Syrians also arrived in Italy, where they became the first nationality per arrival too (26,3%) (*see Table 2*).

Table 1: Arrivals in Greece (Data from UNHCR and Greek Ministry for the Protection of the Citizen, consulted in May 2021)

YEAR	TOTAL NUMBER OF ARRIVALS	FIRST COUNTRY OF ORIGIN		SECOND COUNTRY OF ORIGIN		THIRD COUNTRY OF ORIGIN	
2009[735]	85.626	Afghanistan	20,8%	Palestine	12,5%	Somalia	9%
2010[736]	96.956	Afghanistan	29,1%	Pakistan	9,1%%	Palestine	7,7%
2011[737]	86.622	Afghanistan	32,9%	Pakistan	23%	Bangladesh	6%
2012[738]	64.783	Afghanistan	25,5%	Pakistan	17,1%	Syria	12,2%
2013	22.962	Syria	37%	Afghanistan	27,9%	Pakistan	17,3%
2014	45.421	Syria	38,2%	Afghanistan	13,6%	Pakistan	4%
2015	861.630	Syria	56,1%	Afghanistan	24,4%	Iraq	10,3%
2016	177.234	Syria	47%	Afghanistan	24%	Iraq	15%
2017[739]	29.718	Syria	41,3%	Iraq	19,5%	Afghanistan	11,4%
2018	50.508	Afghanistan	28%	Syria	24%	Iraq	18%

[735] Data refer to apprehensions, not to migrants.
[736] *Ibidem*
[737] *Ibidem*
[738] *Ibidem*
[739] Data are only referred to the arrivals by sea.

2019	74.613	Afghanistan	38%	Syria	23%	Iraq	6%
2020	15.696	Afghanistan	35,2%	Syria	22,7%	Dem.Rep.Congo	10,3%
TOT	**1.611.769**						

Despite the relative proximity of Greek islands and the Turkish coast, many migrants continue to drown in the Aegean Sea; sadly, deaths are also documented in the land route[740].

According to the UNHCR 11.400 refugees and migrants reached the Greek islands in 2013 (only 3600 had arrived in the previous years): as said, most of these migrants were Syrians fleeing the war, and headed the islands of Lesvos, Chios, Samos, Kos and Leros[741]. However, until 2015, the primary destination of those who were crossing the Mediterranean was mainly Italy. In 2014, indeed, 170.000 people arrived on the Italian shores; meanwhile, "only" 43.500 were entering Greece via sea[742]. Again, the following year the situation changed: 856.723 arrivals via sea and 4.907 via land were recorded in Greece[743], while in the same period, Italy documented 153.842 new migrants landed on its shores[744]. The following year numbers became almost equal, as Italy recorded 181.436 asylum seekers (and 4578 deaths) and Greece 173.450 sea arrivals plus 3784 land arrivals. Then, in 2017, Italy returned to be the first destination of migrants crossing the sea: 119.369 asylum seekers reported, compared to the 36.310 ones of Greece (sea and land arrivals)[745].

The evolution of the numbers of migrants' arrivals must be linked to the agreement made by the EU with Turkey and also connected to the existence of the *Balkan corridor*, on which we will focus later. This *corridor*, indeed, is sometimes described as a "short living phenomenon" since numbers of refugees only remained high for two years (2015-2016), following which it was signed the said agreement[746]. Indeed, while 1.082.182 documented arrivals were recorded in the period 2014-2016 (98% sea arrivals), this number fell to 177.127 in the period 2017-2020 (74% sea arrivals)[747]. According to the agreement, irregular migrants crossing from

[740] Trakilovic´, M., "*On this path to Europe" – the symbolic role of the 'Balkan corridor' in the European migration debate* in Cultures, Citizenship and Human Rights, edited by Rosemarie Buikema, Antoine Buyse and Antonius C.G.M. Robben, Routledge, 2020
[741] *Ibidem*
[742] UNHCR, *The sea route to Europe: Mediterranean passage in the age of refugees*, 2015
[743] UNHCR, *Operation Portal, Refugee situations, Mediterranean Situation, Greece,* updated to the 25th of April 2021, accessed on 01/05/2021
[744] UNHCR, *Operation Portal, Refugee situations, Mediterranean Situation, Italy,* updated to the 25th of April 2021, accessed on 01/05/2021
[745] UNHCR, *Operation Portal, Refugee situations, Mediterranean Situation, Greece*, cit., UNHCR, *Operation Portal, Refugee situations, Mediterranean Situation, Italy,* cit.
[746] Trakilovic´, M., "*On this path to Europe" – the symbolic role of the 'Balkan corridor' in the European migration debate* in Cultures, cit.
[747] UNHCR, *Operation portal, Refugee situation, Mediterranean situation, Greece,* cit.

Turkey to Greece will be returned to Turkey; however, "for every Syrian being returned to Turkey from the Greek islands, another Syrian will be resettled to the EU"[748]. Moreover, 6 billion euros have been granted to Turkey to support the 3,7 million refugees in the country with schooling, healthcare, and Covid-19 assistance[749]. However, this agreement has been widely criticized and many accused Europe of dismissing its humanitarian responsibilities; moreover, Turkey's government has been accused by Greece of using asylum seekers as leverage to obtain additional money and political concessions from Europe[750]. Indeed, despite the agreement, Turkey let refugees flow into Greece in March 2020 as a way to express its discontent with Europe[751].

In the period between 2009 and 2020, 1.611.769 asylum seekers arrived in Greece, both via land and sea; migrants' main countries of origin are Syria, Afghanistan, Iraq, Pakistan and Democratic Republic of Congo.

The Balkan Route or the *Balkan corridor95*

The Western Balkan route is a migratory route which runs across the Balkans (Albania, Bosnia-Herzegovina, Croatia, Montenegro, Serbia and North Macedonia); it starts in Greece, where refugees and asylum seekers arrive from Turkey via land or sea, and it continues up to the borders of Europe[752]. An alternative route is the one which goes from Serbia to Bulgaria and then to the other EU MS[753]. Once arrived at the borders of the EU, migrants' destinations are mainly Hungary, Austria, Germany and Sweden[754]. Asylum seekers' countries of origin are mainly Syria, Afghanistan, Iran[755] – the ones that arrive in Greece – but also Morocco and Pakistan[756].

The existence of the *Balkan Corridor* went unnoticed until 2015, when Austrian authorities discovered a truck with seventy-one bodies of migrants; then, when 350.000 migrants marched through Hungary heading the border with Austria, the Hungarian Government decided to close the borders with Croatia and Serbia, thus re-

[748] European Parliament, *Legislative train 03.2021 - 8 towards A New Policy on Migration*, 2019

[749] European Commission, *EU signs final contracts under the €6 billion budget of the Facility for Refugees in Turkey*,17th of December 2020

[750] Terry, K., *The EU-Turkey Deal, Five Years On: A Frayed and Controversial but Enduring Blueprint,* The online journal of the Migration Policy Institute, 8 April 2021

[751] *Ibidem*

[752] Idemudia, E., *Travelling Routes to Europe,* in Idemudia, E., Boehnke, K., *Psychosocial Experiences of African Migrants in Six European Countries*, Social indicators Research Series, Springer, 33-49, 2020

[753] *Ibidem*

[754] *Ibidem*

[755] Frontex, *Western Balkan route,* accessed on 30/04/2021

[756] Roksandic*, S., et al., Migration in the Time of COVID-19—Policy Responses and Practices in Croatia Concerning the Western Balkan Routes and Readiness for the Post-COVID-19 Society in Which the Right to Health Care for the Most Vulnerable Is Guaranteed*, Front. Hum. Dyn., 2021

Figure 13: Balkan route (UNHCR)

routing the *corridor*[757]. In August 2015 Germany decided to open the borders to the refugees[758] and in November border crossing was allowed for Syrians, Afghans and Iraqis[759].

In 2016 new rules were applied in Austria, Germany and Slovenia and no more Afghanis were allowed to enter these countries, while Macedonia built a fence at the border with Greece[760]. Moreover, in March, the Balkan countries announced that their borders were closed to irregular migration, thus placing the migrants which had already took the route in an indeterminate state[761]. There are no official statistics on the migratory movements in the Balkans: the EU Parliament estimates almost 600.000 people transiting the *corridor* in 2015, while the UNHCR raises to number to 815.000.

Despite being entirely overland, this route is dangerous for a series of reasons: first of all, when winter comes, migrants have to face the cold weather of the Balkans; secondly, migrants frequently report smugglers' physical and sexual violence, torture, and extortions; thirdly, the path is not simple, and several migrants lost their lives when trying to cross the Danube at the Romanian-Bulgarian border; finally, pushbacks and use of violence by Hungarian state authorities have been documented too[762].

At present date, the pandemic of Covid-19 is making things more difficult for the migrants crossing the Balkans; this is not only because the countries closed the borders, but also due to the sanitary conditions in the

[757] Abikova, J., Piotrowicz, W., *Shaping the Balkan corridor: Development and changes in the migration route 2015–16*, International Migration, IOM, Wiley, 59,2021
[758] *Ibidem*
[759] Momin, S. *Human Rights Based Approach to Refugees: Look at the Syrian Refugee Crisis and the Responses from Germany and the United States*, Duke Forum for Law and Social Change, 9, 55-80, 2017
[760] Šantić, D., *The Balkan Migration Route: Reflections from a Serbian Observatory* in Towards understanding of Contemporary Migration Causes, Consequences, Policies, Reflections, edited by Mirjana Bobić, Stefan Janković, Institute for Sociological Research, Belgrade, 221-241, 2017
[761] *Ibidem*
[762] UNHCR, *Desperate journeys, Refugees and migrants entering and crossing Europe via the Mediterranean and Western Balkans routes,* 2017

refugee centres, as reported by several NGOs and independent media[763]; in addition, recently, MEPs which were visiting the border between Bosnia and Croatia were prevented from carrying their inspection[764].

The *Atlantic route*

Among the possible routes, West Africans migrants also choose the Western Mediterranean one, known as the *Atlantic route*: in the recent months, the popularity of this migratory path increased, due to a series of reasons on which we will focus later[765]. People from Senegal, Gambia, Mauretania, Western Sahara and Morocco, leave for the Canary Island, sometimes from their countries and mostly from Western Sahara or Morocco: this is a trip of several hundreds of kilometres, which is made onboard of makeshift boats or pirogues[766] . Only in 2020, 23.000 people arrived in the Spanish islands, but we cannot estimate the number of migrants who left their homes as sometimes they are intercepted or rescued at sea, while sometimes they disappear: for instance, at least 500 people lost their lives on this route between January and November 2020[767]. In 2016, 675 migrants left Africa for the Canary Island; in 2017, they were 424; in 2018, 1307 (69 ship arrivals, and 18 recorded shipwrecks), in 2019, 2698 (133 ship arrivals and 26 recorded shipwrecks); in 2020 (in the period between 1 January and the 15th of November), the number increased to 16.760 (545 ship arrivals and 41 documented shipwrecks)[768]. Up to the 25th of April 2021, 4347 migrants arrived in the Canary Island[769].

The route was started in 2006, when 31.678 migrants arrived in the Spanish archipelago onboard of *cayucos*, that is to say small boats; Spain had already signed an agreement for repatriation with Mauretania and in 2006 another one was signed with Senegal, while the Frontex operations (*European Border and Coast Guard Agency*) extended its activity there[770]. The Spanish *Guardia civil* is also present in Mauretania and Spain to contrast activities of human trafficking[771].

The Western Mediterranean route

Already in 2005 thousands of sub-Saharan Africans tried to overstep the fences which divide the Spanish enclave of Melilla and Morocco; in the previous decade, the route was mainly used by Moroccans and

[763] Roksandic*, S., et al., Migration in the Time of COVID-19—Policy Responses and Practices in Croatia Concerning the Western Balkan Routes and Readiness for the Post-COVID-19 Society in Which the Right to Health Care for the Most Vulnerable Is Guaranteed*, cit.
[764] *Ibidem*
[765] Affeldt, J., Seaman, M., A Gateway Re-opens: the growing popularity of the Atlantic route, as told by those who risk it, MMC Research Report, February 2021
[766] *Ibidem*
[767] *Ibidem*
[768] IOM, *Irregular migration towards Europe, Western African Route: Migration to the Canary Island,* 18 November 2020
[769] UNHCR, Operational Portal, Refugee Situation, Mediterranean Situation, *Spain*, accessed on the 30th of April 2021
[770] Affeldt, J., Seaman, M., *A Gateway Re-opens: the growing popularity of the Atlantic route, as told by those who risk it*, cit.
[771] *Ibidem*

Algerians trying to enter Spain, but this changed at the end of the 90s[772]. At present date, the route is used by Western Africans and Maghrebis (mainly Moroccans and Algerians) to enter Europe[773].

Migrants leave Africa with the help of smugglers from Tangier, Morocco (90%)[774], or from Algeria (9%)[775] and head to Tarifa, Spain's southernmost city, but they also try to cross the border of Ceuta and Melilla, Spain's two enclaves, either through false Moroccan passport or by climbing the fences with makeshift ladders, after waiting in the neighbouring forests for months[776]. When crossing the Strait of Gibraltar, migrants are transported on "mother boats" into Spanish water, from where they continue the trip via dinghies or makeshift boats[777]. In alternative, they also sail from the Atlantic coast but instead of heading the Canary island, they try to reach Spain: smugglers, indeed, often choose areas in which the control of the authorities is loose[778].

Along this route, migrants' main countries of origin are Morocco, Guinea, Mali and Algeria, but also Côte d'Ivoire and Gambia (see Table 2).

Table 2: Arrivals in Spain, including the Canary Island, data from UNHCR, consulted in May 2021

YEAR	TOTAL NUMBER OF ARRIVALS	FIRST COUNTRY OF ORIGIN		SECOND COUNTRY OF ORIGIN		THIRD COUNTRY OF ORIGIN	
2015	16.936	Syria	44,2%	Guinea (Conakry)	13,6%	Algeria	10,6%
2016	14.605	Algeria	21%	Côte d'Ivoire	21%	Gambia	12%
2017	28.449	Morocco	15,8%	Algeria	14,7%	Guinea (Conakry)	11,5%
2018	65.383	Guinea	20%	Morocco	20%	Mali	16%
2019	32.513	Morocco	25%	Algeria	16%	Guinea	15%

[772] Idemudia, E., Travelling Routes to Europe, cit.
[773] *Ibidem*
[774] Fernandez-Sebastian M., *Maritime Dimension in the Fight Against Illegal Migration on the Western Mediterranean Route,* in: Ramírez, J., Biziewski J. (eds) Security and Defence in Europe. Advanced Sciences and Technologies for Security Applications. Springer, Cham, 2020
[775] *Ibidem*
[776] Idemudia, E., *Travelling Routes to Europe*, cit
[777] Fernandez-Sebastian M., *Maritime Dimension in the Fight Against Illegal Migration on the Western Mediterranean Route,* cit.
[778] *Ibidem*

2020	41.861	Algeria	39,5%	Morocco	20,3%	Mali	12,6%
TOT	**199.747**						

The Central Mediterranean Route

Italians usually remember the arrival of the *Vlora* ship carrying 20.000 migrants from Albania as the beginning of a new era: Italy was becoming a place of arrival, after year of nationals' emigration[779]. The years after the fall of the Berlin wall, indeed, were crucial for a series of reasons: the end of the Communist rule in Eastern Europe, the associated mass migrations from beyond the former *Iron curtain* and the diversifications of the arrivals from Asia and Africa[780]. However, in the 90s and in the first decade of 2000, Italy saw a limited number of migrants' arrivals on its southern shores, compared to the ones that will follow from 2011: this was also due to the policy of rejection of the migrant's boats, also possible thanks to the 2008's agreement with Libya ("*The Friendship pact*"), which has been widely criticized by NGOs and international observers such as *Human Rights Watch*[781], as well as by the ECHR[782]. According to these sources, indeed, migrants' rejection to Libya was contrary to the principle of *non-refoulment*, while also putting migrants' lives in danger, since reports from the North-African country provided clear proofs of physical abuses, sexual violence in Libyan detention centres, as well as extortion and collusion with smugglers[783]. However, the geopolitical transformations in North Africa, the *Arab springs*, completely changed the scenario: from 2011 onwards, indeed, we talk about "humanitarian crises"[784]. While in 2010 only 4500 people arrived, in 2011 the number rose to 62700 (see table 3). In the following years, numbers increased again, and Italy experienced several difficulties in managing the situation: moreover, many migrants fled from the predisposed centres as they wanted to reach Northern European countries[785].

Nonetheless, as we can see from Table 3, from 2017 onwards, the number of arrivals sharply decreased: in order to understand why, we must remember that in 2016, the EU-Turkey agreement was signed, as mentioned above. Indeed, a similar agreement was made between Italy and Libya: according to the Memorandum of Understanding signed in February 2017, Italy agrees to give support to Libya in contrasting the irregular immigration[786], while both parties agree to strengthen the control on the southern border of the North African

[779] Il Post, *I primi sbarchi di massa degli albanesi, trent'anni fa,* 7th of March 2021
[780] Colucci, M., *Storia dell'immigrazione straniera in Italia, dal 1945 ai giorni nostri,* Carocci Editore, Roma 2017
[781] HRW, *Pushed Back, Pushed Around,* 21st of September 2009
[782] Colucci, M., *Storia dell'immigrazione straniera in Italia,* cit.
[783] HRW, *Pushed Back, Pushed Around,* cit.
[784] Colucci, M., *Storia dell'immigrazione straniera in Italia,* cit.
[785] UNHCR, *The sea route to Europe: The Mediterranean passage in the age of refugees,* cit.
[786] "La parte italiana si impegna a fornire supporto tecnico e tecnologico agli organismi libici incaricati della lotta contro l'immigrazione clandestina, e che sono rappresentati dalla guardia di frontiera e dalla guardia costiera del Ministero della Difesa, e dagli organi e dipartimenti competenti presso il Ministero dell'Interno" (Memorandum d'intesa sulla cooperazione nel campo

country[787]. As the EU-Turkey agreement, the Libya-Italy one has been criticized too, as it does not mention the "legal migration", that is to say the right to migrate of people detaining the status of "refugee": this means that Italy was "outsourcing" the asylum management to a country which does not recognize the right to asylum or cannot process international protection claims[788]. Moreover, doubts have also been expressed regarding the "temporary reception centres under the exclusive control of the Libyan Ministry of Interiors"[789]. In addition, the pandemic of Covid-19 also reduced the number of arrivals, though not in all the countries of departure[790]; we will focus on this issue later.

The "Central Mediterranean Route" is considered the most dangerous of the three routes, but it is nonetheless commonly used; places of departure used to be in Tunisia, Algeria and Morocco, but departures from Libya increased after the fall of Gaddafi regime[791]. The Libyan *Jamahiriya* indeed, maintained a strict control on the coast but an instable situation followed its end, with the consequent growth of uncontrolled smuggling networks[792]. Recently, however, Tunisia replaced Libya as the country with the greatest number of migrants' departures; on the other hand, the programmes enacted by the IOM, the UN and the African Union to evacuate migrants in Libya's detention centres are reducing pressure on the migratory route[793]. Another factor is the increasing dangerousness of the Central Mediterranean route: it is estimated that while 2,6% of the migrants died in the sea during 2017, this number recently rose to 10%[794]. It is estimated that at least 13.000 people died in the Mediterranean between 2014 and 2018[795].

Those who arrive in Italy, may arrive in Sicily (63,8% of the cases), Calabria (24,4%), Campania (5,5%), Apulia (2,8%), and Sardinia (3,5%)[796]. As for the countries of origin of the migrants, according to the statistics, following the *Arab springs*, North Africans were the most represented nationalities (in 2011, Libyans and Tunisians alone were the 84% of the total), but in 2013 and 2014 Syrians were one fourth of the total number: in the same years, indeed, Syrians were moving to Greece too. The other main countries of provenience are Somalia and Eritrea, either for the situation in their countries and for the cultural ties with Italy[797]. However,

dello sviluppo, del contrasto all'immigrazione illegale, al traffico di esseri umani, al contrabbando e sul rafforzamento della sicurezza delle frontiere tra lo Stato della Libia e la Repubblica Italiana).

[787] "Le parti si impegnano a prendere azioni nei seguenti settori: 1) completamento del sistema di controllo dei confini terrestri del sud della Libia, secondo quanto previsto dall'articolo 19 del Trattato summenzionato" (Memorandum d'intesa sulla cooperazione nel campo dello sviluppo, del contrasto all'immigrazione illegale, al traffico di esseri umani, al contrabbando e sul rafforzamento della sicurezza delle frontiere tra lo Stato della Libia e la Repubblica Italiana).

[788] Palm, A., *The Italy-Libya Memorandum of Understanding: The baseline of a policy approach aimed at closing all doors to Europe?* EU Immigration and Asylum Law and Policy Droit et Politique de l'Immigration et de l'Asile de l'UE, 02 October 2017

[789] *Ibidem*

[790] Villa, M., Fact Checking: migrazioni (e Covid-19), ISPI online, 29th of July 2020

[791] Idemudia, E., *Travelling Routes to Europe,* cit.

[792] *Ibidem*

[793] *Ibidem*

[794] *Ibidem*

[795] *Ibidem*

[796] Castellano, V., La mappa dei porti dove sbarcano i migranti, AGI, 01 July of 2017

[797] Riley, D., Emigh, R., Post-Colonial Journeys: Historical Roots of Immigration and Integration, Comparative Sociology, 1, 2, 2002

their main destinations remain Sweden, Switzerland, and Germany[798]. Migrants' other nationalities are Ivoirians, Guineas, Nigerians and Bangladeshi.

Table 3: Arrivals in Italy for year and countries of origin: data from UNHCR and Greek Ministry of the Interior, retrieved in May 2021

YEAR	TOTAL NUMBER OF ARRIVALS	FIRST COUNTRY OF ORIGIN		SECOND COUNTRY OF ORIGIN		THIRD COUNTRY OF ORIGIN	
2011	62.692	Tunisia	44%	Libya	38%	Egypt	2,5%
2012	13.267	Somalia	16,4%	Eritrea	10,8%	Egypt	9,2%
2013	42.925	Syria	26,3%	Eritrea	20,2%	Somalia	7,6%
2014	170,100	Syria	25%	Eritrea	20%	Mali/Nigeria/Gambia	5%
2015	153.842	Eritrea	25%	Nigeria	14,5%	Somalia	8,1%
2016	181,436	Nigeria	21%	Eritrea	11%	Guinea	7%
2017	199.369	Nigeria	9%	Guinea (Conakry)	8%	Côte d'Ivoire	8%
2018	23.400	Tunisia	22%	Eritrea	14%	Iraq	7%
2019	11.500	Tunisia	23%	Pakistan	10%	Côte d'Ivoire	10%
2020	34.154	Tunisia	33,8%	Bangladesh	11,9%	Côte d'Ivoire	7,2%
TOT	**892.685**						

[798] EASO, *Annual Report on the Situation of Asylum in the European Union,* 2020

Table 4: Table of the arrivals in Spain, Italy and Greece per country of origin. Data from UNHCR, retrieved in May 2021

YEAR	TOTAL NUMBER OF ARRIVALS	FIRST COUNTRY OF ORIGIN		SECOND COUNTRY OF ORIGIN		THIRD COUNTRY OF ORIGIN	
2015	1.031.402	Syria	48,3%	Afghanistan	20,39%	Iraq	8,6%
2016	362.376	Syria	23%	Afghanistan	12%	Nigeria	10%
2017	178.500	Nigeria	10,1%	Syria	9,8%	Guinea (Conakry)	6,7%
2018	141.500	Guinea	10%	Morocco	9,6%	Mali	7,9%
2019	123.700	Afghanistan	23%	Syria	15,8%	Morocco	7,1%
2020	95.031	Tunisia	14,8%	Algeria	8%	Bangladesh	5,1%
TOT	**1.932.509**						

2.2.2 Destination Europe: the migratory routes across Asia and Africa

The origin of these great migration routes that cross the Mediterranean lays in other migration routes that, in turn, cross the Asian and the African continent. Migrants, indeed, also come from distant countries such as Bangladesh, Afghanistan and Somalia: therefore, we will now briefly describe their paths.

The African-Mediterranean Routes

As the great majority of the migrants who take the Mediterranean routes are of African origin, they follow several paths depending on their final destination: we can therefore distinguish between the *Western and Central African routes* and the *Eastern African route*[799].

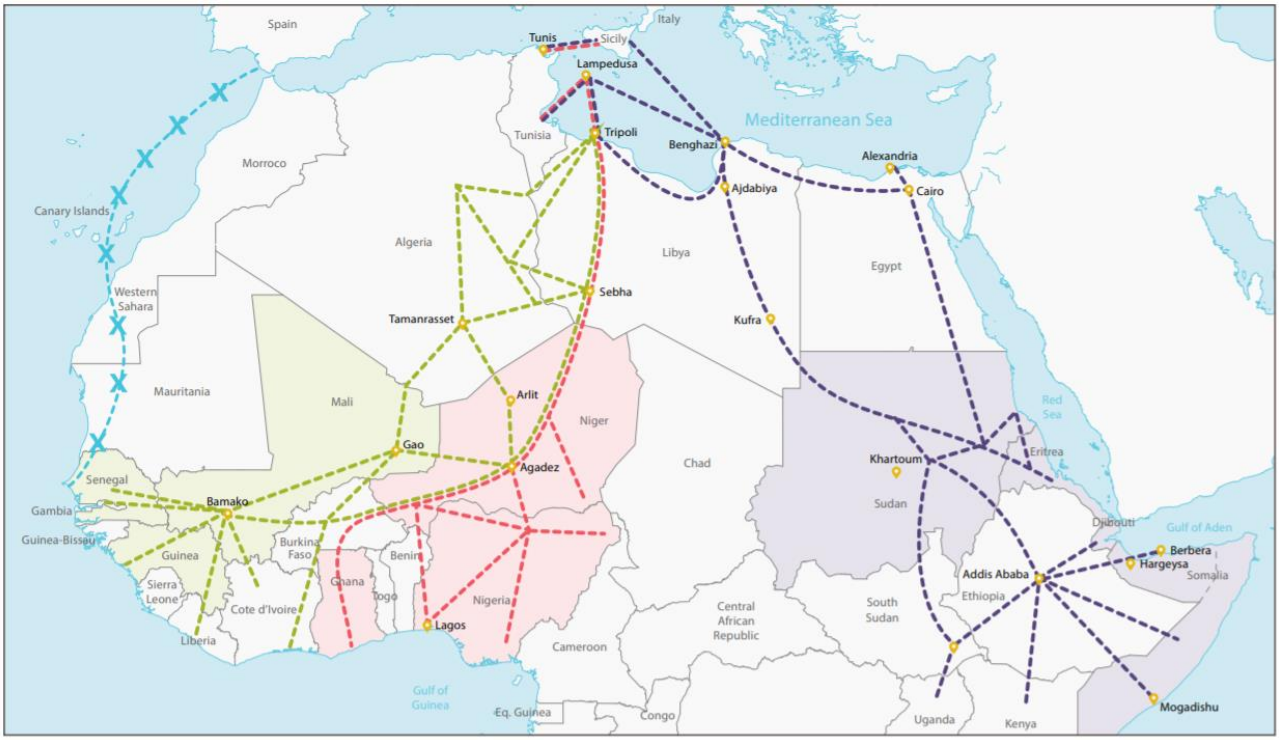

Figure 14: African routes, from, The Global initiative against transnational organized crime, Smuggled Futures: The dangerous path of the migrant from Africa to Europe, 2014

Migrants coming from Senegal, Gambia, Liberia, Guinea, and Ivory Coast who decide to cross the Mediterranean may choose to take the Western Mediterranean route, thus deciding to follow the route that passes through Gao (Mali), Tamanrasset (Algeria) and then to Morocco[800]. On the other hand, those who decide to try to enter Europe through the southern shores of Italy usually transit trough Niger and then they reach Libya: the border between Libya and Niger is the one in which more abuses are recorded[801]. However, the crossing of the desert is extremely dangerous, as it is where 40% of the deaths during the migration process occur; this is due to dehydration, starvation, sickness, lack of access to medication, kidnapping and abuses by smugglers[802]. Asylum seekers from Nigeria, Mali, Burkina Faso and Benin tend to converge in Niger, though in 2016 an agreement between the EU and Niger provided increased border controls in order to avoid the migratory pressure on Algeria and Libya[803]. According to the available data, 45% of the migrants travel on their own, 39% thanks to the help of friends or family and 11% resort to the help of smugglers: this suggests that migrants may ask their help when lacking right documentation[804]. Moreover, 71% of the people cross the

[799] Idemudia, E., *Travelling Routes to Europe,* cit.
[800] *Ibidem*
[801] UNHCR, *Routes towards the Western and Central Mediterranean Sea*, January 2021
[802] Idemudia, E., *Social experiences of Migrants,* in Psychosocial Experiences of African Migrants in Six European Countries, pp 119-135, 2020
[803] Munsch, T., et at., *Before the desert,* Conditions and Risks on Mixed Migration Routes through West Africa, Danish Refugee Council, 2017
[804] *Ibidem*

desert via bus, 15% via car and 7% via truck[805]. As for those coming from Eastern Africa, they tend to travel across Sudan and then to Libya (sometimes via Egypt). Sudan's capital, Khartoum, is the main migratory hub and it is where most of the smuggling networks are; there, migrants are often the target of abuses, and sometimes are even kept in slavery conditions[806]. As noted for the Central Mediterranean route, since 2017 the situation in Libya led the migrants choose to depart from Egypt rather than from Tripoli[807].

The Asian routes

As seen, migrants coming as far as Pakistan, Bangladesh and Afghanistan are a great part of the total amount of the asylum seekers arriving – predominantly – on the Greek shores. Their route is as complicated as the one travelled by the African migrant and both in the case of the Afghanis and the Pakistanis, it passes through Iran and Turkey; a different path is the one of the Bangladeshis.

Migrants coming from Afghanistan may enter first in Pakistan and then in Iran, or directly in Iran, depending on their original homeland or on their point of departure: those who enter in Pakistan (via Karachi, Quetta and Peshawar) must cross the Hindukush, the desert and the steppe, while those who try to enter Iran have to overcome the fence which is placed alongside the border[808]. Once arrived in Iran, they must reach Turkey, a passage which is controlled by organized networks of smugglers: in addition to the abuses perpetuated by the local organized crime, migrants have to face an difficult overnight crossing by foot of the mountain range which divides the two countries[809]. The crossing is predominantly made by groups of 50-100 people; then they travel across Turkey on cars or buses[810].A similar route is the one of the Pakistanis, who usually depart from Quetta and reach Turkey in the same way; researchers have also found that small numbers of Pakistanis arrive in Turkey via plane with a tourist visa too[811]. Then, both the Pakistanis and the Afghanis cross the Aegean Sea: some, as we have seen, on makeshift boats, arriving on the Greek islands; some, on the other hand, hide into trucks and private cars, or even aboard of private sailing boats heading to Italy[812]. In general, during their trip, migrants travel on cars, boats, planes, buses and by walk; they usually arrive in Turkey by car or bus, cross the sea on boats and travel through Europe by walk or on hired cars, when not apprehended by the authorities[813].

[805] *Ibidem*
[806] IOM, *Sudan 2017-9*, Migration crisis operational framework, 2019
[807] Marchand, K., *Study on Migration Routes in the East and Horn of Africa*, Maastricht Graduate School of Governance, 2017
[808] Dimitriadi, A., *Migration from Afghanistan to third countries and Greece*, Hellenic Foundation for European and foreign policy, 2013
[809] *Ibidem*
[810] Kushminder, K., et al., *Irregular Migration Routes to Europe and Factors Influencing Migrants' Destination Choices,* Maastricht Graduate School of Governance, 2015
[811] Yousef, K., *The vicious circle of irregular migration from Pakistan to Greece and back to Pakistan,* Hellenic Foundation for European and foreign policy, 2013
[812] *Ibidem*
[813] REACH, *Migration from Afghanistan to Europe (2014-17),* Research report, October 2017

Finally, Bangladeshis' number of arrivals increased in recent years: indeed, while in 2016 only three migrants arriving by sea were from Bangladesh, their number rose to 4645 between only between January and April 2017[814]. Their journey usually starts in the Gulf countries, from which they leave by plane to the North-African countries: the main flying routes are "Dubai-Istanbul-Tripoli, Dubai-Cairo-Khartoum-Tripoli, Dubai-Istanbul-Tunisia/Libya"[815]. There, they usually spend one year before attempting the journey to Italy; sometimes traffickers seize their documents, forcing them to labour or in detention centres, as happens to the other migrants[816]. In the past, Bangladeshis also travelled to Eastern European countries, from which they attempted to enter Europe; however, now more Bangladeshis are departing from Libya, rather than from Turkey, Albania or Morocco[817]

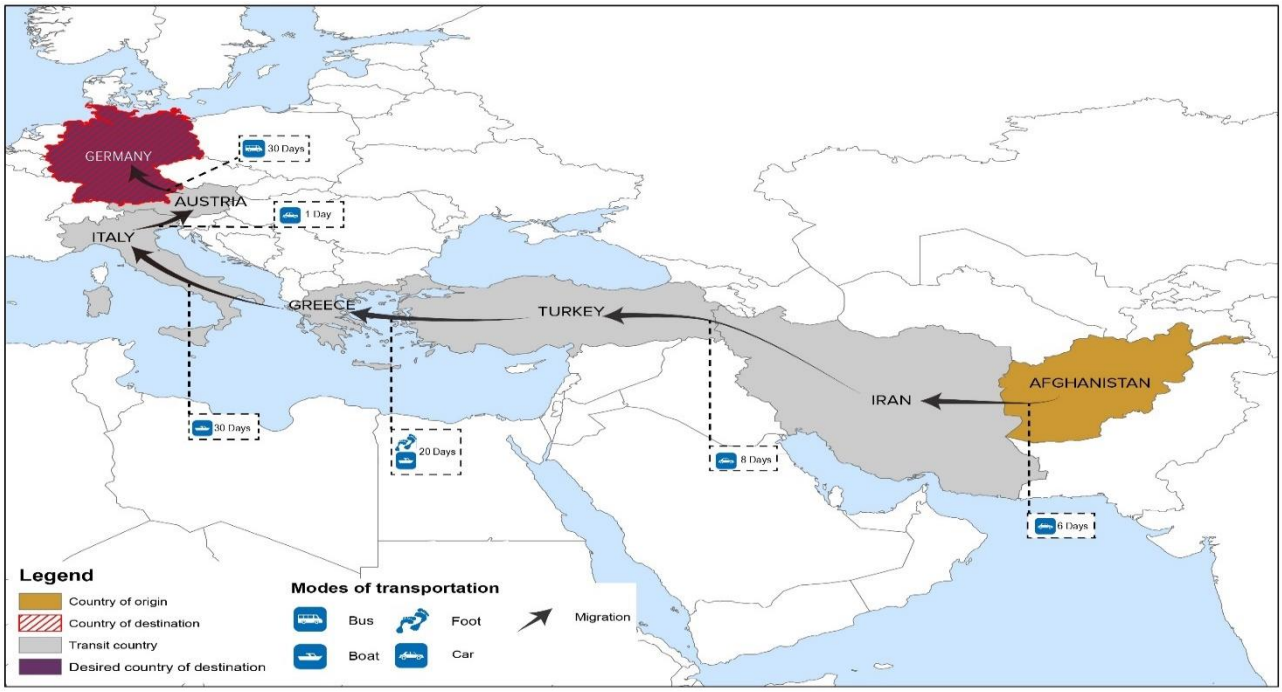

Figure 15: Route from Afghanistan to Europe (REACH, *Migration from Afghanistan to Europe (2014-17),* Research report, October 2017)

2.2.3 Why Europe? Migrants' main reasons to leave

When dealing with the causes of migrations, as already stated in the first chapters, researchers usually distinguish between "push" and "pull" factors: push factors are usually different between countries and depend on local political and economic considerations while pull factors refer to the "reception conditions of the destination"[818]. As we will see, both pull and push factors may vary and they can be different among countries,

[814] Dockery, W., *What's behind the influx of Bangladeshi migrants to Europe?* InfoMigrants, 14th of July 2017; Al Javed, H., *Bangladesh's fatal obsession with the European dream*, Dhaka Tribune, 11th of February 2020
[815] IOM, *Current migration trends from Bangladesh to Italy Focus on arrivals by sea,* IOM Italy Briefing, 1, June 2017
[816] Qayum, N., *Chasing the Dubai Dream in Italy: Bangladeshi Migration to Europe*, Migration Policy Institute, 5th of October 2017
[817] Rahman, M., Kabir, M., *Moving to Europe: Bangladeshi Migration to Italy*, Institute of South Asian Studies Working Paper, 142, 2012
[818] Kang, Y., *Refugee crisis in Europe: determinants of asylum seeking in European countries from 2008–2014*, Journal of European Integration, 43, 1, 2021

though they are generally similar. As for pull factors, for instance, a study argues that while there are mainly shared elements like the importance of a securer and safer life in Europe, networks of migrants, and democracy, there might be some elements that can vary, such as the "image" and the "reputation" of a certain country[819].Other factors might also be the migratory legislation[820]. Moreover, while economic theory suggests that the more a society is wealthy, the more it will attract foreign people especially from poorer countries, many studies argue that economic factors have a minor role in the final decision to leave[821]. In addition, according to Yoo-Duk Kang, due to constraining factors such as time pressure and exceptional circumstances, migrants might not be aware of the conditions of the places of destination[822]: interestingly, as we will see, the 80% of migrants arriving from Sub-Saharian Africa to Northern Africa intend to remain there and do not attempt to cross the Mediterranean[823], where wealthier countries are.

As for the push factors, according to several studies, violence is considered the most important one: refugees mainly leave their countries as they flee from persecution and conflict[824]; we will see later how many facets violence can have. On the other hand, poverty alone is not considered a main reason to migrate, as there is not a clear correlation between this factor and the decision to migrate[825].

Another variable to be included is distance, which, however, has an inverse relationship with the number of migrants: the more two countries are distant, the less migrants there will be in the destination country[826]. Finally, Kushminder et al., also stress the role of "safety along the routes, weather conditions, border surveillance and push-back policies"[827]; however, as the author conclude that these factors result in changing of the routes, but not in their suppression, we will not focus on them, as they seem not to prevent migrants to start their journey. In general, migrants move for a series of reasons and not for one only: we will thus focus on the geographical area of provenience in order to understand the local reasons of migration.

West Africa

[819] Kushminder, K., et al., *Irregular Migration Routes to Europe and Factors Influencing Migrants' Destination Choices,* cit.
[820] Idemudia, E., *Theoretical Explanations of Migrations, Mental Health, Wellbeing and Posttraumatic Stress Disorder,* in: Psychosocial Experiences of African Migrants in Six European Countries. Social Indicators Research Series, vol 81. Springer, Cham, 2021
[821] Kang, Y., *Refugee crisis in Europe: determinants of asylum seeking in European countries from 2008–2014,* cit.
[822] *Ibidem*
[823] Munsch, T., et at., *Before the desert, Conditions and Risks on Mixed Migration Routes through West Africa*, cit.
[824] Crawley, H, et al., *Destination Europe? Understanding the dynamics and drivers of Mediterranean migration in 2015,* Centre for Trust, Peace and Social Relations, Coventry University, Coventry, 2016
[825] Kang, Y., *Refugee crisis in Europe: determinants of asylum seeking in European countries from 2008–2014,* cit.
[826] *Ibidem*
[827] Kushminder, K., et al., *Irregular Migration Routes to Europe and Factors Influencing Migrants' Destination Choices,* cit.

We identified violence as the main driver of migration, and West Africa is no exception: Nigerian migrants in particular – but Western Africans in general – argue that rising tensions between Christians and Muslims, as well as intergenerational conflicts, land disputes and fights between families, often result in murders[828]. These conflicts, however, are not localized or are not regional issues: respondents to surveys argue that groups such as the Movement of Democratic Forces of Casamance in Senegal, Boko Haram and particular fraternities such as the Nigerian Black Axe are considered a life threat[829]. The relationship between Boko Haram and migration has also been confirmed by another study, which claims that 97% of the people leaving the North-west of Nigeria move due to the activity of the terrorist group[830]. Gambia respondents also cited persecution related to the membership of a political party and unfair legal processes as reasons to move[831]. Violence was not mentioned, on the other hand, by the Malians and the Nigeriens, who indicate that the lack of employment perspectives was the factor which motivated them to flee their country; however, in turn, the lack of employment perspective has been linked to a general situation of instability and conflict, as well as to relative poverty and marginalization[832]. This is also evident in the World Bank report on West Africa, in which it is stated that "social and political grievances have played a central role in motivating youth violence"[833]: therefore, violence, triggered by the poor social environment, ultimately generates more violence, further destabilizing the region and forcing more and more people to flee. Indeed, it is important to stress that in the 40% of the cases, migrants coming from this region have at least a secondary school level of education[834] thus could have greater opportunities to find a job than other people.

A recent study also claims that migrants traveling the Atlantic route referred to the desire to escape poverty and to achieve greater economic security, even though the route is widely known to be extremely dangerous, while others claim that lack of fishing was also a motivation, being this their main activity[835]. The lack of fishing is explained by interviewed migrants due to the decision of the governments to sell the fish resources to "foreigners", while other issues such as the lack of access to land, as well as agreements which favour European companies, are considered factors that are having effects on the local economy too[836].

Recently, the number of Congolese along the Central Mediterranean route increased: according to the *Portail sur les données migratoires*, this is due to years of endemic violence in the country. Conflict is thus responsible of a deteriorating security situation and of severe food insecurity: little less than one million refugees leaving

[828] Crawley, H, et al., *Destination Europe? Understanding the dynamics and drivers of Mediterranean migration in 2015*, cit.
[829] *Ibidem*
[830] Mukthar, S., et al., *Boko Haram and the Geopolitics of Forced Migration in Nigeria,* Journal of International Studies Vol. 14, 51-63, 2018
[831] Crawley, H., et al, *Destination Europe? Understanding the dynamics and drivers of Mediterranean migration in 2015*, cit.
[832] Munsch, T., et at., *Before the desert*, Conditions and Risks on Mixed Migration Routes through West Africa, cit.
[833] Marc, A., *The Challenge of Stability and Security in West Africa,* International Bank for Reconstruction and Development / The World Bank, 2015
[834] *Ibidem*
[835] Affeldt, J., Seaman, M., *A Gateway Re-opens: the growing popularity of the Atlantic route, as told by those who risk it*, cit.
[836] *Ibidem*

Congo were documented from April 2020 to February 2021[837]. Most of them are hosted in neighbouring countries, Uganda above all (45%)[838], but some arrived in Greece via the Eastern Mediterranean Route (1004 in 2020)[839].

East Africa

In Eastern Africa, two countries are among the ones that host the greatest number of refugees in the world: Uganda (1.4 million)[840] and Ethiopia (805.164)[841]. Moreover, the greatest number of refugees is produced by one country only, South Sudan (2.3 million). The other main nationalities coming from Eastern Africa documented by the European authorities are the Eritreans and the Somalis. However, even though Somali refugees are more than 750.000 and are hosted in neighbouring countries, Somalia itself hosts refugees from Ethiopia and Yemen[842]: this gives the idea of a general instability which is also reflected by the arrivals on the European shores. As it was already evident from Western Africa, every country has both different and similar patterns of migration: overall, the entire region has a low human and economic development but is also facing conflicts, political oppression and persecutions[843].

As for South Sudan, according to the studies, the main factors that force people to flee their homes are "national conflict (62%), communal clashes (20%) and natural disasters (15%)"[844]; South Sudan, indeed, is at the centre of several disputes, especially regarding the Nile basin[845]. Indeed, as we will see in the third paragraph, in Sub-Saharan Africa, the environmental issue is becoming increasingly relevant. Nonetheless, these environmental disputes and crossed interest are also at the basis of the civil war which began in 2013; ongoing peace talks are trying to come to a permanent peace[846] and to stop a war which caused at least 383.000 deaths after only 5 years of war[847]. Widespread violence clearly affected people, but also caused food insecurity: indeed, it is estimated that half of the population became food insecure due to the effects of the war[848]. Moreover, the conflict also impacted on the country's economy, and poverty in urban areas increased from 45% to 70%. We will further investigate the "environmental factor", but it is sufficient for now to say that 95% of the population relies on "climate sensitive sector such as agriculture, fisheries and forestry resources" and that South Sudan is listed among the "worst performing countries in the Climate change vulnerability index 2017"[849].

[837] Portail sur les données migratoires, *Migration data in Eastern Africa,* 02 February 2021
[838] UNHCR, *Operational portal, Refugee Situation, DRC Situation,* accessed on 04/05/2021
[839] UNHCR, *Operational portal, Refugee Situation, Mediterranean situation, Greece,* cit.
[840] UNHCR, *Refugee Data Finder*, accessed on 04/05/2021
[841] UNHCR, Operational portal, Refugee Situation, *Ethiopia*, accessed on 04/05/2021
[842] Portail sur les données migratoires, *Migration data in Eastern Africa,* 02 February 2021
[843] Marchard, K., *Study on Migration Routes in the East and Horn of Africa*, cit.
[844] Portail sur les données migratoires, *Migration data in Eastern Africa,* cit.
[845] Knopf, P., *South Sudan's Civil War and Conflict Dynamics in the Red Sea*, Special report, United States Institute of Peace, 2018
[846] Sant'Egidio, *South Sudan: together with Sant'Egidio major step forward towards Peace,* 11th of March 2021
[847] Specia, M., *383,000: Estimated Death Toll in South Sudan's War*, The New York Times, 26th of September 2018
[848] Putoto, G., *Environmental Vulnerability: South Sudan's Endgame*, ISPI online, 23rd of March 2018
[849] *Ibidem*

The Sudanese region of Darfur faces the same levels of violence of South Sudan: migrants' main reasons to leave, indeed, are attacks, harassment by authorities, and violence of militias[850]. Clearly, the level of violence prevents people from finding a job, and even when they find, Darfuris may face discrimination: this situation is particularly hard for younger generations, which describe themselves as "hopeless" and regard the migration to Europe as their only option and their unique chance to escape this "systemic persecution"[851]. The rest of the country, on the other hand, is facing inter-tribal violence, especially in the Abyei territory, as well as environmental problems such as soil degradation, drought, and desertification[852]. Climate change is thus exacerbating conflicts over lands and resources: 80% of the rural population, indeed, relies on the agriculture – and thus, on climate conditions – for their living[853].

Other conditions that lead migrants to move – especially younger ones –is the lack of perspectives, as already seen with the West African countries: forty percent of the population is below 15 years of age but, according to IOM, the government has not enacted policies designed to cope with the needs of the youths[854]. The lack of perspective is also linked to the economic situation, which continues to deteriorate due to the years of conflict and civil war[855].

Somalia too is an example of a complex mix of both environmental issues and violence: IOM estimates that only this year, 1.6 million people were affected by the effects of adverse climatic events such as severe drought and famine[856]. To the 31st of March 2021, 632.383 refugees had left Somalia[857] and 2.6 million Somalis were Internally Displaces Persons[858]; Somalia, however, also faced the consequences of the lack of a central government until 2012 but is continuing to struggle with the destabilizing chronic insecurity, which is also linked to poverty[859]. Indeed, according to a 2018 report, Al-Shabaab was the "deadliest group of the Continent": the terrorist movement targets government institutions, civilians, IOs, and even the international missions such as AMISOM[860]. Moreover, clan disputes over lands and political power, further exacerbate the situation[861]; indeed, Somalis also move to escape persecutions related to clan and political affiliations[862]. The

[850] Buchanan-Smith, M., *Darfuri migration from Sudan to Europe: from displacement to despair,* Humanitarian Policy group, August 2018
[851] *Ibidem*
[852] IOM, Migration Crisis Operational Framework, *Sudan*, cit.
[853] *Ibidem*
[854] *Ibidem*
[855] *Ibidem*
[856] IOM, *Climate Change Drives Displacement of Thousands of Vulnerable People in Somalia*, 4th of January 2021
[857] UNHCR, Operational portal, Refugee Situation, *Horn of Africa Somalia situation*, accessed on the 4th of May 2021
[858] UNHCR, Operations, East and Horn of Africa and Great Lakes, *Somalia*, accessed on the 4th of May 2021
[859] Marchard, K., *Study on Migration Routes in the East and Horn of Africa*, cit.
[860] Mbiyozo, A., *Fleeing terror, fighting terror: the truth about refugees and violent extremism,* Institute for Security Studies, 2018
[861] *Ibidem*
[862] UNHCR, IOM, *A long and winding road,* Background Paper, Regional Conference on Refugee Protection and International Migration: Mixed Movements and Irregular Migration from the East and Horn of Africa and Great Lakes Region to Southern Africa, Dar Es Salaam, 2010

lack of access to food, medical services, and healthcare, provoked by the continuous violent situation, provides another stimulus[863].

Eritrea too faced famine and drought in recent years, but the main driver of migration among youths Eritreans is considered the mandatory military service of 18 months, which, however, ends up lasting much longer; this, along with the political oppression and poor economic conditions, forces people to leave the country[864]. Nonetheless, it is important to stress that among those who leave the country, 27% have a university level education, 37% a secondary level and little less than 5% a teacher training[865]. However, when fleeing Eritrea, they risk being shot at the border or risk consequences for their families[866]. The recent tensions in the Tigray region in Ethiopia are further aggravating the situation of the Eritrean refugees hosted in the area[867].

Finally, as the other countries in the Horn of Africa, Ethiopia faced the effects of the 2011 drought that affected the regions, as already mentioned; this provided a stimulus for Ethiopians to leave their country, as did the ethnic divisions and other socio-economic factors[868]. In 2013 the Ethiopian Government imposed a ban on migration, but this does not prevent many Ethiopians to irregularly leave the country[869].

Middle East and Asia

Violence threat is a common driver for migration from Iraq, Syria and Afghanistan: just to introduce the issue, it is sufficient to say that 79% of the Iraqi migrants would have left their country even if offered a job and that among the returnees only 20% would not try to reach Europe again[870].

The origin of the crisis that is forcing both Iraqis and Syrians to leave their homeland lies in the *Arab springs* that led to the civil war in Syria and to the insurgence of the Islamic State in both Iraq and in Syria: while protests were dividing Syria in 2011, indeed, the US were leaving Iraq and by 2013 ISIS had begun to be a real challenge to the Iraqi State[871]. ISIS was declared defeated in 2019, but between the 2013 and 2019 the terrorists had ruled over a wide territory, causing the displacement of millions of people, both in Syria and in Iraq; however, while Iraq is now hosting a huge number of Syrian refugees, and less Iraqis are migrating, Syrians continue to leave their country[872]. UNHCR, indeed, documented 5,600,469 Syrian refugees so far[873].

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[863] Mbiyozo, A., *Fleeing terror, fighting terror: the truth about refugees and violent extremism,* cit.
[864] Marchard, K., *Study on Migration Routes in the East and Horn of Africa*, cit.
[865] Kibreab, G., *The national service/Warsai-Yikealo Development Campaign and forced migration in post-independence Eritrea*, Journal of Eastern African Studies, 7,4, 630-649, 2013
[866] *Ibidem*
[867] UN News, *Deep concern for thousands of Eritrean refugees 'scattered' in Ethiopia's Tigray,* 26th of March 2021
[868] Adugna, G. *Migration patterns and emigrants' transnational activities: comparative findings from two migrant origin areas in Ethiopia*, CMS 7, 5, 2019; Marchard, K., *Study on Migration Routes in the East and Horn of Africa*, cit.
[869] ILO, *Addressing the Root causes of Migration in Ethiopia,* accessed on the 4th of May 2021
[870] IOM, *Iraq, Migration drivers and reasons for migrating to Europe,* 2018
[871] Chambers, Richard L., et al., "*Iraq*". Encyclopedia Britannica, 11th of January 2021
[872] UNHCR, *Regional Strategic overview 2020-2021, Regional Refugee & Resilience Plan (3RP),* 2019
[873] UNHCR, Operational portal, Refugee Situation, *Syria regional Refugee Response*, accessed on 04/05/2021

State and non-State violence, therefore, seems to be the main driver of the Middle Eastern migration, as said before: according to the studies, indeed, 28% of the migrants interviewed in Greece reported that they had to leave due to the terrorist activity of ISIS, though not only in Syria and Iraq but also in Afghanistan and Yemen[874], while State persecution is also cited by Syrians and Pakistanis[875]. According to the work of Crawley et al., indeed, 87% of the Syrians, 88,6% of the Afghans, and 93% of the Iraqis arrived in Greece claim that they moved due to "conflict, human rights abuse and persecution"; in addition, even those who were not targeted argued that the level of violence had become intolerable and a threat for their families[876].

As for the Afghanis, they mentioned their belonging to the *Hazara* ethnicity as a threat, because they experienced discrimination and lack of rights even when they fled to neighbouring Iran[877]. Moreover, according to the REACH report, war and conflict (20%), lack of job opportunities (5%) and tribal conflict (less than 5%) were the primary reasons to leave Afghanistan, while lack of job opportunities were the secondary reasons to migrate for the 20% of the interviewed migrants[878].

Pakistan too is among the ten world countries per numbers of emigrants: so far, 6.3 million people left the country, a sixth of which only in 2015[879]: among the pull factors that lead Pakistanis to Europe, studies reported availability of educational scholarships (30%), migrants' networks (21%) and job opportunities (20%)[880]. As for push factors, 39% of the respondents declared that lack of job opportunities was the main reason, 12% cited financial problems, 14% lack of quality education and 12% reunification with friends or family[881]. It is also interesting to say that among the migrants who want to reach EU, 64% obtained at least a bachelor and 42% would stay in Pakistan if given better educational opportunity, a job (58%) and a safer situation (46%)[882].

Similar considerations are made by Bangladeshi migrants: Bangladesh, indeed, is the sixth country per number of migrants worldwide: statistics reveal that 7.5 million Bangladeshis live abroad. The country experienced slow economic growth, overpopulation, and natural disasters[883]: thus, key drivers of migration are the necessity to find a better job and livelihoods (73%) but also to increase the social status (11%)[884]. Moreover, the three main causes driving Bangladeshi migration are unemployment (33%), family reunification (27%), and access to a community abroad (25%)[885]. Nonetheless, 91% of the migrants would anyway remain in their homeland

[874] Crawley, H. et al, *Understanding the dynamics of migration to Greece and the EU: drivers, decisions and destinations,* MEDMIG Research Brief No.2, 2016
[875] *Ibidem*
[876] *Ibidem*
[877] *Ibidem*
[878] REACH, *Migration from Afghanistan to Europe (2014-17),* cit.
[879] IOM, *Pakistan: survey on drivers of migration,* 2020
[880] *Ibidem*
[881] *Ibidem*
[882] *Ibidem*
[883] Yousef, K., The vicious circle of irregular migration from Pakistan to Greece and back to Pakistan, cit.
[884] IOM, *IOM Releases Results of Largest Survey on Drivers of Migration in Bangladesh,* 14th of July 2020
[885] IOM, *Bangladesh, survey on drivers of migration and migrants' profile,* 2020

if they were given a job[886]. Moreover, 28% of the Bangladeshi migrants claim that they choose a destination for its availability of jobs and better salaries[887].

The impact of Covid-19

The impact of Covid-19 may have long-lasting effects on the societies from which migrants come; surveys carried out in West Africa, for instance, report that the pandemic is acting as a threat-multiplier, that is to say it is reducing the access to work, increasing worries and stress, and reducing the availability of goods[888]. According to the surveys, indeed, 60% of the interviewed refugees could not meet their basic needs; 40% were selling their goods to buy food and 11% had to move to less safer accommodations[889]. In addition to the "push factors" represented by the economic fallout, an interesting "pull factor" motivating young Africans to leave their country is the perceived shortage of jobs in Europe, influenced by the news of thousands of deaths in the European Continent[890]. Moreover, as the majority of the migrants is facing difficulties when moving across borders, an increased need for smugglers has been reported: furthermore, smugglers are also choosing more dangerous routes[891]. It seems therefore that the more the pandemic will impact economy, the more migrants will risk their lives on dangerous routes. Indeed, while in May 2020 it seemed that the number of arrivals on the European shores was decreasing[892], in January 2021 it was clear that numbers had increased, compared to 2019 (at least in Italy and Spain)[893]. In conclusion, it is no surprise that, according to data, many new arrivals came from countries affected by economic difficulties rather than by conflicts[894]: again, this clearly demonstrated that migration is likely to increase due to the economic difficulties triggered by the pandemic, also considered the global reduction of remittances[895].

2.3 "Climigrants" and "ecodemics"?

2.3.1 Climate changes' effects

According to the Intergovernmental Panel on Climate Change (IPCC), "scientific evidence for warming of the climate system is unequivocal"; moreover, the NASA claims that it is extremely likely (more than 95% of probability) that the current global warming is the "result of human activity since the mid-20th century"[896].

[886] *Ibidem*
[887] *Ibidem*
[888] Litzkow, J., *West Africa: How the Pandemic Reshapes Migration*, ISPI online, 17th of September 2020
[889] UNHCR, *Routes towards the Western and Central Mediterranean Sea,* cit.
[890] Affeldt, J., Seaman, M., *A Gateway Re-opens: the growing popularity of the Atlantic route, as told by those who risk it*, cit.
[891] *Ibidem*
[892] IOM, *Mixed migration flows in the Mediterranean,* 2020
[893] European Commission, *Migration statistics update: the impact of COVID-19*, 29th of January 2021
[894] *Ibidem*
[895] *Ibidem*
[896] NASA, *Climate Change: How Do We Know?* Accessed on the 6th of May 2021

However, even though the IPCC was founded in 1988, the issue of climate change only recently entered the political and legislative debate[897].

The beginning of the modern efforts to mitigate the effects of human activity on climate are to be set in 1952, when London was covered by a huge smog cloud and the English legislator consequently had to restrict the domestic coal burning[898]. During the 50s the American mothers became concerned about the effects of the nuclear irradiation on the health of their babies, but it was not until 1970 that, after the Santa Barbara oil spill and the Cuyahoga River burning, the US Environmental Protection Agency was founded[899]. It was becoming evident that the industries impacted not only on their local regions, but also on the global environment: for instance, invasive species, carried by long-distance transports, were beginning to threaten local species, with direct effects on human health[900].

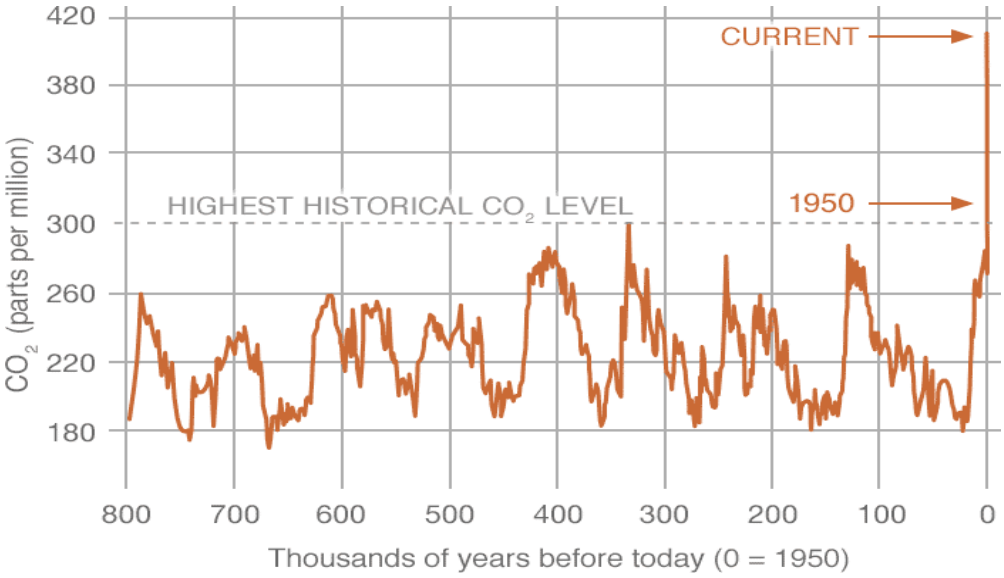

Figure 16: Carbon dioxide levels throughout history, NASA, Carbon dioxide, accessed on 11/05/2021.

For centuries, societies were influenced by climatic events: they had poorer individual life outcomes, but had little impact of the environment; conversely, in the era of the *Anthropocene*, humans improved individual outcomes but are causing systemic changes on the global environment. However, the "double-edged sword of science and industry"[901] gave humans the illusion to control Nature, but Nature is nonetheless impacting human society: the very symbol of the globalized society, air transport, "has made every local outbreak a new disease"[902], spreading worldwide new viruses resulting from the crossing of animal-human border. Interestingly, we will see how spill-over infections are becoming more frequent due to the invasions of animal habitats by humans and how migration can also be linked to the effects of human-induced climate change.

[897] Ebbs, S., *Experts call for climate change debate to move beyond settled science and focus on action,* ABC News, 22nd October 2020
[898] Brooke, J., *Growth beyond Limits: 1945 to Present*, in Climate Change and the Course of Global History: A Rough Journey, Studies in Environment and History, 529-558, Cambridge University Press, Cambridge, 2014
[899] *Ibidem*
[900] *Ibidem*
[901] *Ibidem*
[902] *Ibidem*

In NASA's opinion, the evidence of climate change can be found in the rise of temperatures connected to the oceans' warming, the shrinking of the ice sheets, the glacial retreat, the decreased snow cover, the sea level rise, the declining arctic sea ice, the increasingly common sea events and the ocean acidification[903]. The rise of temperatures is caused by the constant emissions of greenhouse gases (water vapor, nitrous oxide, methane, and carbon dioxide) produced by human activities, which trap the solar radiation within the atmosphere, thus warming the planet[904]. In addition to the proved effects of greenhouses gases emissions, studies also demonstrated that carbon dioxide concentration has never been higher for millennia (see figure 4), thus further confirming that human activities are responsible for the current global warming[905]. Even though we cannot give a precise percentage, there is a wide agreement among scientist of the anthropogenic origin of global warming[906]. Therefore, we will mainly focus on the effects of climate change on the European society.

Effects on the seas

First of all, as temperatures worldwide are rising, Arctic and Antarctic ice sheets and glaciers are melting and sea levels are rising[907], with effects on the coasts such as flooding and erosion[908]. The sea level rise is expected to have consequences on all low-lying coasts in absence of adaptation efforts[909]: however, this is not only true for tropical islands, but also for several kilometres of European coasts. Recently, for instance, the German Federal Court of Justice ruled that the 2019 law on climate change makes no sufficient provisions for cuts of carbon emissions, as stated by a young woman living on a small island in the north of the country: in her opinion, indeed, the effects of climate change will soon affect the island, as also reported by scientists. According to the studies, indeed, sea level might rise up to 80 cm by the end of the century in both southern England and northern Germany[910]. The largest share of damages relative to floods, however, is expected in Germany, France, Italy, the Netherlands, Belgium and the UK[911]. This will impact the economy and the communities living in these areas, which will be forced to migrate[912]. Moreover, the number of people exposed annually to coastal floods is expected to increase by fifteen and thirty times by 2100 and three European cities,

[903] NASA, *Climate Change: How Do We Know?* Cit.
[904] NASA, *The causes of Climate Change,* accessed on 06/05/2021
[905] NASA, *Carbon dioxide*, accessed on the 11th of May 2021
[906] NASA, *Scientific consensus: Earth climate is warming*, accessed on 06/05/2021; Herring, D., *Isn't there a lot of disagreement among climate scientists about global warming?* NOAA, Climate.gov, 3rd of February 2020; Powell, J., *Scientists Reach 100% Consensus on Anthropogenic Global Warming*, Bulletin of Science, Technology & Society, 37, 4,183-184, 2017
[907] Nerem, R. et al., *Climate-change–driven accelerated sea-level rise detected in the altimeter era,* PNAS February 27, 115, 9, 2022-2025, 2018
[908] European Commission, *Climate change consequences,* accessed on the 6th of May 2021
[909] *Ibidem*
[910] Grinsted, A., et al, *Sea level rise projections for northern Europe under RCP8.5,* Clim Res, Vol. 64, 15–23, 2015
[911] *Ibidem*
[912] Bosello, F., et al., *Economic impacts of climate change in Europe: sea-level rise,* Climatic Change, 112, 63–81, 2012

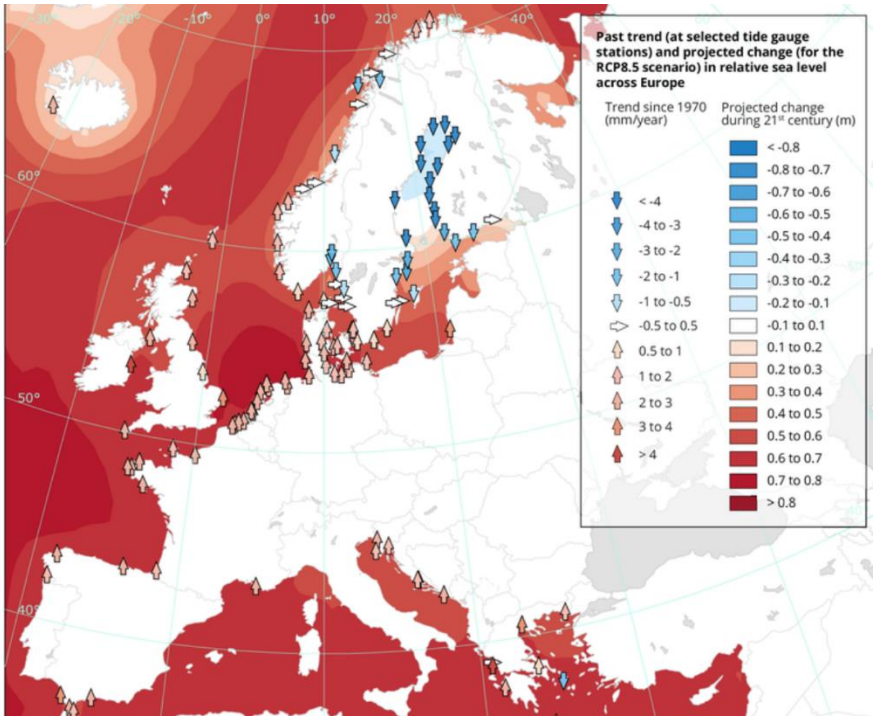

Figure 17: Projected change in the European costs. From: European Environment Agency

Naples, Marseilles, and Athens, are among the twenty cities that will be most affected by the flood damages by 2050[913].

The effects of global warming on seas are not confined to the rise of the sea level; in recent years, indeed, the oceans absorbed between one fifth and a third of the carbon dioxide emissions, causing the acidification of the seas[914]. As for Europe, this is both true for the Mediterranean Sea[915] and for the Atlantic Ocean[916]. The acidification of the sea impacts the ecosystems of the seas and biodiversity[917] but has also effects on human health: it causes respiratory problems because of the

	European regions*					
Physical impacts	Southern Europe	Central Europe South	Central Europe North	British Isles	Northern Europe	EU
Physical impacts as estimated by the agriculture model						
Yield change (%)†						
2.5 °C	0	5	−1	−9	37	3
3.9 °C	−12	5	−3	−11	39	−2
4.1 °C	−4	3	2	15	36	3
5.4 °C	−27	−3	−8	19	52	−10
Physical impacts as estimated by the river flooding model						
People affected (1,000s/y)‡						
2.5 °C	46	117	103	12	−2	276
3.9 °C	49	101	110	48	9	318
4.1 °C	9	84	119	43	−4	251
5.4 °C	−4	125	198	79	−3	396

Figure 18: Projected temperatures depending on the world mean temperatures. From: Ciscar, *J., Physical and economic consequences of climate change in Europe,* PNAS, 108, 7, 2678–2683, 20115

	Scenario			
	2.5 °C	3.9 °C	4.1 °C	5.4 °C
World population in 2100 (10^{12})	10.4	15.1	10.4	15.1
World GDP in 2100 (10^{12}, 1990 US$)	235	243	235	243
CO_2 concentration (ppm)	561	709	561	709
Δ Temperature (°C)*				
World	2.4	3.1	2.3	3.1
EU†	2.5	3.9	4.1	5.4
Southern Europe	2.6	4.1	4.3	5.6
Central Europe South	2.4	3.9	4.4	6.0
Central Europe North	2.3	3.7	4.0	5.5
British Isles	1.6	2.5	3.2	3.9
Northern Europe	2.9	4.1	3.6	4.7
Δ Precipitation (%)*				
EU†	1	−2	2	−6
Southern Europe	−7	−15	−13	−28
Central Europe South	2	−2	−4	−16
Central Europe North	3	1	6	−1
British Isles	−5	−2	10	5
Northern Europe	10	10	19	24
Sea level rise (high climate sensitivity) (cm)	49	56	51	59

Figure 19: Ciscar, *J., Physical and economic consequences of climate change in Europe,* PNAS, 108, 7, 2678–2683, 2011

[913] *Ibidem*
[914] Sabine, C., et al., *The Oceanic Sink for Anthropogenic CO2,* Science, 305, 5682, 367-371, 2004
[915] Hassoun, A., et al., *Acidification of the Mediterranean Sea from anthropogenic carbon penetration, Deep Sea Research Part I: Oceanographic Research Papers,* 102, 1-15, 2015
[916] Rios, A., et al., *Decadal acidification in the water masses of the Atlantic Ocean,* PNAS August 11, 112, 32, 9950-9955, 2015
[917] Guinotte, J., Fabry, V., *Ocean Acidification and Its Potential Effects on Marine Ecosystems*, *New York Academy of Sciences,* 1134, 320–342, 2008

aerosolization of toxins; it impacts the human well-being as it causes the loss of habitats; it reduces the possibility to obtain medicines and natural products important for human health; more importantly, it reduces the quantity and nutritional composition of seafood, thus leading to malnutrition, especially in the coastal communities[918].

Extreme events

Between 1980 and 2019, extreme events, such as "temperature extremes, heavy precipitation and droughts" caused the death of 92.119 people in Europe and economic losses for 11.1 billion per year; worryingly, according to the IPCC these extreme events will become even more frequent in the future [919]. Moreover, extreme droughts are projected to increase in severity, both in the moderate emission scenarios and in the extreme emission ones; southern and western Europe will be the regions with the heavier impact, while Northern Europe will nonetheless experience more droughts events during both spring and summer[920]. However, Northern Europe is the region that would experience the highest temperature increase if temperatures in Europe will rise of 2,5 °C on average by 2100; on the other hand, in case the mean global temperature rise would be of 5.5 °C, Southern Central Europe will be the region with the highest increase, 6 °C[921]. In this case, Northern Europe would be under heavier rains (+24%) and Southern Europe will experience less precipitations (-28%, see also Figure 5)[922].

These events will impact several human activities: among all, agriculture, which is dependent on temperatures and water. According to Ciscar et al., under the best scenarios, Southern and Central Europe would experience low yield losses, while in the worst scenario the region would see an important reduction in the yield production; Northern Europe, on the other hand, will be favoured by the rising temperatures in any case[923]. The Final report of the European Cooperation in Science and Technology claims that the Pannonian zone would be the most impacted too in agricultural terms[924].

Heavier rains, on the other hand, are projected to increase all over Europe; this does not mean that it will rain more, but that there will be higher intensity precipitations and longer dry periods in Europe[925]. Moreover, a recent study also claimed that there will be an intensification of short duration heavy rains exceeding the high

[918] Falkenberg, L. et al., *Ocean acidification and human health,*Int J Environ Res Public Health, 17, 12, 4563, 2020
[919] European Environment Agency, *Economic losses from climate-related extremes in Europe,* 16th of March 2021
[920] Spinoni, J., et al., *Will drought events become more frequent and severe in Europe?* Int. J. Climatol., 38: 1718–1736, 2018
[921] Ciscar, J., *Physical and economic consequences of climate change in Europe*, PNAS, 108, 7, 2678–2683, 2011
[922] *Ibidem*
[923] *Ibidem*
[924] COST Action 734, *Impact of climate change and variability on European agriculture'*, edited by Simone Orlandini, Pavol Nejedlik, Firenze University Press, Firenze 2012
[925] European Environment Agency, *Heavy precipitation in Europe,* 23rd February 2021

thresholds, leading to "flash floods"[926]. River floods, indeed, are estimated to increase and affect between 250.000 and 400.000 people per year by 2080[927].

Europe's first "climigrants"?

According to statistics, 47% of the Europeans claim that climate change represents a major threat to society and 41% of young Europeans think that they will have to move to another country because of global warming[928]. This is particularly evident among Southern and Eastern Europeans, 90% of which feel the impact of climate change on their lives[929]. Northern Europeans, on the other hand, are among those who do not feel the impact of climate change, notwithstanding the recent temperature records (Norway, for instance, experienced its warmest November since 1900)[930]. Indeed, scientists agree that the effects of the current climate change are already particularly evident in the Arctic and in the northern regions, where "the surface air temperature is increasing with a speed that is more than double the global average"[931]. Effects are already visible in the northern European lands and are already changing the habits of an indigenous population, the Sami.

The Sami are a nomadic people who has been living in Arctic Scandinavia and Lapland for centuries: even though no formal census based on ethnicity exists[932], it is widely accepted that there are approximately 100.000 Sami in this part of Europe[933]. Sami's historical occupation has been reindeer herding, which makes them highly dependent on the environment and makes them carry a nomadic life. Nowadays, however, only 10% of the Sami people are engaged in this occupation: this is due to sociological and climate change reasons. Indeed, more and more Sami are migrating, looking for new opportunities and this is due to the effects of climate change: we can thus consider the Sami as the first European "climigrants", migrants leaving their homes due to the effects of global warming.

The present effects of the climate change on this nomadic population, indeed, are twofold. From a strict point of view, since the Sami are reindeer herders, we must consider the said impact of rising temperatures on the environment, "food, predators and habitats"[934] as well as "changing vegetation"[935]. A warmer climate is increasing the risk of wildfires, as well as stress among humans and animals, animal-borne diseases, and

[926] *Ibidem*
[927] Ciscar, J., *Physical and economic consequences of climate change in Europe,* cit.
[928] European Investment Bank, *2019-2020 EIB climate survey,* accessed on the 6th of May 2021
[929] *Ibidem*
[930] Davis, S., *Europe's autumn 'the hottest on record amid world's warmest November',* 07th December 2020
[931] Yamanouchi, T., Takata K., Rapid change of the Arctic climate system and its global influences - Overview of GRENE Arctic climate change research project (2011–2016), Polar Science, 2020
[932] Kelman, I., Naess, M. W., *Climate Change and Displacement for Indigenous Communities in Arctic Scandinavia*, Center for International Climate and Environmental Research, Oslo, 2013
[933] Kelman, I., Naess, M. W., *Climate Change and Migration for Scandinavian Saami: A Review of Possible Impacts,* MDPI, 2019; Furber, M., Evengard B., Nilsson, M., *Facing the limit of resilience: perceptions of climate change among reindeer herding Sami in Sweden*, Global Health Action, 2019
[934] Kelman, I., Naess, M. W., *Climate Change and Migration for Scandinavian Saami: A Review of Possible Impacts,* cit.
[935] *Ibidem*

mental health problems related to the fear for future[936]. On the other hand, climate change is also making these northern lands more inhabitable, and an increasing number of people is deciding to settle there, also thanks to the Norwegian policy to settle Syrian refugees in this area[937] aimed to populate the region: a "*folkevandring"* (notably, the same word used by Germans to describe the *Migration period*) which is being studied by many scholars[938] and is changing the demography of the region.

Refugees, however, are not the only newcomers: while younger Sami generations are already leaving Lapland looking for "education, larger settlements, or more varied livelihoods"[939], it is "resource extraction [which] will bring major changes to Arctic Scandinavia"[940]. Sami, indeed, are now facing the competition of these new industries, which are reducing the lands for reindeer herding[941]. Nonetheless, despite the negative effects produced by the warm climate, Sami are not fierce opponents of the exploitation of their lands: they just want to be consulted so that all stakeholders could gain from resource extraction. In this sense, outmigration related to climate change "is not inevitable"[942] though linked to a successful mediation.

Nonetheless, previous societal changes and assimilation policies have contributed to the loss of heritage of Sami, making them even more vulnerable to the negative effects of climate change. Moreover, even though the Pandemic of Covid-19 did not affect the cross-border herding, it aroused worries about the price of reindeer's meat and about Sami's activities in general[943].

In conclusion, so far, the migration of the Sami communities is not due to the primary effects of climate change, but rather to the "social and governance factors which inhibit adaptation [to the climate change] that in turn forces people to migrate"[944]. It is to be expected, though, that the persistent effects of climate change will continue to affect the region, allowing new resource extraction activities and forcing the Sami – already partially rootless – to leave Lapland.

2.3.2 Facing the effects of Climate change from outside

The Sami migratory movement is not the only migratory movement triggered by Climate Change: indeed, Europe is already witnessing the arrival of migrants leaving due to environmental reasons. Sea level rise, coastal flooding, salinization of low-lying agricultural lands, rise in tropical cyclone and storm intensity, changes in rainfall regimes with consequences on the crop production, increase in temperature and more

[936] Jakkola, J., *The Holistic Effects of Climate Change on the Culture, Well-Being, and Health of the Saami, the Only Indigenous People in the European Union,* Curr Environ Health Rep.,5,4, 401-417, 2018
[937] *Ibidem*
[938] Naguib, N., Humanitarian Pluralism: *The Arctic Passage in an Age of Refugees*, International Journal of Middle East Studies, Cambridge University Press, 2016
[939] Kelman, I., Naess, M. W., *Climate Change and Displacement for Indigenous Communities in Arctic Scandinavia*, cit
[940] *Ibidem*
[941] Kelman, I., Naess, M. W., *Climate Change and Migration for Scandinavian Saami: A Review of Possible Impacts,* cit
[942] *Ibidem*
[943] The Arctic Council, *The impact of Covid-19 on Saami communities*, 2020
[944] Kelman, I., Naess, M. W., *Climate Change and Displacement for Indigenous Communities in Arctic Scandinavia,* cit.

frequent fires, changes in chemistry affecting agricultural production and maritime ecosystems, are "heavily felt in poorer countries" and, in the words of the European Parliament, are "likely to influence migration drivers"[945]. In some African and Asian countries out and in-migration are already indirectly triggered by climate changes through wages and agricultural productivity: therefore, even though "individuals may still see their migration decisions primarily as economically motivated, deteriorating environmental conditions can be linked to migration dynamics by analysing the impact of environmental change on the economy"[946]. While it is evident that extreme natural events can impact a local community, with direct effects on the crop production, for instance, there are also indirect links between climate change and conflict-related displacement. We will thus focus on them.

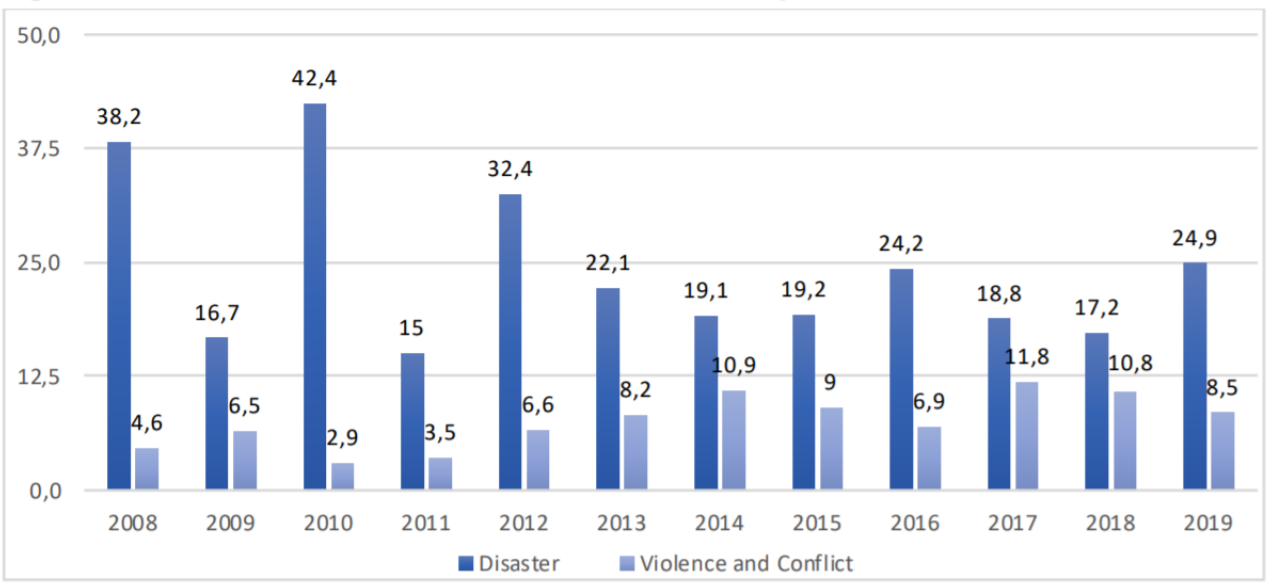

Figure 20: Disaster and conflict related internal displacement, from Kraler, A., et al., Climate Change and Migration: Legal and policy challenges and responses to environmentally induced migration, Policy Department for Citizens' Rights and Constitutional Affairs Directorate-General for Internal Policies, European Parliament, 2020.

According to Black et al., we can list five drivers of migration: economic, political, demographic, social and environmental ones[947]. However, the presence of drivers of migration does not mean that migration will actually take place, since it is the result of the decision of a single individual; age, sex, educational level, wealth…these factors, indeed, also play a role in the decision and so do family characteristics, barriers and facilitators. Nonetheless, climate change might influence both economic, political, demographic, and social drivers, even though there is no agreement on the matter (at least, not for all the drivers). We will therefore

[945] Kraler, A., et al., *Climate Change and Migration: Legal and policy challenges and responses to environmentally induced migration,* Policy Department for Citizens' Rights and Constitutional Affairs Directorate-General for Internal Policies, European Parliament, 2020

[946] *Ibidem*

[947] Black, R., et al., The effect of environmental change on human migration, Global Environmental Change, 21,1, S3–S11, 2011

focus again on the countries of origin of the migrants arriving in Europe, looking for evidence of the effects of climate change on the decisions to migrate.

West Africa

Africa is considered – along with Asia – the Continent that will be most severely affected by climate change. Moreover, it is also important to consider that the 65% of Sub-Saharan labour force is linked to rain-fed agriculture[948] and that the number of unnourished people increased by 45% since 2012: Sub-Saharan Africa, indeed, is a region severely affected by droughts[949]. However, as stated above, we must consider that the decision to migrate results from a series of reasons, but research is revealing how environmental factors are playing a role in the migration from several West African countries: Lake Chad's drying, for instance, with its consequences, could be considered as a driver of outmigration[950]. In Mali, extreme climatic conditions contributed to the decline of Lake Faguibine, completely dry for 21 years between 1976 and 2008; this led 200.000 people to abandon their livelihoods, transforming the traditional economy[951]. Moreover, river flows in Niger, Senegal, and Gambia dropped by 25 to 60% over the last 30 years. In addition, the increasing outbreaks of malaria have been linked to unusual heavy rainfall, after which they usually occur[952], while, more importantly, consequences of the same unusual heavy rainfall are also the floods that were documented in the region in recent years, which led to the displacement of hundreds of thousands of people and to major crop losses, thus raising the prices of rice, corn, and wheat[953]. The 2007 flood in Ghana, for instance, caused the loss of 260.000 metric tons of cereals and food items, while 330.000 people were forced to leave their homes[954].

Furthermore, climate changes effects have also been noted in the Guinean Gulf, where 56% of the coastlines in Benin, Cote d'Ivoire, Senegal and Togo are already eroding, with consequences on the cultivations that occur near the coast[955] but also on the migration of fish stocks[956]; extreme fishing by foreign trawlers, as said before, is thus pejorating a situation made worse by climate change. We have to bear in mind, indeed, that 4.8 million people in West Africa rely on fishing for their livelihoods[957]. Extreme weather events, therefore, might be at the basis of the decision to leave, as they impact the agriculture, affecting the subsistence economy but also raising prices. Moreover, new studies are linking the effects of climate change to the other main driver of outmigration in the region: conflict and violence.

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[948] Freeman,L., *Environmental Change, Migration, and Conflict in Africa: A Critical Examination of the Interconnections*, Journal of Environment & Development 26,4, 2017

[949] United Nations Climate Change, *Climate Change Is an Increasing Threat to Africa,* 27th of October 2020

[950] Freeman,L., Environmental Change, Migration, and Conflict in Africa: A Critical Examination of the Interconnections, cit.

[951] United Nations Environment Programme, *Livelihood security: climate change, migration and conflict in the Sahel,* 2011

[952] United Nations Climate Change, *Climate Change Is an Increasing Threat to Africa,* cit.

[953] United Nations Environment Programme, *Livelihood security: climate change, migration and conflict in the Sahel,* cit.

[954] *Ibidem*

[955] *Ibidem*

[956] Lovei, M., *Climate Impacts on African Fisheries: The Imperative to Understand and Act*, World Bank Blog, 11th of November 2017

[957] Muggah, R., *In West Africa, Climate Change Equals Conflict,* Foreign Policy, 21st of February 2021

According to several authors, indeed, there might be a connection between climate change and violence in the crucial region of Lake Chad, which borders Cameroon, Chad, Niger and Nigeria. Starting from 2009, clashes between armed groups destabilized the area and created 2.5 million refugees: Janani Vivekananda, senior adviser for Climate Change and Peacebuilding at Adelphi, claims that this is due to the increasing and unpredictable rainfalls that, with their effects on agriculture, are increasing tensions and exacerbating problems, triggering competition for the increasingly scarce natural resources[958]. Youth people are thus forced to leave their lands, but as they lack education and skills necessary to find a job in urban areas, they are driven into poverty: poor and marginalized, they easily become prey of radical groups such as Boko Haram[959].

Moreover, even before the birth of Boko Haram, a terrorist group which is terrorizing the region, there was a growing competition for lands between opposite groups, such as pastoralists and farmers. Pastoralists, indeed, which are almost 25 million in Sahel, depend on weather, which is changing: dry seasons are longer, and rainfalls are less regular, thus posing the problem of reduced access to water[960]. Competition is also increasing on the coasts, both among fishermen[961] and also between fishermen and coastal guards[962].

Therefore, it is becoming evident how climate change, exacerbating existing fragilities, increases the attractiveness of the financial incentives provided by the armed and terrorist group such as Boko Haram[963], but also triggers small conflicts which might also lead to escalations[964].

Eastern Africa

When dealing with drivers of migration from Eastern Africa we mentioned the case of South Sudan, where 95% of the population is dependent on agriculture, fisheries and forestry resources, thus be highly susceptible to climate change. We also dealt with Somalia, where drought caused the displacement of millions of people. Eastern Africa, indeed, is no new to droughts: in 2011, 13.5 million people across Somalia, Kenya and Djibouti were suffering the effects of the droughts of the past years[965] and in 2019, when another drought occurred, the number raised to 15.3 million[966]. Moreover, other droughts also took place between 2017 and 2015[967] and previously in 2009, 2008, 2006, 2005, 2001, 2000 and in the 90s[968]. It should be said that droughts are endemic to the Horn of Africa and that the local societies adapted and migrated across the region for centuries, keeping

[958] Vivekananda, J., *Climate Change and the Conflict Trap in Lake Chad,* ISPI online, 19th of March 2020
[959] Onya, C., *Climate Change and Conflict in Nigeria: The Boko Haram Challenge,* American International Journal of Social Science, 4, 2, 2015
[960] Muggah, R., *In West Africa, Climate Change Equals Conflict,* cit.
[961] United Nations Environment Programme, *Livelihood security: climate change, migration and conflict in the Sahel,* cit.
[962] Muggah, R., *In West Africa, Climate Change Equals Conflict,* cit.
[963] *Ibidem*
[964] United Nations Environment Programme, *Livelihood security: climate change, migration and conflict in the Sahel,* cit.
[965] International Federation of Red Cross and Red Crescent Societies, *Drought in the Horn of Africa. Preventing the next disaster,* 2011
[966] Goldenberg, M., *Drought in the Horn of Africa is threatening 15 Million People,* UN Dispatch, 5th of August 2019
[967] Internal Displacement Monitoring Center, *Recommendations for addressing drought displacement in Ethiopia*, 2021
[968] International Federation of Red Cross and Red Crescent Societies, *Drought in the Horn of Africa. Preventing the next disaster,* cit.

emergency wells and remembering where water and pasture were; it should be said too, however, that several – non climatic – factors are changing the region, impacting the livelihoods of its inhabitants[969]. Borders are preventing migration, while enclosures are limiting the access to wells, and conflicts over the lands are exacerbating the situation as pastoralist clashes often turn into serious conflicts[970]. Tensions already present in the Horn of Africa are thus aggravated by the worsening effects of climate change. According to IOM, indeed, there were 1.7 million IDPs in Ethiopia at the end of 2019: 489,359 of them were due to climate-related events, while the rest had to leave their homes because of conflicts[971].

As for Somalia, 2.6 million people are actually displaced inside the country, and UNHCR argues that they had to leave their homes "mainly due to conflict, but increasingly due to climate-related shocks such as severe droughts and flooding": indeed, 70% of the 1.3 million new Somali refugees in 2020 were driven by flooding[972]. In addition, over the past thirty years, the country not only experienced severe droughts, but also fifteen tropical storms and cyclones as well as flash floods: experts claim that they are part of the stronger storms caused by climate change and warmer ocean temperatures[973]. When cyclone Gati arrived in Somalia in November 2020, 46.000 people had to leave their homes[974].

Moving north, statistics show that in South Sudan there are 1.67 IDPs: 15% of which due to natural disasters, 20% because of communal clashes and 62% had to leave in consequence of the national conflict[975].

South Sudan was also important to mention because of a recent research according to which conflict is more likely to take place where floods and droughts are more probable[976]. Once again, we find a nexus between climate change and conflict: interestingly, a 2014 research show that droughts and livestock losses make people more susceptible to recruitment by Al-Shabaab, a Somali terrorist group[977]. Moreover, as in the case of West Africa, changing pastoral mobility patterns, linked to changing environmental conditions, might degenerate in conflicts among pastoralists; in addition, low-scale conflicts, also related to climatic shifts, might also be exacerbated by politics, as in the Darfur conflict (2003-2009), when tensions between farmers and nomads were used to co-opt the nomads in the Janjaweed militia, or in Kenya, where the Moi regime used the land grievances between pastorals and farmers for political scopes[978]. In general, Assistant Professor van Balen and Senior Research Office Mobjörk claimed that there is a link between hot temperatures and violent conflict in East Africa; for instance, "in Somalia, abnormally high temperatures and drought cause herders to sell more

[969] *Ibidem*
[970] *Ibidem*
[971] Portail sur les données migratoires, *Migration data in Eastern Africa,* cit.
[972] UNHCR, *UNHCR airlift supplies to assist thousands of Somalis displaced by Cyclone Gati,* 18th December 2020
[973] *Ibidem*
[974] *Ibidem*
[975] Portail sur les données migratoires, *Migration data in Eastern Africa,* cit.
[976] Putoto, G., *Environmental Vulnerability: South Sudan's Endgame*, cit.
[977] Abshir, S., *Climate change and security in the Horn of Africa: can Europe help to reduce the risk?* European Institute of Peace, 2020
[978] *Ibidem*

of their livestock than under normal conditions, causing an oversupply of low-quality animals that depresses prices in local consumer markets. This increases the risk of violent conflict between groups by triggering economic price shocks"[979]. Livelihood losses, therefore, contribute to conflict in the fact that they aggravate tensions on resource sharing and push people to join armed groups. However, this does not mean that violence "automatically follows when peoples' livelihoods are under stress"; nonetheless slow environmental change would give people more time to negotiate resource access and develop cooperation[980]. On the other hand, a rapid climate change is increasing tensions and damaging the economy, forcing people to migrate before developing adaptation strategies: many of the African migrants, as we have seen, try to reach Europe, while other leave for other African countries.

Middle East and Asia

An analysis carried out by Zhang et al. confirmed that the Middle East region is experiencing a warming trend since the 70s: cold days are diminishing, while warm days are intensifying, with a sudden sharp increase in the 90s (recorded in South and Central Asia too)[981]. The warming weather is also reflected in the number of droughts, the most severe of which, according to Barlow et al., were the ones of 1999-2001 and 2007-2008 (see also Figure 7)[982]. Moreover, as for the Middle East region, climate is projected to become drier in the future and the Fertile Crescent might even disappear by the end of the century: this is worrying as the region is already experiencing significant water stress[983].

Kyrgyzstan	2009
Turkmenistan	
Uzbekistan	2000/01
Tajikistan	2000/01, 2008
Afghanistan	1969, 1971–73, 2000–02, 2006, 2008, 2011
Pakistan	1999–2003
Syria	1999–2000, 2008–10
Lebanon	
Israel	1999
Saudi Arabia	
Iraq	1969–71, 1998–2001
Iran	1964, 1999–2001
Jordan	1999, 2000
Kuwait	
Yemen	1969–71, 1975, 1977

Figure 21: List of the most severe droughts in the Middle East region, Barlow, M., et al., A Review of Drought in the Middle East and Southwest Asia, Journal of Climate, 29(23), 8547-8574, 2016

Drought, on the other hand, is linked to food insecurity. UN reports that in the Middle East the rain-fed crops are highly influenced by droughts; the current climate change is thus decreasing yields and vegetation in pasture lands, which in turn affects cattle[984]. Moreover, this also affects both the families and the overall economy, as for instance, agriculture accounted for about 25% of the Syrian GDP before the 2007-2010 drought that affected the country. However, agriculture production decreased in the whole Middle East after the 2010 drought [985].

[979] van Baalen, S., Mobjörk, M., *A coming anarchy? Pathways from climate change to violent conflict in East Africa*, Stockholm International Peace Research Institute & The Swedish Institute of International Affairs, 2016
[980] *Ibidem*
[981] Zhang, X., et al., *Trends in Middle East climate extreme indices from 1950 to 2003,* Journal of Geophysical Research, 110, 22, 2005
[982] Barlow, M., et al., *A Review of Drought in the Middle East and Southwest Asia*, Journal of Climate, 29(23), 8547-8574, 2016
[983] *Ibidem*
[984] Haamed, M., *Drought and food security in the middle east: An analytical framework,* Agricultural and Forest Meteorology, 281, 2020
[985] *Ibidem*

In the period between 1998 and 2006, Afghanistan experienced the most extreme drought in its climate history; this caused losses of crops and cattle, and also raised prices. In 2018, 43% of the rural population (9.8 million people) was in food crisis; an year later, 287.000 people became IDPs because of the drought and it was estimated that 13.5 million people were food insecure; moreover, floods caused by unusual rainfalls damaged villages and crop. This is a serious matter as the 85% of the population relies on agriculture[986].

Droughts in the region are projected to be more frequent in the future, due to the effects on climate change, and this will probably exacerbate the socio-political tensions[987]. Indeed, there is a wide literature which links the outbreak of the Syrian Civil War, and the consequent destabilizing situation in the Fertile Crescent, with the 2007-2010 drought we mentioned before[988]: we will now focus on the matter.

Already in 2009, a study argued that "shifting rainfall patterns, spreading desertification, and falling agricultural productivity are likely to undermine rural livelihoods, worsen job prospects in rural areas and accelerate migration to urban areas. This could strain services in cities and lead to increased resentment of existing refugee populations"[989]. The authors of the abovementioned study then focused their attention on Syria, where they claimed that "the 2007/8 drought caused significant hardship in rural areas [...] In the northeast of the country, a reported 160 villages have been entirely abandoned and the inhabitants have had to move to urban areas"[990]. Two years later, in 2011, the civil war broke out. Later on, other authors, as said, attempted to find a link between the Syrian Civil War and the drought: indeed, the entire region, in the words of the author of the aforementioned study, Brown and Crawford, already experienced decades of bloody wars and climate change could only exacerbate the situation in several ways[991]. Before the Syrian Civil War the Levant, indeed, was already struggling with "scarce water, food insecurity and erratic economic growth, each of which could be exacerbated by climate change" as it could increase competition for scarce water resources, intensify food insecurity, worsening poverty and social instability, force migration and trigger further tensions, increase militarization and lead to additional mistrust towards the West, in the words of Brown and Crowford[992]. Again, interestingly, this escalation effectively took place in Syria. However, before going on,

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[986] Prívara, A., Prívarová, M., Nexus between Climate Change, Displacement and Conflict: Afghanistan Case, Sustainability, 11, 5586, 2019

[987] Cook, B., et al., *Spatiotemporal drought variability in the Mediterranean over the last 900 years*, J Geophys Res Atmos, 121, 5, 2060–2074, 2016

[988] Gleick, P., *Water, Drought, Climate Change, and Conflict in Syria,* Weather, Climate, and Society, 6, 3, 331-340, 2014; Feitelson, E., Tubi, A., *A main driver or an intermediate variable? Climate change, water and security in the Middle East*, Global Environmental Change, 44, 39-48, 2017; Brown, O., Crawford, A., *Rising Temperatures, Rising Tensions - Climate change and the risk of violent conflict in the Middle East,* International Institute for Sustainable Development, 2009; Saha, S., How climate change could exacerbate conflict in the Middle East, Atlantic Council, 14th of May 2019; Fischetti, M., *Climate Change Hastened Syria's Civil War,* Scientific American, 2nd of March 2015; Kelley, C. et al., *Climate change in the Fertile Crescent and implications of the recent Syrian drought,* PNAS, 112, 11, 3241-3246, 2015

[989] Brown, O., Crawford, A., *Rising Temperatures, Rising Tensions - Climate change and the risk of violent conflict in the Middle East,* cit.

[990] *Ibidem*

[991] *Ibidem*

[992] *Ibidem*

we should also include in the picture the neighbouring Iraq, whose western part is highly dependent on the Euphrates river; importantly, its upstream course is used both by Syria and Turkey use for irrigation purposes[993]. The two Gulf War clearly affected the water management and since Iraq was already experiencing social tensions since 2003, the 2007-2010 drought also interacted with an already destabilized socio-economic environment[994]. During the drought, agricultural production dropped (wheat production by 47% and barleycorn one by 67%), several herders lost more than 80% of the cattle; finally, prices increased and so did malnutrition and diseases among children. Even though the Syrian government appealed to the UN, only a small part of the funds was received, and soon 1.5 million people left the Northeast for the towns, while an equivalent number of Iraqi refugees were doing the same, triggering an increase in the urban population: the illegal tent camps where they settled had limited access to infrastructure and refugees received little or no aid from the Government, and could find no jobs. These cities became the centres of the developing social tensions, which where the seeds of the Syrian civil war; meanwhile, in neighbouring Iraq, the same drought forced people to leave their homes, increasing grievances against the Government and creating the bases for the spill-over of the conflict to northern Iraq. Then, with the outbreak of ISIL, the dams on the Euphrates became a weapon in the hands of the terrorist group[995]. Lastly, it is interesting to mention the response of a woman, questioned about a possible correlation between climate change and revolution: "Of course. The drought and unemployment were important in pushing people toward revolution. When the drought happened, we could handle it for two years, and then we said, 'It's enough'[996].

Remarkably, other studies also find possible links between changing climatic conditions and the *Arab springs*. It should be said that higher food prices were only an "aggravating factor" for the people to demand change and that the riots that took place in the MENA region in 2011 should not be described as "bread riots". Nonetheless, protests in Algeria were actually triggered by higher prices for basic goods, people were tired of inflation in Tunisia and even in Egypt families spent 40% of their income on food due to the rising inflation[997]. Climate change with its consequences, therefore, acted as a "threat multiplier" in North Africa too[998]. Indeed, in the region, climate changes contributed to inflation, triggering social grievance, already caused by water scarcity; both desertification and increasingly unpredictable and unusual rainfalls contributed and accelerated

[993] Feitelson, E., Tubi, A., *A main driver or an intermediate variable? Climate change, water and security in the Middle East,* cit
[994] *Ibidem*
[995] *Ibidem*
[996] ; Kelley, C. et al., *Climate change in the Fertile Crescent and implications of the recent Syrian drought,* cit.
[997] Johnstone, S., Mazo, J., *Global Warming and the Arab Spring*, in The Arab Spring and Climate Change, A Climate and Security Correlations Series, Edited by Caitlin E. Werrell and Francesco Femia, Center for American Progress, Stimson, The center for Climate and Security, 2013
[998] *Ibidem*

migratory flows, which on the other hand also exacerbated conflicts and damaged the capacity of the States to cope with the needs of the population[999].

As for Afghanistan, by "enhancing the attractiveness of poppy production, deteriorating climatic conditions are exacerbating insecurity and instability in Afghanistan"; the cultivation of opium, indeed, is associated with conflict and violence, as it is highly remunerative and funds anti-governments groups, thus contributing to the frailty of the State[1000]. Moreover, degradation and huge demographic growth are triggering competition for land, feeding historical conflicts like the one between sedentary Hazara and pastoralists Pashtun; the conflict seems also to be exploited by the Taliban, which provide weapons to the Pashtun in order to win land to secure routes for smuggled goods[1001]. Conflicts on natural resources are also part of a larger geopolitical picture, as, according to researcher Price, Iran is both financing the development of efficient water use and the Taliban, who destabilize the correct water division[1002]. We cannot therefore argue that climate change is fuelling violence in Afghanistan, but we can observe that, as in the other regions of the Middle East and North Africa, it is exacerbating pre-existent tensions.

Pakistan, which neighbours Afghanistan, is among the areas most affected by climate change due to the effects of drought and floods; remarkably, as in many of the analysed countries, 45% of the labour force is employed in agriculture[1003]. Climate change, migration and violence in Pakistan have been defined as linked by a "causal relationship": surveys, indeed, showed that droughts, heatwaves, floods, and disease are affecting people's livelihoods. Moreover, overpopulation, linked to migration, scarcity of lands, economic competition, and migration have a clear link with changing climatic conditions, and it was clear in the surveys that socioeconomic challenges, resource diminution, migrants and water insufficiency are the most common causes of conflicts in the region[1004].

Lastly, as for Bangladesh, we must say that climate factors are only one of the main drivers of migration, though it has been said that the country will be one of the most affected by climate change due to its geographical characteristics. Already in 2003, land and water scarcity were the main drivers of migration; the same study argued that the growing rural to urban migration, triggered by floods and droughts, would drive

[999] Werz, M., Hoffman, M., *Climate Change, Migration, and Conflict*, in The Arab Spring and Climate Change, A Climate and Security Correlations Series, Edited by Caitlin E. Werrell and Francesco Femia, Center for American Progress, Stimson, The center for Climate and Security, 2013

[1000] Prívara, A., Prívarová, M., *Nexus between Climate Change, Displacement and Conflict: Afghanistan Case*, cit.

[1001] Price, R*., Climate change as a driver of conflict in Afghanistan and other Fragile and Conflict Affected States,* K4D Helpdesk Report 527, Institute of Development Studies, Brighton, UK 2019

[1002] *Ibidem*

[1003] Fahad, S., Wang, S., *Climate change, vulnerability, and its impacts in rural Pakistan: a review,* Environmental Science and Pollution Research, 27, 1334–1338, 2020

[1004] Ali, F., et al., *Climate Change-Induced Conficts in Pakistan: From National to Individual Level,* Earth Systems and Environment, 2, 573–599, 2018

between 3 and 10 million people out of Bangladesh by 2040[1005]. In the period between 2005 and 2011 only, however, more than 3,5 million Bangladeshis left their country[1006]. In 2007, 9 million people remained homeless due to flooding[1007] and in 2020, the worst flood since 1988 inundated almost a million homes[1008], affecting 2.4 million people [1009] and inundating a third of the Bangladeshi territory[1010].

In conclusion, as studies agree that worsening climate conditions will negatively affect Bangladesh[1011], we may argue that the migrants arriving in Europe can be regarded as the first migrants that left also because of changing weather conditions.

2.3.3 Are we dealing with "ecodemics"?

In the first paragraph we saw that the twenty-first century pandemics were or are *zoonosis,* that is to say infections or diseases transmitted by animals to humans: the bubonic plague, SARS, MERS, HIV, Ebola, flu, and Covid-19 are all examples of zoonotic diseases[1012]. This kind of infections are caused by contacts with wild species, such as bats, monkeys, camels, and pangolins, just to mention some; however, even though humans hunted animals for millennia, according to WWF, bushmeat eating is increasing dramatically and so is doing wild animals trafficking[1013]. Both practices risk to transmit viruses to humans both because of wild animals' flesh consumption (Ebola's outbreaks have been linked to hunting and butchering of infected meats) and also because wild animals are frequently packed close together with poor hygienic conditions nearby human housing. Moreover, the fact that exotic animals are frequently sold together in markets increases the possibility of genetic recombination[1014]. Furthermore, it is also food insecurity – triggered by anthropogenic climate change's effects too – which often drives people to hunt exotic animals such as chimpanzees, hippopotamuses, and antelopes, particularly in Africa[1015]. So called "wet markets", one of which is also considered to be the starting point of the current Covid-19 Pandemic, are known for selling wild animals such as scorpions, crocodiles, monkeys, bats, rodents, insects and so on; however, these markets also feed millions of poor people both in Africa and Asia[1016]. On the other hand, we must also say that wildlife goods are a source

[1005] Mahmoeei, B., Parris, B., *Climate change and internal migration patterns in Bangladesh: an agent-based model,* Environment and Development Economics, 17,6, 763-780, 2012
[1006] Bundeszentral fur politische Bildung, *International Migration from Bangladesh,* 30th of November 2015
[1007] BBC, *Rivers and flooding: Case study: Bangladesh,* accessed on 10/05/2021
[1008] NASA, *Intense flooding in Bangladesh,* accessed on 10th of May 2021
[1009] OCHA, *Daily Noon Briefing Highlights: Bangladesh*, 27th of July 2020
[1010] Dhaka Tribune, *One-third of Bangladesh under water in worst floods in a decade*, 15th of July 2020
[1011] Mahmoeei, B., Parris, B., *Climate change and internal migration patterns in Bangladesh: an agent-based model,* cit.
[1012] Jeffries, B., The loss of Nature and the rise of pandemics, WWF, 2020
[1013] *Ibidem*
[1014] *Ibidem*
[1015] *Ibidem*
[1016] Vidal, J., *Destroyed Habitat Creates the Perfect Conditions for Coronavirus to Emerge*, COVID-19 may be just the beginning of mass pandemics, Scientific American, 18th of March 2020

of profit for many guerrilla groups such as Al Shabab and Boko Haram, among others[1017]; interestingly, we previously linked the emergence of these groups to changing climate conditions.

Importantly, spill-over is also favoured by the disruption of ecosystems, that is to say disruption of forests, intense mining, and increasing urbanization: together with rapid population growth, these actions are bringing people in closer contact with animals as it has never been before[1018]. However, urbanization is also increasing population density, thus facilitating the spread of a possible new virus. As pathogens do not respect species boundaries, humans are facilitating the outbreak of new viruses in the sense that they are creating new artificial habitats destroying the natural ones; in these shanty towns at the margin of the cities, people live in close contacts with the species that adapted to the new environment, such as rodents, bats and birds, which are the more likely to transmit new diseases to humans[1019].

Importantly, land-use change, deforestation, and modification of natural habitats too, are considered responsible for the outbreak of almost half of the zoonoses[1020]; however, deforestation and disruption of natural habitats not only indirectly damage humans by creating the possibility of new viruses' spill-over, but also because they contribute to climate change. Deforestation, indeed, as scientists demonstrated[1021], prevents the absorption by trees of the carbon dioxide produced by human activities; moreover, not only deforestation impacts the environment by eliminating a potential help against the emissions of CO2, but it produces carbon dioxide too, when cut trees are burnt. Indeed, between only two years, 2015 and 2017, the loss of tropical forests contributed to the creation of 4.8 billion tonnes of C02 per year (8-10% of global emissions)[1022]: for instance, if forests' burning were a State, they would rank third among the countries with the highest emissions' level[1023]. Furthermore, deforestation also alter rainfall pattern, further drying and heating the existing forests[1024].

Conclusion

We began this chapter wondering whether it was possible that the anthropogenic climate change could be the underlying factor of both the pandemics of the twenty-first century and the migrations we daily read of on the newspapers; throughout the analysis, however, we focused in depth on both the effects of the current pandemic

[1017] Brashares, J., et al., *Wildlife decline and social conflict. Policies aimed at reducing wildlife-related conflict must address the underlying causes*, Science Magazine, 345, 6159, 376-378, 2014
[1018] Vidal, J., *Destroyed Habitat Creates the Perfect Conditions for Coronavirus to Emerge, COVID-19 may be just the beginning of mass pandemics*, cit.
[1019] *Ibidem*
[1020] Jeffries, B., *The loss of Nature and the rise of pandemics*, cit.
[1021] Shukla, J., et al, *Amazon Deforestation and Climate Change*, Science, 247, 4948, 1322-1325, 1990
[1022] Dean, A., *Deforestation and climate change,* Climate Council, 21st of August 2019
[1023] Gibbs, D., et al., *By the Numbers: The Value of Tropical Forests in the Climate Change Equation,* World Resource Institute, 4th October 2018
[1024] Nunez, C., *Deforestation explained,* National Geographic, 7th of February 2019

of Covid-19 and on the migratory routes and the other factors that make people leave their homes. The decision to adopt such a holistic perspective was motivated by two purposes. First of all, it was necessary to analyse our historical era in all its facets in order to compare *our* period with the *Migration* period, which will be the subject of the next chapter. Moreover, since the current work is also aimed to provide possible policies to tackle the issue of climate change, it required an approach which would analyse global warming' effects on everyone's daily life. Pandemics, economic difficulties, increasing migratory waves, conflicts: these events might indeed become the normality, forcing people to leave their houses, or urging States to adopt restrictive measures to face new viruses.

In our analysis, however, we did not find any proof that climate change caused the current pandemic of Covid-19 nor that it is driving people towards the European shores. Nonetheless, we saw that climate change's effects, primarily droughts and floods, are already provoking displacement of people in many rural countries of Africa and South-east Asia, though not yet in Europe. We also acknowledged that disruption of habitats and deforestation, one of the driving factors of anthropogenic climate change, are also prerequisites for a zoonotic disease to evolve into a pandemic. On the other hand, we can nonetheless argue that the Covid-19 pandemic could have outbroken anyway, but we also observed that the probability of a zoonotic spill-over are increased by the disruption of habitats and this seems to be confirmed by the numerous epidemics/pandemics we witnessed in the last twenty years.

Furthermore, we considered that both a pandemic and the loss of fields and cultivations triggered by drought and floods provoke food insecurity and job losses; we also understood how these factors, in turn, might be "push factors", that is to say they might be incentives for people to leave their country. Moreover, we learnt that the same food insecurity can trigger disputes and conflicts, and also lead people to join armed groups; in addition, we acknowledged that conflicts could also trigger migration, but also that migration can cause conflicts, as for example between pastoralists and farmers in Africa and Asia. Therefore, migration and conflicts can cause each other.

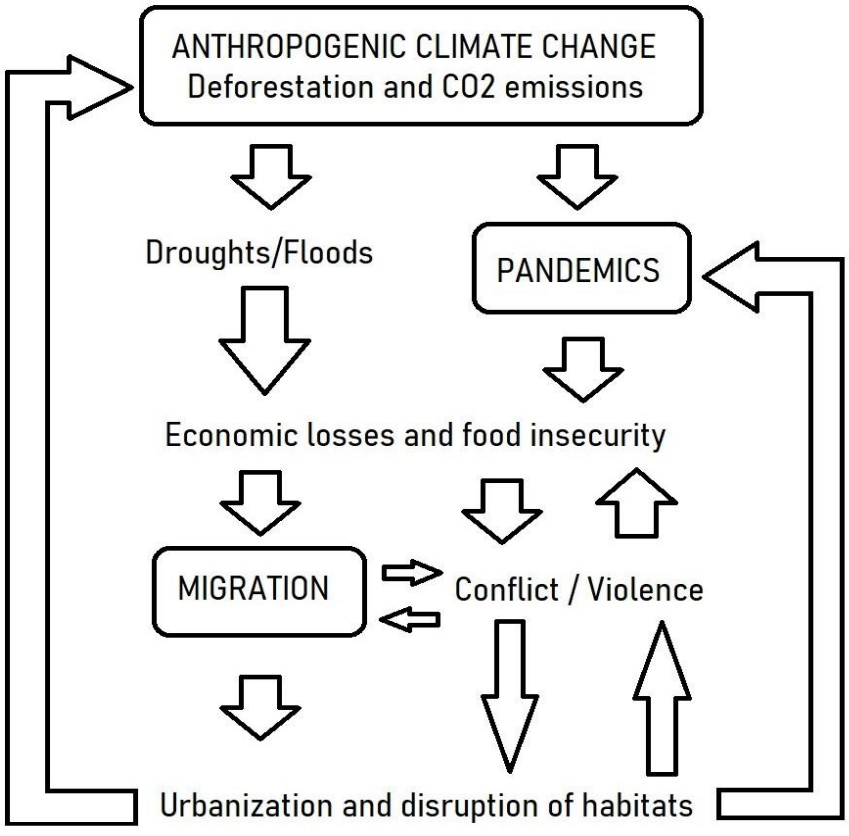
Finally, we saw how displaced people seek refuge in towns and villages, where, however, they risk being marginalized and therefore co-opted by armed groups such as Boko Haram or Al Shabaab, thus fuelling violence and triggering other displacements of people. Alternatively, they also face difficulties when finding a job, as happened to the many Syrian refugees that later manifested and revolted against the Assad regime. Importantly, IDPs and refugees, when converging into towns and cities, mainly settle in the suburbs and in makeshift shelters; by doing so, they contribute to the progressive urbanization of the environment. Moreover, as they live in poor conditions, they are at risk of contracting zoonosis, also because, as we have seen, wild flesh is also an important part of the diet of millions of people in South-east Asia and Africa. In addition, the progressive urbanization not only contributes to the loss of the environment (thus causing climate change), but

also to the rapid spread of zoonotic epidemics, as people live concentrated in small areas and in close contact with animals.

In conclusion, we can argue that the links we draw between these possible events do not mean that climate change *actually* cause conflicts, migrations, and pandemics. However, in the current study we saw that due to climate change already visible trends might become the normality in the next future. Even in Europe, climate change effects might provoke huge societal changes, as it is evident from the current analysis; moreover, Europe might also face new migratory waves, triggered by the worsening and more frequent droughts, floods and conflicts. We also have to consider that the great majority of asylum seekers and refugees is not in Europe, but rather in Africa, South America and the Middle East; however, as climatic conditions are going to worsen especially in Africa and in the Middle East, migrants might then converge in Europe. In addition, as urbanization will proceed, zoonotic pandemics might become more frequent, triggering further destabilization.

Global historians, therefore, must grasp the historical trends, in order to understand what the future holds: this will be the scope of the next chapter. We believe, indeed, that comparing the *Migration period* and our era can help foresee possible evolution and draw the necessary conclusions to provide possible policies that might help mitigate the effects of climate change.

Figure 22: Hypothesized links between Climate Change, Pandemics and Migrations



III. Are we living in another Migration Period?

The current research arises from a question: are we living in another Migration Period? Can we compare the Early Medieval Ages with the Contemporary Era? Can we find some similarities between the events of the said historical period and our time? Are populations moving for the same reasons and could have the Justinian Plague provoked the same effects of the Covid-19 pandemic? Ultimately, can we learn from the past and provide policies that can cope with the epochal challenges we will face in the next future?

3.1 Past, Present, Future

3.1.1 Two pandemics, one common trend?

In the first chapter we labelled the period of the Justinian Plague as "a *caesura*" between the Roman period and the Middle Ages: this definition was motivated by the fact that the pandemic left a mark on the society of that time, not only for its elevated death toll, but also for its socio-economic effects. Nowadays, despite we are still facing the Covid 19 pandemic, we may argue that it will change contemporary society; for instance in such a short time we have learnt how to work and study from home, and we also had to cope with social distancing, thus abruptly changing our habits. However, we could argue that even though the first outbreak of Covid-19 was recorded less than two years ago, we have already vaccinated more than a seventh of the world's population, while the Justinian Plague outbreaks lasted for centuries. On the other hand, such an historical comparison, is not only relevant to grasp similarities and common trends in the reaction of mankind to pandemics; it is also useful to foresee possible evolutions, as said in the previous chapter. In addition, the task is made more urgent by the issue of anthropogenic climate change.

As we have seen, Covid-19 was not the first pandemic of the twentieth century, but it will be certainly remembered for its impact on our society because we were not able to learn from the past epidemics/pandemics; indeed, in the past few years, we have learnt that zoonotic diseases' spill-over might become more frequent in the future if we continued to disrupt natural habitats. Sars-CoV-3 might be already hiding in some tropical forest, waiting for a bulldozer to chop down a bat's tree.

At the same time, we have seen that changing climatic conditions might have been at the basis of the Justinian Pandemic. Importantly, they could have also driven populations out of the Plague's natural foci, thus creating the potential for the spread of the pestis. However, plague is a zoonotic disease too and it spills over to humans in the same manner as Covid-19 and the other pandemics did. Besides, even though it is transmitted among humans in a different way, it probably spread due to migratory flows or via trade routes, which at the time connected people of different parts of the world.-Furthermore, in spite of the differences, the Justinian Plague and the Covid-19 pandemic have had similar impacts on the societies of their times. In this sense, comparing

two distant pandemics can make us understand how a society might avoid heavy impacts both on the macro and on the micro level: the comparative work of global historians is thus becoming extremely important, in such a globalized society in which a small microorganism can provoke the lockdown of States with millions of inhabitants and history can provide us with examples from the past.

We don't know how the Justinian Plague arrived in Pelusium, though, since the city was an important port, we can hypothesise that it travelled by boat, the "main long-distance mean of transport of the time"[1025]. Conversely, as for Covid-19 and the other 21st century's pandemic, there is little doubt that plane helped spreading the viruses, whence the "travel ban" imposed by several countries on flights coming from China in early 2020. However, since a disease usually needs an incubation period before the onset of symptoms, the virus can spread unnoticed until it is detected for the first time; consequently, travel restrictions serve the purpose of avoiding *new* outbreaks rather than preventing the virus from arriving. Just to give an example, 759,493 people coming from China entered the USA in the period between December 2019 (when the virus probably emerged) and February 2020 (when the travel ban was issued)[1026], thus probably unwittingly carrying the virus with them. The plane, indeed, "has made every local outbreak a new disease"[1027], as said above; the ship, on the other hand, can be even considered a form of quarantine for the length of the journey, though it did not prevent the disease to spread. However, while the virus may have taken less than one year to get to Constantinople, the capital of the Byzantine Empire, it took a little less than one day to arrive from Wuhan to New York. This gives the idea of a globalized world in which events are "accelerated" and so are trends, hence again the importance of comparison to foresee possible evolutions.

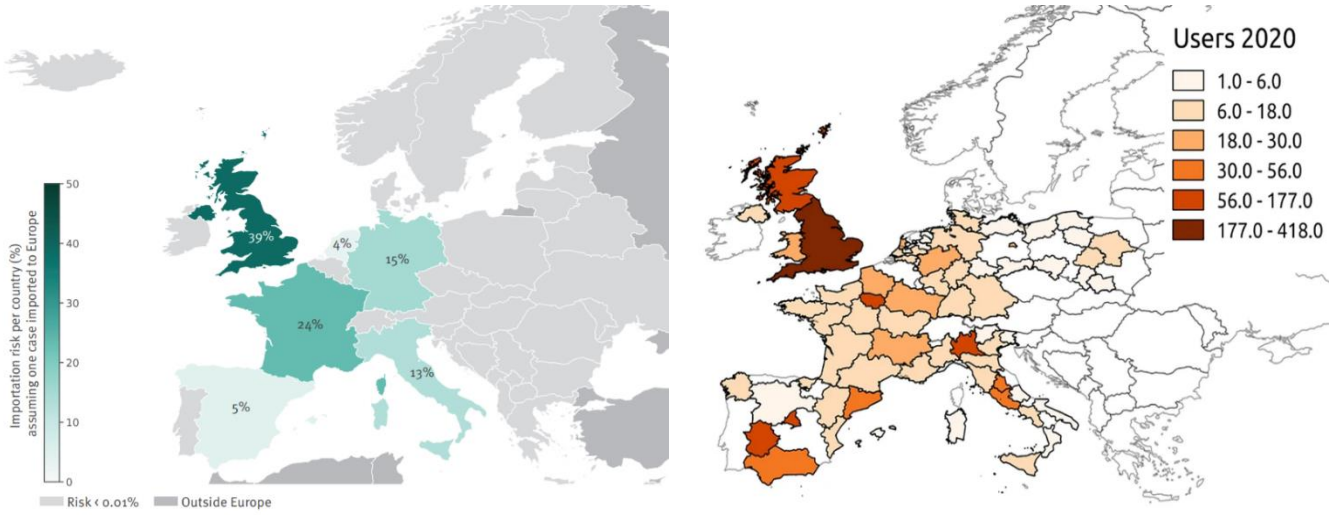


*Figure 23: **Left**: Geo-localization of tweets containing the words "pneumonia", from: Lopreite, M., Early warnings of COVID-19 outbreaks across Europe from social media, Scientific Reports, 11, 2147, 2021; **Right**: probability of risk of importing Covid-19 cases depending on the number of connections between Europe and the Chinese city of Wuhan, from: Pullano, G., et al., Novel coronavirus (2019-nCoV) early-stage importation risk to Europe, Euro Surveill., 25,4, 2020.*

[1025] *See chapter I, page 2*

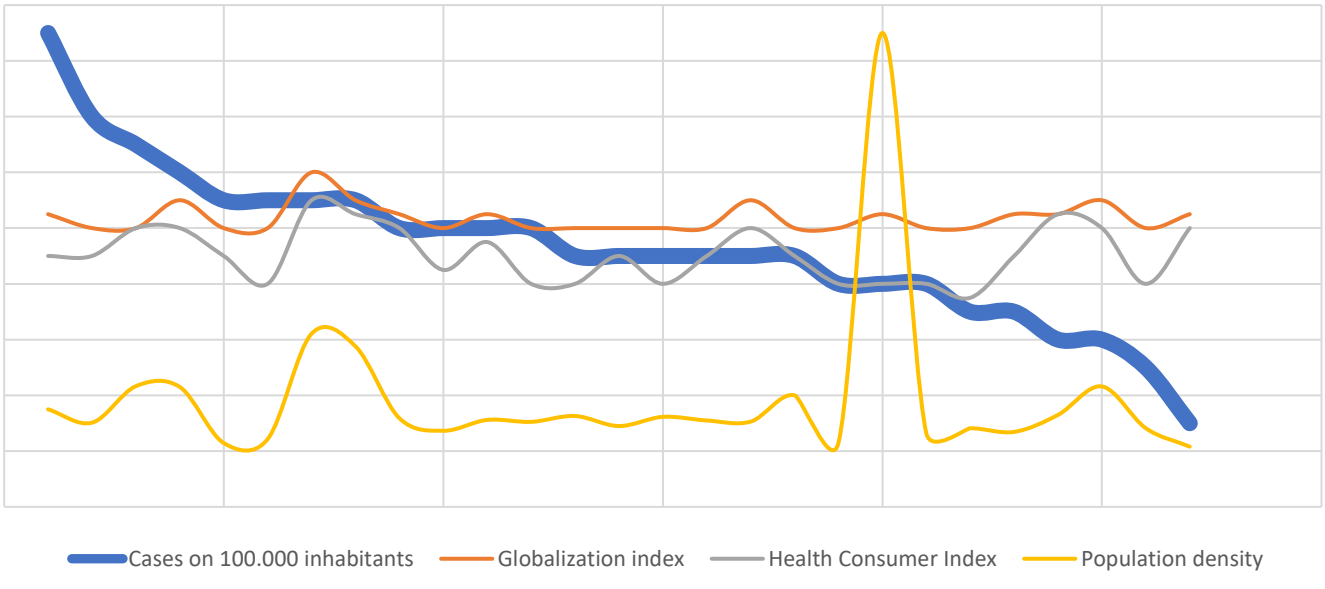
[1026] Thomas, P., et al., *Disaster in motion: 3.4 million travelers poured into US as coronavirus pandemic erupted*, ABC News, 2nd of April 2020

[1027] Brooke, J., *Growth beyond Limits: 1945 to Present*, cit.

Once arrived in Constantinople in 542, the Plague spread all over the Mediterranean and beyond; the virus, indeed, probably travelled mainly along the trade routes, the roads of globalization in that era. This assertion is reinforced by the fact that several chronicles of the time argued that some regions were left untouched by the pandemic, while they claimed that cities along the rivers or by the sea recorded several outbreaks. Similarly, we can imagine that economic connections may have played a role in the outbreaks in the first part of the pandemic of Covid-19: indeed, a study dating to the 23rd of January 2020[1028] – the day in which the travel ban on the Chinese city of Wuhan was issued – claimed that the risks of importing cases from China based on the Europe-Wuhan networks were higher for Great Britain (39%), France (24%), Germany (15%), Italy (13%), Spain (5%) and the Netherlands (4%)[1029]. Interestingly, a research based on the geo-localization of tweets containing the word "pneumonia"[1030] before the official outbreaks of Covid-19 both in China and Europe seems to confirm that these countries might have recorded undetected cases of the disease consistently with the number of networks with China. The Netherlands, Germany, UK, France, Italy and Spain are, indeed, the European countries with the largest import share from China[1031].

However, in the long run, this type of hypothesis does not hold; once the travel ban was issued, indeed, the number of cases evolved independently of imports or arrivals from China. At present, the European countries with the highest incidence of Covid-19 are Croatia, Slovenia, Luxembourg, and Sweden[1032]. Therefore, in order to find a possible explanation for the number of cases, we compared the incidence on 100.000 inhabitants

Graph 1: Comparison between cases of Covid-19, Globalization Index, Health Consumer Index and Population density. Data from ECDC, Statista LUISS, Health Power House and Eurostat, May 2021



[1028] ECDC, *Timeline of ECDC's response to COVID-19,* accessed on 13th of May 2021
[1029] Pullano, G., et al., *Novel coronavirus (2019-nCoV) early-stage importation risk to Europe*, Euro Surveill., 25,4, 2020
[1030] Lopreite, M., *Early warnings of COVID-19 outbreaks across Europe from social media,* Scientific Reports, 11, 2147, 2021
[1031] Eurostat, *China-EU - international trade in goods statistics*, March 2021; Ward, M., *Statistics on UK trade with China,* House of Commons Library, 7379, 2020
[1032] Statista, *Incidence of coronavirus (COVID-19) cases in Europe as of May 9, 2021, by country,* 9th of May 2021

with the Globalization index (which aims to measure the number of international connections globally), the health consumer index and the population density.

We found a possible relation between the trend of the cases and the population density, though not a significant connection with the globalization index. Furthermore, we can however posit an inverse relationship between the health consumer index and the number of cases: the higher the index was, the lower the cases that were detected, though this is not completely true, as countries with an high index recorded high levels of cases too.

Therefore, we can conclude that political decision might have played a role in relation to the decisions to adopt strict or loose measures, as also stressed by the OECD, which claimed that the difference in the number of incidences might be explained with a "combination of density plus other factors such as a lack of appropriate measures"[1033]. We cannot make similar considerations for the Justinian Plague, but the conclusion we came to stress the importance of the task policy makers have to carry out in a period of crisis. Measuring the effects of the Plague in Early Medieval Europe, indeed, is complicated by the concurrence of wars and migrations but we can nonetheless highlight some interesting points of reflection.

Procopius and other historians, indeed, reported that Justinian appointed a *Referendarius*, who "supervised the matters"[1034]. In other words, we can argue that the Emperor aimed to centralize the management of the crisis; Justinian, indeed, had to cope not only with the increasing necessity to dig more burials, but with the demands of workers and with shortages as well.

As we saw throughout the analysis, indeed, both the Justinian plague and the Covid-19 pandemic had effects on the economy, from the general level of trade to the scarcity of goods. Just to give an example of the serious matter of shortages, we must recall that the ongoing global shortage of microchips is forcing several factories to close and it is motivated by the strains on global supply chains triggered by the pandemic; this can easily become a major problem, since microchips are the basis of cars, household appliances, and electronic devices[1035].

Moreover, both the pandemics brought social problems stemming from economic ones, which required a strong response by the State. Hence, the above-mentioned appointment of a *referendarius* in Justinian's time and the adoption of the State of emergency in contemporary Europe. However, as recently observed, pandemics and crisis might also pave the way for an authoritarian transformation of the State; this also happened in the past and we found evidence of a strengthening of the imperial power as a consequence of the rising protests during the first outbreak of the Plague. This is an interesting point on which we will return when dealing with migrants and climate change. Democracies, indeed, are designed to cope with crisis, and we can

[1033] OECD, *The territorial impact of COVID-19: Managing the crisis across levels of government,* 2020
[1034] John of Ephesus in Ps. Dyonisius of Tel-Mahre, Chronicle, Part III, cit.
[1035] Il Post, *La crisi dei microchip è sempre più grave,* 5th of April 2021

argue that Covid-19 only exacerbated existing trends in Hungary and Poland, but, as climate change might trigger more frequent crisis in the future, will democracies resist? We must not forget that the Empire also had to face not only a pandemic, but other crises and wars as well; nonetheless, in the near future Europe might face new migratory fluxes, possible climate-related conflicts as well as the consequences of climate change in its own territory. Moreover, both pandemics and these events could be at the basis of increasing waves of social unrest: protests indeed are already occurring in these days and they occurred in Justinian's time too.

As we will see in relation to migrations, crisis and pandemics might induce a society to adopt an inward-looking approach, closing to foreigners and to the outside world: this is what we grasped, for instance, from the first chapter when mentioning the general "fortification" of Europe's settlements. Such a reinforcement of defences, probably triggered by both the migratory movement and the acknowledgement that the Justinian Plague was coming from outside, might have led to a reorganization of the way of living. This seems to be proved by the abandonment of the *villae* and the sudden appearance of hillforts and it could have possibly led to a societal reorganization. Again, we will deal with this issue when focusing on migrations, but we can conceivably track the origins of feudalism, which started developing in the fifth and sixth century[1036], back to the effects of the plague: the rise in warrior bands protecting prominent men could have become necessary due to the general uncertainty provoked by the Plague's effect. Paul the Deacon, for instance, reports of deserted settlements and roads[1037] and although many people died, we are also told that many others sought refuge in other settlements or migrated, probably wandering across Europe.

Poverty and risk of poverty are another common problem of the two periods. Even nowadays, before the pandemic, 21% of the inhabitants of the European Union were at risk poverty[1038] and Covid-19 probably worsened the situation, as we have seen throughout the current research. Indeed, the most fragile people, from both an economic and health point of view, are those who pay the highest price in period of crisis. According to the World Bank, the Covid-19 pandemic will drive a further 150 million people in poverty by the end of 2020, 80% of which in middle income countries[1039]. This means that more and more people will experience difficulties not only with household expenses, but also with mortgages or rents[1040]: as for the USA, for instance, it was estimated that between 30 and 40 million people might have lost their house by the end of 2020[1041].

[1036] Ganshof, F., *Feudalism,* University of Toronto Press, Medieval Academy of America, 1996
[1037] *See chapter I, page 17*
[1038] Eurostat, *Over 20% of EU population at risk of poverty or social exclusion in 2019,* cit.
[1039] The World Bank, *COVID-19 to Add as Many as 150 Million Extreme Poor by 2021,* 7th of October 2020
[1040] Center on Budget and policy priorities, *Tracking the COVID-19 Recession's Effects on Food, Housing, and Employment Hardships,* 7th of May 2021
[1041] National Low Income Housing Coalition, *30-40 Million People in America Could Be Evicted from Their Homes by the End of 2020,* 7th of August 2020

What is more, this situation is impacting on a society which has not yet completely recovered from the economic crisis. Not surprisingly, it is becoming a common trend –for now mainly in the USA – to consider alternative forms of living such as vehicles; indeed, as claimed by Angus Duff and Scott Ranking, from the School of Economics of Thompson River University, increased housing costs and precarious work are causing people to choose to leave costly urban centres and return living with their families, buying or renting tiny apartments and building tiny homes[1042]. Therefore, we might be at the eve of a reorganization of spaces and living, as it also happened in Early Medieval Europe.

Another trend common to the two periods is the demographic decline: it is estimated that between the sixth century and 650 CE, European population fell from 27.5 million to 18 million[1043]. This was primarily reflected in the above-mentioned abandonment of fields and in the lack of people to bury the dead, but also in the decline of trade, with the ensuing economic effects. Similarly, Europe is facing a declining birth rate, which might have important consequences on the economy: according to Bloom et al., if fertility rate remains at current level, there will be a decline in the working age population and lower *per capita* income[1044]. Even though this trend was already evident before the pandemic, as we saw in the second chapter, the current socio-economic conditions might worsen and accentuate this decline.

From a sociological point of view, both pandemics have had important impacts on individuals. Important aggregation and cultural centres such as "theatres, hippodromes, and circuses […] were all discontinued": interestingly, this is not a contemporary description, but the account of the historian Procopius, which also describes phenomena of mass hysteria and vandalization of ~~the~~ cities. As previously mentioned, several contemporary research are focusing on the impact of closing schools and aggregation centres, and evaluating the effects that this might have on both health and future employment prospects as well as on early school leaving.

Moreover, pandemic-related episodes of mass hysteria and scapegoating, as described by the ancient sources too, are recorded. We can describe them as the natural reaction of a population which is forced to abandon its habits overnight. However, in such a globalized world, we are faced with the possibility that pandemics might become more frequent, imposing again lockdowns, social distancing, and restrictive measures that impact on social habits. If it will be so, will social cohesion vane?

It is often said that we will have to learn to live in a more digital world, working, studying, and meeting each other via web. However, from a sociological and philosophical point of view, might this be the solution? The

[1042] Duff, A., Rankin, S., *Exploring flexible home arrangements – an interview study of workers who live in vans,* Career Development International, 25, 7, 747-761

[1043] Josiah C., *Population in Europe* in: Carlo M. Cipolla, ed., The Fontana Economic History of Europe, Vol. I: The Middle Ages, 25-71, 1972

[1044] Bloom, D., et al., *The cost of low fertility in Europe,* National Bureau of Economic research, 2009

cognitive effects of social distancing on the children deprived of schooling seem to confirm that a further digitalization of schooling might be detrimental to health[1045]. Moreover, from a more practical point of view, this might exacerbate the digital divide, thus further excluding those who do not have access to internet, as also seen during local lockdowns. Furthermore, from an economic point of view, it is true that online shopping is developing, and retailers are mainly complementing their shops with online versions of their stores, but this process is also impacting on small producers, who have difficulties in giving visibility to their goods[1046].

Pandemics, therefore, might change our habits, but we should also consider *how* we want our habits to be changed. Importantly, indeed, pandemics also affect our intimate habits such as the relationship of men with the dead. This was also evident from the descriptions given by ancient sources, which report of mass graves and of the need to find burials for dead people: in the contemporary world, we cannot forget the images of the trucks transporting coffins in Bergamo[1047], the mass graves in New York[1048] and the huge number of pyres in India[1049]. The impact these images have had on society might be similar to the one on Procopius's contemporaries: as the historian reports, when the smell of buried corpses reached the city, it "distressed the inhabitants still more", thus probably hinting to a common sense of distress that is also evident from the narration of Pseudo-Dionysius, who tells of a man carrying a tablet with its name in case he dies[1050]. This description sounds extremely actual and resembles the one of those people who died in hospitals, far from their relatives, and unable to see them due to the emergency situation. Moreover, both pandemics have also had effects on the relationships among people: the ancient historians, indeed, refer to people abandoning their factions to help the sick and the fragile ones, but also to people abandoning their relatives. Again, during the Covid-19 pandemic we witnessed a common sense of solidarity and even NGOs claim that more people were willing to help than before the pandemic, even though we have also seen growing episodes of violence, scapegoating and hate speech. These events, therefore, have had and will have a huge impact on society: such a shift in the burial habits as the ones we witnessed in the post-pandemic Europe of the Migration Period, indeed, seem to reveal an important change in the societal practices.

The crises triggered by pandemics or epidemics also urge men to concentrate their efforts on health care, looking for treatment and remedies for the disease. In Chapter I we saw that the development of hospitals and health centres might be related to the Justinian Plague; at the same time, contemporary investment in the health care by European authorities might be seen, in the future, as prompted by the necessity to face future challenges to our health systems as the one posed by Covid-19. Nonetheless, when facing a new and mysterious disease,

[1045] Lopez-Bueno, R., et al., *Potential health-related behaviors for pre-school and school-aged children during COVID-19 lockdown: A narrative review,* Preventive Medicine, 143, 2021
[1046] Melisande, C., et al., *The macro-economic impact of e-commerce in the EU Digital Single Market,* European Commission, 2015
[1047] Il Post, *Le bare dei morti di COVID-19 di Bergamo portate sui camion dell'esercito,* 19th of March 2020
[1048] Hennigan, W., *Lost in the Pandemic: Inside New York City's Mass Graveyard on Hart Island,* 18th November 2020
[1049] BBC, *India Covid: Delhi builds makeshift funeral pyres as deaths climb*, 27th of April 2021
[1050] Pseudo-Dionysius of 'Tell-Mahre', *Chronicles*, cit.

men could also decide to rely on "unofficial" remedies such as the magic spells at the time of Justinian or other composites in our time[1051]. This choice might also be prompted by mistrust in the official treatment which, as we might argue, reflects the mistrust in the authorities we have described above, as also stated by psychologists Palamenghi et al..[1052]

A pandemic might have geopolitical implications too, as evidenced nowadays by the importance of vaccines - which are becoming a "soft power tool" – as well as by the tensions over vaccine imports and exports, and fake news associated to the serum, the authors of which are considered China and Russia. In the Middle Ages, on the other hand, the demographic decay triggered by the Plague is said to have prompted the Slavs to move into the Balkans, thus changing the *status quo* of the peninsula; moreover, according to some authors, the difficulties experienced by the Eastern Roman Empire might have also been at the basis of the Arabs' expansion.

Notably, the perceived shortage of labour in Europe is leading many African migrants to leave their home: the pandemic has therefore become a *pull factor* but it is also a *push factor* in several African countries, where 20 million people lost their job. Importantly, this is almost the same amount of people who migrated within Africa in the last ten years[1053]. Another problem related to migration is the reduction in remittances, which are projected to drop by 23% in 2020, since migrants are losing their jobs in foreign countries; remittances proved to be effective in contrasting poverty and child labour in low and middle-income countries and even surpassed FDI in 2019 in the entire African continent. Such a sharp reduction might lead more people to leave their countries looking for jobs: we should also consider, however, that pandemics might become more frequent in the future and that climate changes might also trigger more conflicts and migration, thus complicating the picture. It is thus time to focus on migration in both periods.

3.1.2 Across, into, and again across Europe?

Migrations, as we have seen, can have multiple causes; that is why we commonly distinguish between *push* and *pull* factors. The current research showed that among the push factors we can mainly list conflicts and economic reasons; going further, we discovered that among the causes of the contemporary migratory waves there might also be climate change. This is not only because it provokes droughts and floods, thus impacting on the livelihoods of farmers and, in general, on the whole economy. Climate change, indeed, might also fuel both violence and economic problems, triggering disputes over lands that may degenerate in larger conflicts between opposite social groups such as shepherds and farmers. Interestingly, we can apply this hypothesis to the Migration Period: we have already argued that an abrupt climatic shift might have lowered agricultural

[1051] Slattery, G., *Aspirin in honey: dubious COVID-19 'cures' spread in Brazil*, Reuters, 17th of June 2020
[1052] Palamenghi, L., et al., *Mistrust in biomedical research and vaccine hesitancy: the forefront challenge in the battle against COVID-19 in Italy*, Eur J Epidemiol 35, 785–788, 2020
[1053] African Union, *Africa labour migration outlook in the post Covid-19 era*, Policy Brief I, 2020

productivity, thus leading Germanic tribes to leave their homes. However, we can also argue that this lowering productivity might have triggered tensions between the different tribes, thus exacerbating an already ongoing process of societal reorganization.

Importantly, thanks to the comparison of the historical account of Cesar and the one of Tacitus, we understand that something was changing within the Germanic society in the first centuries of the first millennia: new organizations and new confederations, such as the Alemanni, the Thuringi, the Franks and the Saxons were indeed emerging in *Barbaricum.* We can only postulate the causes of the federation process, because we lack written sources; historians argue that this was both due to an ongoing process of demographic expansion and to the attraction exercised by the neighbouring Roman Empire, which, despite the existence of a *limes*, had important contacts with the Germanic tribes. This "revolutionary process" deeply interested the Romans, who decided to support certain princes and often co-opted some of them as they acknowledged that a transformation from a kingship to an oligarchy was taking place [1054]. However, in the following years, a migratory movement started: a limited number of people, indeed, invaded the Empire, ending up as far as in Africa (the Franks), while other decided to become *foederati*, that is to say to settle with their families and fight for the Romans. We can explain these early movements by making reference to tensions that could have been the result of the federation process. Therefore, this process of social transformation in *Barbaricum* took place simultaneously with the process of integration of the Germans into the Roman territory but also with the other transformation that was changing the Roman Empire. In 212, indeed, Caracalla issued the *Constitutio Antoniana*, which granted the Roman citizenship to all the inhabitants of the Empire: among them, there were thousands of Germanic descendants who had been settled within the Empire to cultivate the deserted lands and pay tribute.

Figure 24: Barbarians leaving Germania for the Empire, as represented in the "Plomb of Lyon" (297 CE); Mathisen, R., Peregrini, Barbari, and Cives Romani: Concepts of Citizenship and the Legal Identity of Barbarians in the Later Roman Empire, The American Historical Review, Vol. 111, No. 4 (October 2006), pp. 1011-1040, 2006

[1054] Wolfram, H., *The Roman Empire and Its Germanic Peoples,* University of California Press, 1997

Remarkably, the descendants of the settlers were not a limited number: this process had started with August, who settled 50,000 Goths on the Danube; then Tiberius (14-37) moved 40,000 Germans in Gaul; Nero (54-68) gave lands in the Balkans to more than 100,000 people from across the Danube; Marcus Aurelius settled the Quadi, Vandals, Iazyges, Naristae, and Marcomanni in the Empire; under Claudius, the defeated Goths (270) became farmers in the Roman lands; Constantius Chlorus (293-306) assigned deserted lands to the Barbarians; Constantine I (303-337) settled the Franks in the deserted lands in Gaul and made them *foederati,* while also giving lands in Thrace, Scythia, Macedonia and Italy to more than 300,000 Sarmatians, followed by Ausonius in 368; moreover, between the 360s and the 370s, part of the Alamanni was relocated in Gaul and Italy, where this population started farming along the Po; in 377, they were also followed by the Goths and Taifals, who became cultivators in Rhegium and Parma; in 386, "the nation of Greuthungi" was brought into the Roman Soil" and twenty years later a group of Scirians became *coloni* in the Eastern Empire[1055].

Looking at these movements after analysing the contemporary period makes us consider them in a different light: rather than invasions, in fact, the later movements seem to be migrations that followed the same routes of their ancestors, with whom they probably remained in contact. Further studies could therefore investigate the effects that the above settlement policies had on the migrations of Germanic tribes into the Roman Empire, but we can argue that they certainly provided an incentive for Germanic tribes to move into the Empire, probably even more so after 212, when the descendants of these settlers became Roman citizens, with all that this entailed.

In *Barbaricum*, on the other hand, Germanic chieftains were highly influenced by Rome, not only from a political point of view, but also from a cultural perspective: the Empire could offer them richness, prestige, and power, something that tribal life could not[1056]. Moreover, the gifts provided by Rome and the proximity of the Imperial power had already "raised the stakes in barbarian politics", as previously said[1057]. Social status and political authority were manifested through the use of Roman stylistic motifs and Roman goods, be they gifts or the result of trade or raids; this makes the historian Guy Hansall think that the Germanic tribes could have been more bellicose among themselves, than against Rome, from which their status depended on[1058]. It is interesting to note what the historian says: "what would happen to such groups if the Empire ceased to exist as a valid model for legitimate rule? These units could be destabilised and, when they were, the threat to the security of the frontiers was that much greater"[1059].

[1055] Mathisen, R., Peregrini, Barbari, and Cives Romani: Concepts of Citizenship and the Legal Identity of Barbarians in the Later Roman Empire, cit.
[1056] Pohl W., *The Avars: A Steppe Empire in Central Europe, 567–822,* cit.
[1057] Halsall, G., *Barbarian Migrations, and the Roman West, 376–568*, cit.
[1058] *Ibidem*
[1059] *Ibidem*

On the other hand, Rome was also getting weaker, due to a series of factors which we have not dealt with. Therefore, a combination of issues, such as the *attraction* offered by Rome, combined with its political weakness, might have provided the necessary incentives for an increasing number of Germanic tribes to cross the borders. However, we might argue that this could have not been sufficient: nonetheless, we must include another variable or *push factor*, which might have forced Germanic population to move: the Hunnic invasion.

But before going on with the Migration Period, we must focus again on our time: indeed, why are we dealing with the Early Medieval Age and what can we grasp from such analysis? In our opinion, provided that we are dealing with two extremely different periods from both a technological and societal point of view, we can nonetheless find some interesting similarities.

We have already stated that the aim of this research is to find similarities and common trends between the two historical eras; therefore, it is necessary to adopt a *longue durée* approach, not focusing only on the twenty-first century, but also on the previous decades. As nowadays we are dealing with migratory waves predominantly coming from Africa and Asia, we also have to stress that, until the Decolonization process, these territories were governed by the same States to which now migrants are heading to: the European ones. Interestingly, European States governed these territories with the same approach of the Roman Empire: they appointed chieftains favourable to them while also supporting certain tribes or ethnicities, thus creating the basis for the subsequent ethnic tensions such as the ones experienced in Rwanda and Burundi[1060].

Then, in the aftermath of the Second world war, new political instances would lead to the decolonization process and to the formation of independent States. However, the States that came out from this process where extremely fragile, since colonial rulers had shaped them regardless of the previous societal organization: the administrative reorganization under the European powers, indeed, had transformed the relationship between groups favouring some of them. As African History professor Gentili claims, the administrative rationalization of the territories into defined and territorial entities meant a remodelling, a reconstruction or even the creation of the traditional authority, with the contemporary opposition and collaboration of local chieftains[1061]. Thus, on the eve of the decolonization, the need was felt to create a united front aimed to gain independence; however, once self-government had been achieved, this unity, represented in the single (independence) party, became the norm, and the lack of democracy was justified with the need to rebuild the nation[1062]. Then, from the middle of the 60s, a series of military coups transformed once again the African States; moreover, authoritarian governments – not only in Africa, but in other parts of the world as well – were also instrumental to the Cold War divisions: former colonial powers continued to have an important role in these areas. In addition, many of these post-independence rulers had studied in the former colonising States or had served in

[1060] Gentili, A., *Il leone e il cacciatore,* Carocci Editore, Roma, 2015
[1061] *Ibidem*
[1062] *Ibidem*

the colonial armies: Somalia's leader Siad Barre, Zimbabwe's Mugabe, and DCR's Mobutu, among others. With the end of the Cold War came the first democratic elections, but internal tensions did not stop, and a growing number of African countries is now experiencing democratic backsliding, while the continent is ever more at the centre of disputes between several external States such as China, Russia, Iran, the EU and the USA[1063] for its abundance of resources and for being a possible outlet market for goods and services[1064].

Given that we are dealing with two different historical periods, we can however find some similarities between the two periods and their historical processes. Provided that we cannot describe the Roman influence on the Germanic tribes as "colonisation", we can nonetheless state that the Empire exerted a considerable influence on *Barbaricum*. The appointment of certain rulers and the support given to specific chieftains and tribes was indeed instrumental to maintain these lands under conditions favourable to the Roman Empire; at the same time, the Germanic tribes derived their status from the proximity of the Empire and probably they underwent a process of federation also because of the influence and the attraction of the neighbouring power. These once divided tribes, therefore, organized themselves in a societal framework defined by the dominant power, probably with the aim to emulate it, in consideration of the lure the Empire exerted.

In more recent times, post-colonial African States, in particular, were organised under the same administrative and political structure of the former colonising States, despite their traditional divisions and boundaries: this "artificial" process created tensions among the society, as it was already evident in the aftermath of the colonization process. These tensions, in turn, triggered the authoritarian response by the army, bringing to power military governments which had also important ties with the former colonial States.

Similarly, tensions in *Barbaricum* following the development of new political entities – with the interference and the appointment of some chieftains by the Romans – could be revealed by the early migrations, such as those of the Franks and of the Herulis. Moreover, just like modern military leaders formed in the West, Germanic leaders were also formed in the Empire through the practice of taking the children of Germanic nobles as hostages[1065]. For instance, Theodoric the Great spent his youth as a hostage in Constantinople, an experience that deeply influenced him and he later decided to raise his daughter and grandson with a classical education[1066]. Moreover, when he became the ruler of Italy, he apparently told the Eastern Roman Empire: "our rule is similar to yours"[1067], thus clearly showing the German desire to imitate the Empire's rule. And this is exactly what the post-independence African rulers did.

[1063] Cheeseman, N., *A divided Continent,* BTI, 2018
[1064] Alden, C., *Emerging Powers and Africa: From Development to Geopolitics,* IAI, 19, 2019
[1065] Lee, D., *The Role of Hostages in Roman Diplomacy with Sasanian Persia*, Historia: Zeitschrift für Alte Geschichte, 40, 366-374, 1991
[1066] Burns, T., *Theodoric the Great and the concepts of power in late antiquity,* Acta Classica, 25, 99-118, 1982
[1067] *Ibidem*

We can however argue that the process of formation of the colonial and postcolonial States differs in many aspects from the federation process that occurred in *Barbaricum* with the help and the influence of Rome, though we cannot refrain from noticing some similarities. Only by doing so, indeed, we can better frame the later migrations – the "barbarian invasions" – as also motivated by the willingness to achieve the same power and prestige of the Roman Empire. The invaders certainly did not want to destroy the Roman cultural heritage, as it is evident from the adoption of the Roman laws and the perpetuation of the Roman culture, though with the inclusion of Germanic elements. At the same time, the interviews of contemporary migrants highlight that they are moving to Europe because of its attraction in terms of wealth, democracy, and higher standards of living. Something which is lacking in their countries of origin.

We also argued that the attraction exercised by the Roman wealth and culture could not constitute a sufficient stimulus for people to move, in the same way that - we may argue - "poverty" cannot be considered a necessary motivation to migrate, as mentioned in chapter two. Violence and conflict, indeed, are generally the other main drivers of outmigration. Therefore, were the Germanic tribes escaping from conflicts?

Just as the Europeans have favoured some groups among others, the Romans kept the Germanic tribes divided: as mentioned before, this clearly created several tensions, related to the development of the Germanic federation and the rise of new political organizations. We have already linked this process to the first migratory movements, like those of the Herulis, the Saxons, the Vandals, and the Burgundians, claiming that it might not be a coincidence that at the same time as these movements we hear of the first Danish king and there is evidence of the formation of the Thuringian confederation. These groups may have left the Germanic territory probably because they did not want to be submitted to the new dominant power. In addition, we could also argue that the population growth, which was the basis of the federation process, might have triggered tensions over land, causing conflicts and displacement of people. However, around 370, this process of social change overlapped with an event that would change the history of *Barbaricum* and Europe: the arrival of the Huns.

This new rising power, as seen in the first chapter, drove more and more fleeing populations to the Roman Empire, but at the same time the Huns, while imposing their rule over what is now Germany, managed to ally themselves with the Romans, only to support again the subsequent migration of the Visigoths into Italy. The probable strategy of the Huns was to create a Germanic defensive ring to protect the Hun core while using the Germanic tribes as a threat to the Roman Empire, in order to subject it to vassalage. However, the Hunnic Empire would dissolve following the death of Attila, when his sons were unable to put down the revolts of the Germanic tribes. These people (Langobards, Goths, Herules, Gepids…) would then move into a declining Roman Empire, driven also by another variable: climate change.

Again, before going on with the analysis, we must draw some parallels with our own period. It is true that the Empire had settled thousands of Germans in its territory, but at the time of the Hun invasion it was also facing

several internal problems; this is also demonstrated by the Theodosius' decision to divide the Empire, which was already undermined by several disruptive forces despite the major socio-economic transformation taking place[1068]. Therefore, the Empire was not able to absorb or stop other migratory waves as it had done in the past. Once the Hun Empire collapsed, preventing the Germanic tribes from moving into the Roman Empire, the Germanic people were free to migrate.

Notably, we can say that the same is happening now: European states have already signed several agreements with North African countries and Turkey to stop migratory flows, giving them great bargaining power. These agreements have effectively reduced the number of arrivals in 2016/17 at the expense, however, of a dismissal of European humanitarian responsibility[1069], and with the result of "outsourcing" asylum management to countries that do not recognize the right to asylum[1070].

Furthermore, we can argue that, in some respects, the Roman empire created the conditions for the migration of Germanic tribes both by influencing the process of "State formation" and through the power of attraction generated by the Empire's achievements; similarly, according to many, Western rule in Africa retarded political development, at least in some states, as it made local elites less accountable to their citizens by appointing a few chosen authorities, thus creating the basis for predatory attitudes in the post-colonial period[1071]. In the long run, these attitudes would create problems of underdevelopment[1072], and as former colonial powers continued to support authoritarian governments (which granted concessions to western companies)[1073], predatory attitudes continued to create the economic and social preconditions for migration[1074]. At the same time, past colonial influence (the language, the education…) provided an important pull factor that attracted the former colonised to former colonising countries[1075].

Another topic to be dealt with is the political transformation of Europe: following the Migration Period, new kingdoms were formed: these "Roman-Barbarian" entities were mixed entities, where, for instance, Roman laws continued to apply, as mentioned above. Moreover, for instance, the Visigoths developed their own culture only when they found themselves in present-day France and not before; furthermore, Ralph Mathisen, author of the book "Romans, Barbarians, and the Transformation of the Roman World" argues that the very elites of the Germanic tribes were "international", in the sense that they often stayed in distant courts and had

[1068] La Storia, *Dall'Impero Romano a Carlo Magno*, cit.
[1069] Terry, K., *The EU-Turkey Deal, Five Years On: A Frayed and Controversial but Enduring Blueprint*, cit.
[1070] Palm, A., *The Italy-Libya Memorandum of Understanding: The baseline of a policy approach aimed at closing all doors to Europe?* cit.
[1071] Heldring, L., Robinson, J., *Colonialism and development in Africa,* Vox EU, 13th January 2013
[1072] Yates, D., *Paradoxes of Predation in Francophone Africa,* International Journal of Political Economy, 47, 2, 2018
[1073] *Ibidem*
[1074] Kirwin, M., Anderson, J., *Identifying the factors driving west African migration*, OECD, West African Papers, 17
[1075] Hooghe, M., et al., *Migration to European countries: a structural explanation of patterns, 1890-2004*, IMR: International Migration Review, 42, 2, 476 – 504, 2008

blurred identities[1076]. This is not entirely relevant for our analysis, but it gives us the idea of a general cultural reshaping of Europe, which integrated several distant elements. What might interest us, however, is the fact that the political organization changed in Early Medieval Europe with the rise of feudalism, which many studies trace back to a Germanic custom described by Tacitus, the *"comitatus*"[1077].

As Europe will experience new migrations in the future, the political reorganization is an issue it will have to address: how will European society evolve following the arrival of new migratory flows? Will it include cultural and legislative elements of the newcomers? Caracalla, for instance, enacted the citizenship reform, paving the way for the subsequent transformation of the Empire; will European countries change their citizenship laws? Interestingly, this is a much-debated topic nowadays.

Returning to our time, when Europe is already facing huge migratory waves, we could argue that it is likely to face even more arrivals due to the effects of climate change: indeed, we have seen that climate change is already causing droughts, floods and disputes in Africa and the Middle East. However, we have also argued that climate change could worsen global climatic conditions, if states do not take adequate actions to counter it. This could trigger more crop failures, more tensions, more conflict and thus more migration. Just to give some figures, in the worst case scenario, the Sahel region could become almost uninhabitable and vital crops such as maize, beans, bananas and millet would decline by 35%[1078].

It is also important to remember that the African population is expected to double by 2050, reaching 2.2 billion inhabitants or more[1079] and so will do the Middle East, reaching 723 million people[1080]. It should also be noted that neither Europe nor the USA currently host the majority of refugees: 85% of the refugees, indeed, are hosted in developing countries[1081]. Nowadays, Turkey is the country with the largest number of refugees (3.3 million), followed by Colombia (1.8 million), Pakistan (1.4 million), Uganda (1.4) and Germany (1.1 million)[1082]. However, since Africa, the Middle East and South America are among the regions that will experience the worst weather conditions, we can assume that migratory flows will converge in Europe and the United States. As Mastrojeni and Pasini argue, European states might respond to the growing migratory waves with new agreements aimed at curbing the number of arrivals, thus increasing the bargaining power of states such as Turkey, or indirectly favouring authoritarian drifts, and a general decrease in the states' respect for human rights[1083].

[1076] *Romans, Barbarians, and the Transformation of the Roman World,* edited by Mathisen, R. and Shanzer, D., Routledge, 2016
[1077] Ganshof, F., *Feudalism,* cit.
[1078] Mastrojeni, G., Pasini, F., *Effetto guerra effetto serra,* Chiarelettere, Milano, 2017
[1079] Ezeh, A., et al., *Why sub-Saharan Africa might exceed its projected population size by 2100,* 396, 10258, 1131-1133, 2020
[1080] UN DESA, *Total population across the Middle East and North Africa from 1990 to 2050 (in million)* [Graph]. In Statista. Retrieved May 18, 2021
[1081] UNHCR, *Figures at a Glance,* 18th June 2020
[1082] *Ibidem*
[1083] Mastrojeni, G., Pasini, F., *Effetto guerra effetto serra,* cit.

However, external pressures can also trigger populist responses in European states, as we have seen in recent years with the growth of nationalist and populist parties in most European countries[1084]; moreover, we should not forget that two European states are already experiencing a democratic recession. It is interesting to note that, according to some authors, the threat of immigrants has played an important role in this process[1085].

Conversely, even if the European rule of law were to succeed in resisting the democratic decay triggered by the growth of populist parties, it could find itself isolated in an increasingly "closed" and authoritarian world; the worsening climate, in fact, could trigger tensions and war not only *within* the States, but also *between* them. Possible tensions could arise, for instance, between Syria, Turkey and Iraq over the use of the Jordan river[1086], further destabilising an already "incandescent" area; tensions could also resurface between Ethiopia, Egypt and Sudan over the sharing of water in the Nile basin[1087]. We have already seen that most of the world's refugees are hosted in these two areas: what would happen if tensions increased in these regions? In particular, Syria and South Sudan only are the country of origin of nearly 9 million refugees[1088]and are not that far from Europe.

It is crucial to remember, as global historians, that as the world is increasingly interconnected, local processes have the potential to impact even distant areas; while, for instance, a climate change might have displaced the Avars from their Asian homeland, the effects on Europe were only visible two hundred years later. However, nowadays, deteriorating climatic conditions in Syria have created the conditions for a local conflict that is impacting on the whole world, and has the potential to lead to an escalation of tensions between Russia and the USA.[1089]

Violence, conflict, but also climatic factors: in the course of this analysis we have understood that these are the main *push* factors for people to leave their homes. Moreover, we have also realised that climate change could act as a "threat-multiplier", since it impacts on existing tensions, thus possibly triggering further conflicts and migrations, which are mutually reinforcing. According to international organizations, indeed, by 2050 there could be between 25 million and 1 billion climate refugees[1090], i.e. migrants who decide to leave their homes due to a combination of factors related to climate change.

Looking back at the Migration Period, one could grasp that the above-mentioned issues (violence, conflicts, effects of climate change), along with *pull factors*, pushed the Germanic populations to leave their lands;

[1084] De Torre, C., *Routledge Handbook of Global Populism*, Taylor and Francis, ebook, 2018
[1085] Vachudova, M., *Ethnopopulism and democratic backsliding in Central Europe,* East European Politics, 36, 3, 2020
[1086] Mastrojeni, G., Pasini, F., *Effetto guerra effetto serra,* cit.
[1087] Swain, A., *Challenges for water sharing in the Nile basin: changing geo-politics and changing climate*. Hydrol. Sci. J. 56(4), 687–702, 2011
[1088] UNHCR, *Figures at a Glance,* cit.
[1089] Yacoubian, M., *What is Russia's Endgame in Syria?* United States Institute of Peace, 16th of February 2021
[1090] Bassetti, F., *Environmental Migrants: Up to 1 Billion by 2050*, Foresights – The CMCC observatory on climate policies and futures, 22nd May 2019

importantly, this trend had already started in the third and fourth century, but the arrival of the Huns and the creation of the Hun Empire probably delayed it, also because of the strategy of the Asian confederation, aimed at containing the Germanic tribes to force the Roman Empire into vassalage. However, with the death of Attila, the Germans revolted, the Hun Empire collapsed and the Germans moved further into the Roman Empire, clearly showing that such epochal processes cannot be stopped.

At the same time, Europeans witnessed a limited number of arrivals in the early years of the twentieth century; then the numbers kept on growing until European authorities signed several agreements with the States from which migrants arrive. However, it is important to note that migratory flows are increasing again. Indeed, in these days Spain is facing a migration crisis in Ceuta and Melilla as Morocco has been accused of doing nothing to prevent migrants from arriving in the two *enclaves*: in particular, several commentators claim that behind the crisis there could be the Spanish decision to host the leader of the Polisario Front, Brahim Ghali, who is fighting for the sovereignty of Western Sahara against the Moroccan claims[1091]. Meanwhile, Italy has called on the European authorities to strengthen assistance to Libya[1092] as up to 70,000 migrants are said to be ready to cross the Mediterranean[1093], according to the Italian intelligence. Moreover, EU authorities are also negotiating the renewal of the EU-Turkey agreement[1094]. These recent reports, therefore, seem to confirm what we have argued before, namely that migratory pressure will not stop but is bound to increase. On the other hand, negotiating agreements to stop the migratory flows is not a solution: in fact, if projections are correct and climate refugees will indeed be between 25 million and 1 billion in the near future, agreements or borders will not prevent this large human flow from moving, as also demonstrated by the migratory movements of the Migration period.

According to a report published by the Internal Displacement Monitoring centre of the Norwegian Refugee council, there were globally 30.7 million of climate-related internally displaced persons (IDPs) in 2020 alone, i.e. three times the total number of conflict-related IDPs (9.8 million). The majority of them was in Afghanistan (1.1 million), India (929,000) and Pakistan (806,000)[1095]. We are already seeing the effects of climate change on migration.

Lastly, we must also consider the effects of Climate change on Europe. As mentioned before, droughts and wildfires will become more frequent in our continent as a result of rising temperatures, and ecosystems may not be able to supply the current amount of water, which will also have major effects on agriculture and livestock. Rising sea level, flooding, agricultural losses, and water shortages will have an impact especially on

[1091] Hedgecoe, G., Migrants reach Spain's Ceuta enclave in record numbers, BBC, 18th of May 2021; Nicastro, A., *Ghali, il leader del Sahara diventa un caso diplomatico tra Marocco e Spagna,* Corriere della Sera, 19th of May 2021
[1092] ANSA, *Migrants: Lamorgese calls to strengthen Libya border control*, 12th of May 2021
[1093] Kington, T., *70,000 migrants waiting to cross from Libya, Italy warns,* The Times, 12th of May 2021; Lowen, M., Lampedusa: Italy's gateway to Europe struggles with migrant influx, BBC, 12th of May 2021
[1094] ANSA, *Migranti: Johansson in Turchia per discutere accordo con Ue,* 6th of May 2021
[1095] IDMC, *Global Report on Internal Displacement 2021,* accessed on 27th of May 2021

Mediterranean regions, i.e. those most exposed to migration flows. It is important to note that Southern and Eastern Europeans are the ones who are already experiencing the effects of climate change on their lives the most and those who say they might leave their countries because of global warming[1096]. Are we going to see more intra-European migrations?

Interestingly, the University of Notre Dame, (Indiana, USA) created an index, the ND-GAIN (Notre-Dame Global Adaptation Index), which aims to measure a country's vulnerability to climate change in combination with its readiness to improve resilience. When measuring vulnerability, the authors took in account the exposure, the sensitivity, and the adaptive capacity, while when measuring readiness, they considered economic, social and governance readiness. Moreover, they classified the countries in a Vulnerability/ Readiness matrix, dividing the well-prepared States with few challenges to face, from the ones with more urgency to act and with the greatest challenges to cope[1097]. Among the worst prepared and with the highest number of challenges we find countries from which high numbers of migrants already depart: Chad, Somalia, Central African Republic, Afghanistan, Eritrea, Sudan and Niger, among others. As for the well performing and with limited challenges, we find Northern European countries such as Norway, Finland, Denmark and Sweden, but also Austria, Iceland and Germany[1098].

In a worsening climatic scenario, therefore, given that Southern European countries will experience the most important challenges from climate change in Europe, we might claim that in the future Southern Europeans will consider moving north. However, we are already witnessing difficulties in the redistribution of refugees through a quota-system, thus undermining a "European solidarity"[1099] which in the future might become even more important not only in relation to non-European refugees but also to intra-European migrants. European policymakers should therefore consider this aspect as it might become crucial for the future of the EU.

Summarizing, we have seen that migrations, both in the Migration period and in the contemporary era, were and are triggered by a series of factors, among all, conflicts in the societies of departure. Moreover, we have seen how both the Roman Empire and the European States created the conditions for these out-migrations, interfering with the social organization process and providing a model that was and is attractive to migrants for the life it could offer. In both periods, migrants were and are prevented to arrive in Europe by interposed state entities, be these the Hun Empire or Turkey and the Northern African states, which thus have a great bargaining power. As for the Migration period, deteriorating climatic conditions, which, we argued, had already been one of the causes of the first migrations of the Germanic tribes, further worsened, thus provoking

[1096] European Investment Bank, *2019-2020 EIB climate survey,* cit.
[1097] Chen, C. et al., *University of Notre Dame Global Adaptation Index Country Index Technical Report,* ND-GAIN, 2015
[1098] University of Notre Dame, *ND-GAIN,* Country Index, accessed on 19th of May 2021
[1099] Gerhards, J., et al., *How Strong is European Solidarity?* Berlin Studies on the Sociology of Europe (BSSE), 37, 2018

the later migration of non-Germanic tribes such as the Slavs, the Avars and the Hungarians, who settled in Eastern Europe.

Whether we accept the comparison between the two historical period, we might contend that Europe can be placed at the beginning of this historical trend of climate-induced migrations: we know that climate change is already worsening the living conditions of people living in Third world countries because we are seeing the first "climigrants". The European States should therefore act accordingly. However, as for now, EU is increasing the bargaining power of neighbouring States; conversely, strategies aimed to mitigate the effects of Climate change in departure countries must be the priority. Importantly, on the bases of what we have learnt, we can argue that Rome "fell" also because of its internal weaknesses and its political instability which however prevented the Empire to do what it had done so far: integrate the Germanic tribes within the Empire. Indeed, Roman emperors had settled within the Empire thousands of Germanic tribes during the centuries, and the end of the Empire was probably less dramatic as we can imagine, as demonstrated by the adoption of Roman laws in the "Roman-Barbaric" kingdoms and the perpetuation of the Roman cultural heritage. Nonetheless, contemporary Europe is not only called upon to respond to such important migratory crisis, but also to prevent climate change to worsen: differently from the Migration period, indeed, we can act on the global warming.

3.1.3 Are we living in another Migration Period? Problematic issues

The aim of this study was to discuss the possibility that we might be experiencing the same historical events of the Early Medieval Ages' Europeans. The *Migration period*, indeed, was not only a period of migrations, but also of pandemics and climate change. It was, therefore, a period dense of social changes and of crisis. Moreover, Europe was highly influenced from that period: new kingdoms were formed, new social structures emerged, and new people arrived. Importantly, these huge changes were triggered by the contemporaneous presence of the pandemics, migrations and climate change, which interacted among themseves, influencing the historical development. Indeed, we cannot speculate what would have happened if global cooling had not occurred: would have the German tribes remained in *Barbaricum*? Would have the Huns arrived anyway? And what if the Plague had not outbroken? Would have the Slavs migrated into the Balkans? Would have the Eastern Roman Empire been able to reconquest Italy during the Gothic wars? We can already grasp the important historical consequences if things had gone differently. Importantly, nowadays Europe is at a crossroad, since it is experiencing the same contemporaneous crisis that took place in the Migration period too.

Since climate change might worsen and cause more damages in the future, we must analyse its possible future effects from an holistic perspective. On the basis of the diagram we drew in the second chapter, we can see that the anthropogenic climate change might cause both droughts, floods, and pandemics. Importantly, they

cause economic losses and food insecurity, which are the main drivers of conflict and migrations. Lastly, we argued that migration and conflicts cause displacement and a progressive flow into cities and urban areas, which in turn grow haphazardly, thus causing disruption of habitat. This, in turn, creates the conditions for other pandemics both because of the creation of densely populated areas, but also because of the possibility of a zoonotic spill-over.

However, we did not include in the analysis other factors such as geopolitical issues, wars and conflicts caused by other factors that might nonetheless impact on these issues or further exacerbate them. We argue, indeed, that climate change poses the conditions for conflicts, migrations and pandemics, but we cannot determine whether they will effectively take place or if they will interact with existing tensions. We agree, indeed, with researchers who claim that climate change is a "threat multiplier", because it aggravates "existing socioeconomic stresses"[1100]. At the same time, however, we claim that in the next future climate change might become – at least indirectly – the main cause of migrations and conflicts, which might also be exacerbated by more frequent pandemics.

We have seen that both in the Migration Period and in our era, pandemics also created the conditions for major geopolitical changes: the Slavs entered the – presumably – abandoned Balkans, while nowadays migrants are heading Europe because of the economic difficulties in their countries but also due to a perceived shortage of labour in Europe. However, these events might become more frequent in the future and further interact among themselves: pandemics might trigger more economic difficulties, thus in turn triggering more migrations and conflicts which in turn might pose the basis for further migrations. Importantly, we can argue that contemporaneous pandemics and migratory crisis might be deleterious for the states, not only from an economic point of view: in the past years, indeed, we saw that several states decided to close their borders in response to the migratory crisis. Interestingly, this was the same response that was adopted, for sanitary reasons, by the great majority of the world's countries. We might also contend that European States like Hungary or Poland were already experiencing democratic backslidings, but both the refugee crisis and the Covid-19 one gave them the opportunity to further the authoritarian descent. However, importantly, even a still democratic State such as the United Kingdom decided to leave the European Union in the same period; interestingly, according to several analysis, immigration "was one of the single strongest issue driving Brits to vote Leave"[1101]. Moreover, during the "refugee crisis", Germany, Austria, Denmark, Sweden and France reintroduced checks at internal borders, thus triggering a "Schengen crisis"[1102]: importantly, the abolition of the internal border controls is widely considered one of the pillars of the EU. Furthermore, at the very eve of

[1100] Huntjiens, P., Nachbar, K., *Climate Change as a Threat Multiplier for Human Disaster and Conflict,* Working paper 9, The Hague Insititute for Global Justice, 2015

[1101] Garret, A*., The Refugee Crisis, Brexit, and the Reframing of Immigration in Britain,* Europe Now, Council for European Studies, 1st of August 2019

[1102] Colombeau, S.,Crisis of Schengen? *The effect of two 'migrant crises' (2011 and 2015) on the free movement of people at an internal Schengen border*, Journal of Ethnic and Migration Studies, 46, 11, 2258-2274, 2020

the Covid-19 pandemic, the European solidarity faltered as France and Germany blocked the export of masks[1103], while the border closure was motivated by sanitary reasons[1104].

Will therefore further migratory waves and pandemics create the conditions for a "closed" world and for the disintegration of the European Union? Importantly, the European Commission pressured both France and Germany to lift the blockade[1105] and then Europe moved towards a general solidarity during the pandemic[1106]. However, while Europe was dividing itself relatively to the medical devices, China committed itself to help Italy in facing the pandemic[1107]. Moreover, a general agreement on the redistribution of migrants has not been implemented yet[1108], despite the reform of the Dublin Regulation in September 2020[1109]. These examples clearly show that these combined crises might divide the European States; however, we have to consider that increasingly frequent crisis will also require rapid and strong responses. For instance, Mastrojeni and Pasini claim that the melting of the Himalaya glaciers due to global warming might trigger a crisis which in turn might escalate in a major war between countries like China, India, Pakistan and Russia, all of which, importantly, detain the atomic bomb[1110]. What would Europe do in the face of such a crisis?

In conclusion, we can content that the Migration period completely changed Europe: the contemporaneous emergence of the Justinian Plague and its outbreaks along with the migrations of people and the related conflicts contributed to the dissolution of the Roman Empire and to the birth of several Roman-Barbaric Kingdoms. Moreover, even though we previously argued that these kingdoms perpetuated classical knowledge, this was a limited activity and a general decay in the spread of culture might be measured for instance by the manuscript production, which is extremely low compared to the eight century (see figure 2). Interestingly, we set the end of the Migration Period between the eight and the

TABLE 1
MANUSCRIPT PRODUCTION IN ABSOLUTE NUMBERS PER CENTURY
(sixth to fifteenth centuries)

Area	*Sixth*	*Seventh*	*Eighth*	*Ninth*	*Tenth*
Central Europe[a]	0	0	0	0	0
Bohemia	0	0	0	0	0
British Isles[b]	81	1,026	5,474	7,926	9,793
France	1,682	2,441	15,920	74,190	12,752
Belgium	0	127	1,111	3,029	1,555
Netherlands	0	26	60	82	58
Germany	0	0	7,503	59,771	45,703
Switzerland	0	30	594	5,330	1,799
Austria	0	0	2,735	9,414	0
Italy	10,194	4,478	6,536	20,307	15,215
Iberia[c]	1,594	2,512	3,770	21,693	48,763
Western Europe	13,552	10,639	43,702	201,742	135,637
Increase per century (percent)		–21	311	362	–33
	Eleventh	*Twelfth*	*Thirteenth*	*Fourteenth*	*Fifteenth*
Central Europe[a]	3,983	27,530	120,987	301,833	376,650
Bohemia	657	1,136	5,377	42,066	45,363
British Isles[b]	20,360	81,044	200,654	155,513	208,729
France	45,061	197,831	510,828	564,624	1,195,783
Belgium	8,529	43,219	119,588	106,148	572,124
Netherlands	354	1,731	2,066	13,179	171,974
Germany	49,548	166,876	270,392	293,814	515,116
Switzerland	1,090	2,355	3,821	6,349	10,652
Austria	2,808	37,370	37,408	39,777	88,623
Italy	38,768	95,207	253,013	879,364	1,423,668
Iberia[c]	40,871	114,422	237,818	344,284	390,478
Western Europe	212,030	768,721	1,761,951	2,746,951	4,999,161
Increase per century (percent)	56	263	129	56	82

Figure 25: Manuscript production from the Early Medieval Period to the end of the Middle Ages: from Buring, E., Van Zanden, J., *Charting the "Rise of the West": Manuscripts and Printed Books in Europe, a LongTerm Perspective from the Sixth through Eighteenth Centuries*, The Journal of Economic History, Jun., 69,2, pp.409-445, 2009

[1103] European Parliament, *German ban on medical equipment exports,*16th of March 2020 ; European Parliament, *Masks intended for Italy blocked by France,* 3rd of April 2020
[1104] European Commission, *Temporary Reintroduction of Border Control,* accessed on the 20th of May 2021
[1105] Ministero dello Sviluppo Economico, *Sblocco delle esportazioni di dispositivi sanitari da Germania e Francia,* 15th of March 2020
[1106] European Commission, *Coronavirus: European Solidarity in action,* accessed on the 20th of May 2021
[1107] European Commission, *Coronavirus: Chinese aid to the EU delivered to Italy,* 6th of April 2020
[1108] ISPI, *Sui migranti l'Europa non c'è,* 12th of May 2021
[1109] European Parliament Think Tank, *Reform of the Dublin system,* 30th of September 2020
[1110] Mastrojeni, G., Pasini, A., *Effetto serra, effetto guerra,* cit.

ninth century, when the Justinian Plague mysteriously disappeared, temperature began to increase and so did settlements, as seen in chapter one.

The comparison with Migration Period, however, must not be intended as a direful projection of what will happen to Europe. Importantly, we do not claim that Europe will experience internal wars, be invaded by foreign armies or face a loss of culture. However, the analysis aims to suggest what might happen if we do not act on climate change: rising tensions, increase in migratory flows, and more frequent pandemics. Moreover, the analysis showed that men belonging to different historical periods behave and react to pandemics and climate change in similar manners, thus the importance of doing such a comparativist work with the aim to provide a model that can explain the interconnections between climate change, pandemics and migrations.

3.2 Are we living in another Migration Period? Possible solutions

Since the underlying statement of this work is that climate change might be considered directly or indirectly one of the main drivers of migrations and pandemics, we must now concentrate on climate change and on the strategies to deal with it. Remarkably, there are two main difference between the climate change that took place in the Migration period and the current one: first of all, early medieval Europeans witnessed a general cooling, while we are now experiencing a global warming. However, importantly, as also said in the second chapter, the current climate change is attributable to men. Therefore, an important corollary of this statement is that we can lessen the effects of global warming and act on it. However, as stated by Mastrojeni and Pasini, this does not imply that we can return to a pre-global warming situation: indeed, since the situation is already deteriorated, we must anyway prepare to face the future effects of the damages we are currently doing to the environment. Nonetheless, mitigating actions might reduce the effects of global warming in the long run.

First al all, we must stress the fact that anthropogenic activities caused so far the increase of 1.2 °C above the pre-industrial level and it is likely that this will reach 1.5 °C between 2030 and 2052 if we do not cut the emission rates[1111]. Clearly, as we are dealing with a global issue, global collaboration is required. The abovementioned International Panel on Climate Change was thus created in 1988 to provide worldwide governments with scientific knowledge, but it was the foundation of the UN Framework Convention on Climate Change in 1992 which provided a new framework in which discussing the stabilization of the greenhouse gases concentrations in the atmosphere. The Kyoto protocol, Doha amendment and Paris agreement were indeed negotiated in this context. In particular, the Paris agreement was aimed to limit the temperature increase to 2 °C by 2100 while pursuing efforts to limit it to 1.5 °C. According to the agreement, these targets must be achieved by enforcing national measures aimed to cut the carbon emissions and also with

[1111] Fawzy, S., et al., *Strategies for mitigation of climate change: a review,* Environmental Chemistry Letters, 18, 2069–2094, 2020

obligations by developed countries to promote sustainable development and establish adequate mitigation and adaptation support measures in vulnerable countries[1112].

However, the path towards a global reduction of carbon emissions is not easy. Nowadays, the States with more emissions are economic giants such as China (28% of the total), USA (15%), India (7%), Russia (5%), Japan (3%), and Germany (2%). The UK, France, Italy and Poland account each for 1% of the total account[1113]. Moreover, the issue of emission reductions has been defined as dividing the poor from the rich: indeed, the top 1% by income of the world population accounts for about 15% of global emissions, the richest 10% is responsible of nearly the half of them while the poorest 5% only accounts for 6% of them[1114]. We also have to ponder that the debate on climate change is not extraneous to geopolitical considerations too: Brazil, South Africa, India and China believe, indeed, in the combined but differentiated responsibilities", for which the states in different stages of development have different responsibilities respectively to the global effort[1115], thus implying that "western States" must do the greater part in the global reduction. However, the 2017 decision of the Trump Administration to leave the Paris Agreement further demonstrated that a single solution to greenhouse gases emissions seems politically impossible in such an international situation[1116].

In this context, the current pandemic of Covid-19, stressed the urgency and the importance of a global cooperation in the face of transnational issues such as pandemics and climate changes (which, we have seen, are extremely connected). However, a 2021 study claims that there was not a real international cooperation during the pandemic of Covid-19, being the response of the states predominantly motivated by the national interest[1117]. Moreover, the WHO has been widely criticised for its role during the sanitary emergency, but we must also bear in mind that like the other international organizations, the WHO is at the centre of geopolitical disputes; the global pandemic response, indeed, further emphasises that "geopolitical framework is essential to understanding the capacity and willingness of states and the public to engage with super-wicked problems" such as climate change[1118]. Intriguingly, Professor of Physics Antonello Pasini and Professor of Biology Fulvio Mazzocchi argue that there is a similarity between the evolution of the Covid-19 pandemic and the one of climate change: the little and limited number of cases made many argue that the disease might have been kept under control; at the same time, we are only seeing some limited effects of the climate change, due to the

[1112] *Ibidem*
[1113] Union of concerned scientists, *Each Country's Share of CO2 Emissions*, accessed on 21st of May 2021
[1114] Wagstyl, S., *Climate change is becoming less a battle of nations than rich vs poor,* Financial Times, 21st of May 2021
[1115] Dalby, S., *Climate Change and Geopolitics,* Climate Science, 2017
[1116] *Ibidem*
[1117] Basrur, R., Kliem, F., *Covid-19 and international cooperation: IR paradigms at odds,* SN Social Sciences, 1, 7, 2021
[1118] Cole, J., Dodds, K., *Unhealthy geopolitics: can the response to COVID-19 reform climate change policy?*, Bull World Health Organ., 99, 2, 148–154, 2021

inertia of the global climatic system[1119]. Thus, national authorities must learn a lesson from the later evolution of the pandemic and provide effective policies to contrast global warming.

According to the IPCC, in order to meet the 1.5 °C target by 2100, a 45% decline in global emissions relatively to the levels of 2010 must be achieved by 2030, while for the 2 °C target, states should cut world emission by 25% by that year, as well as reaching zero-net emissions by 2070[1120]. In November 2021 will take place the COP 26 (Conference of the Parties on Climate Change) but in a recently published report the IPCC stated that if the current trend of the emissions will continue, there will be only a reduction of 1% relatively to the levels of 2010 by 2030[1121]. UN Secretary General Guterres thus called on governments, civil society, business and individual citizens to start an effective reduction of the global emissions in such a "pivotal" year[1122].

Mitigation strategies: a short review

According to a 2020 study published by the Environmental Chemistry Letters, there are three main mitigation strategies to cope with climate change. First of all, as human energy-related activities are the main cause of the increased greenhouse gases concentration, the main strategy is to focus on decarbonization through the introduction of renewable energies and renewable fuels. As of 2018, renewable energy represented the 26.2% of the global electricity production[1123].

Furthermore, negative emissions technologies such as afforestation and reforestation, and bioenergy carbon capture are also adopted to contrast the rising CO2 emissions; ocean fertilization, ocean alkalinity enhancement, wetland reconstruction and biochar are other possible strategies[1124].

Reforestation strategy is based on the fact that trees capture CO2 while growing, being thus a biogenic negative emission technology. Bioenergy carbon capture, on the other hand, captures CO2 from the atmosphere and store them in geological reservoirs; however, this technology also requires large amount of biomass feedstock and can thus have a negative impact on the environment. Biochar too has both positive and negative effects and so does direct air carbon capture and storage, which has significant costs and is highly energy intensive. This technology, indeed, is based on the use of chemicals in order to remove atmospheric CO2 directly from the air. Moreover, ocean fertilization is the process of promoting biological activity in the oceans: planktons, indeed, absorb CO2; however, among the side effects there are unpredictable impacts on food cycles, varied

[1119] Pasini, A., Mazzocchi, F., Perception and risk of Covid-19 and climate change: Investigating analogies in a common framework. Global Sustainability, 3, E32, 2020
[1120] Fawzi, S., et al., *Strategies for mitigation of climate change: a review,* cit.
[1121] UN Climate change, *"Climate Commitments Not on Track to Meet Paris Agreement Goals" as NDC Synthesis Report is Published,* 26th of February 2021
[1122] World Metereological Organizatation, *The State of the Global Climate 2020*, 1264, 2021
[1123] Fawzy, S, et al., *Strategies for mitigation of climate change: a review,* cit.
[1124] *Ibidem*

effects on the sea ecosystems and even possible increase in the production of greenhouse gases[1125]. Wetland restoration, on the other hand, does not present side effects, though a limited number of wetlands have been restored so far[1126].

Therefore, given the difficulties that are related to negative emissions technologies, the best approach so far seems to reduce carbon emissions and reforest lands.

3.2.1 A possible long-term solution: The European Green Deal

In a divided global context such the one we described above, it seems unlikely that sovereign states will bind themselves to cut their emission. On the other hand, the European Union aims to be climate-neutral by 2050: this is the core of the "European Green Deal", an action plan presented in December 2019 which seeks to cut pollution, restore biodiversity, and move to a circular and clean economy. These targets are to be achieved in several ways; Europe indeed, plans to invest in environmentally friendly technologies, decarbonise the energy sector, provide cleaner forms of private and public transport, ensuring more energy efficient buildings and support industry to innovate in a "greener" way. In order to achieve the Green Deal's objectives, the Commission aims to work with the Members states to ensure that the policies linked to the Green Deal's implementation are effectively fulfilled. Actually, between 1990 and 2018, the EU reduced greenhouse gases by 23%, while its industry grew by 60%, thus demonstrating that a green economy is possible[1127].

Moreover, the "green transition" wishes to be an opportunity to increase the market of sustainable and job-intensive activities; Europe, indeed, recognises that energy-intensive industries (steel, chemicals and cement) are necessary for the economy, but also claims that their decarbonisation and modernisation is vital. A circular economy plan will prioritise reducing and reusing materials and will set minimum requirements to prevent products to be harmful to the environment. Furthermore, by 2030, all packaging must be reusable and recyclable. Business will be encouraged to offer durable, reusable and repairable products; "green" companies will also have to respect several standards[1128].

Internal transport, as said, must be sustainable, and this will also be true for inland freight, which should shift to rail and inland waterway rather than on road. Moreover, one million recharging stations will be available by 2025 for the 13 million zero and low emissions vehicles; furthermore, there will be also more stringent air pollutant emissions standards[1129].

[1125] *Ibidem*
[1126] *Ibidem*
[1127] European Commission, Communication from the Commission to the European Parliament, the European Council, The Council, the European Economic and Social Committee and the Committee of the Regions - *The European Green Deal,* 11th of December 2019
[1128] *Ibidem*
[1129] *Ibidem*

A biodiversity strategy will also be aimed to increase the protected areas, which play an important role in mitigating natural disasters; the European Commission will also pursue reforestation and afforestation in order to counterbalance the CO2 emissions. Resilient seas and healthy oceans will also be a priority of the ecosystem strategy; moreover, Europeans authorities claimed that they will have a zero-tolerance to illegal and unreported fishing[1130].

In order to achieve this ambitious plan, a 260 billion annual investment will be needed; a Just Transition Mechanism will also be dedicated to those regions which depend the most on fossil fuels and carbon intensive activities. The aim is to achieve a socially just transition and leave no region behind[1131].

Finally, EU is conscious of the risk of carbon leakage, which can happen in two ways: production can be transferred in countries with less stringent carbon emissions controls or by replacing EU products with more carbon intensive imports. This would frustrate EU efforts: the Commission therefore plans to propose a "carbon border adjustment mechanism"[1132].

These efforts to make Europe "the first zero emission Continent", however, might also be frustrated by MSs. Recently, a Polish Minister claimed that the Emission Trading Scheme (the key tool of the EU's strategy for reducing the greenhouse gases[1133]) must be discontinued, the Czech Prime min ister argued that the Green Deal should be cancelled, and the vice-president of the Romanian ruling party asked the Romanian Parliament to abandon the agreement[1134]. Moreover, according to critics, the Green deal does not call on citizens to change their attitudes, which makes it unlikely that they will start the transformation of their behavioural norms on their own; in addition, the text of the Green Deal has been accused of being ambiguous in the sense it does not clearly identifies the very agents of the proposed actions[1135].

On the other hand, several researchers argue that the European Green Deal is a "great opportunity", though they agree that in order to make it successful, "it must be anchored in the concepts pertaining to the constitutional framework of the EU legal order […] the concepts of solidarity, sustainable development and high level of environmental protection"[1136]. Importantly indeed, the EGD is a "framework of regulation and legislation", that is to say it is an instrument of the EU *soft law,* which is not binding, though it can produce some legal effects. However, according to Professoress Sikora, environmental action programmes are legally binding for EU institutions, but they have also to be respected by States in the meaning of article 191(2) TFEU;

[1130] *Ibidem*
[1131] *Ibidem*
[1132] *Ibidem*
[1133] European Commission, *EU Emissions Trading System (EU ETS),* accessed on 22nd of May 2021
[1134] Elkerbout, M., The European Green Deal after Corona: Implications for EU climate policy, CEPS, 6, 2020
[1135] Eckert, E., *Sustainability in the European Union: Analyzing the Discourse of the European Green Deal,* Journal of Risk and Financial Management, MDPI, 2021
[1136] Sikora, A., *European Green Deal – legal and financial challenges of the climate change,* ERA Forum, 21, 681-697, 2021

however, when turning EGD's objectives into legal acts "environmental principles should demonstrate their legal meaning"[1137].

Recently, European leaders did not manage to come to an agreement on the 55% cut of the emissions during the extraordinary European Council: a source of debate was indeed the burden-sharing between the MS[1138]. By mid-July, the Commission should present a 12 point legislative package which will deal with the revision of the ETS; the Energy tax Directive; the Regulation setting CO_2 emission performance standards for new passenger cars and for new light commercial vehicles; the Directive on deployment of alternative fuels infrastructure; the amendments to the Renewable Energy Directive to implement the ambition of the new 2030 climate target; the amendments to the Energy Efficiency Directive to implement the ambition of the new 2030 climate target, among others[1139].

Moreover, other authors link the European Green Deal to the issue of social and economic inequalities: according to a study published in the Journal of Eastern Europe Research in Business and Economics, the EU have the potential to become the world leader in the green transition if it manages to address social and economic inequalities along with the climate change issue[1140]. New green sectors can provide employment opportunities for unemployed young people, as also stated by another study published on The Lancet[1141].

In conclusion, the European Green Deal can potentially make Europe a "greener" continent, but differences among MSs must be overcome; problematic issues such as the refugee crisis and the pandemic of Covid-19 already posed problems to the States and a delicate issue such as the "green transitions" can possibly divide Europe. In this sense, we have to recall the recent debate on a "multi-speed Europe": according to some studies, this solution might allow MSs which are willing to further the European integration to increase the efficiency of the European policies, while consenting other states to pursue their own national policies[1142]. Conversely, other argues that this solution would be an error, breaking Europe's strength: its unity[1143]. However, Europe risks finding itself in the same situation which characterises the international arena: it risks being divided between the different national interests and opt for a compromise which would not help solving the issues. Conversely, as stated above, when facing such delicate matters, rapid responses are needed. Furthermore, European States risk being among the few States that will unilaterally decide to curb the emissions; that is why

[1137] *Ibidem*
[1138] Basso, F., *Pacchetto clima, l'UE si divide su emissioni e costi per gli Stati,* Corriere della Sera, 26th of May 2021
[1139] European Parliament, *Fit for 55 package under the European Green Deal,* Legislative Train schedule, accessed on 26th of May 2021
[1140] Nae, T., Panie, N., *European Green Deal: The Recovery Strategy Addressing Inequalities*, Journal of Eastern Europe Research in Business and Economics, 2021
[1141] Becchetti, L., et al., *European Green Deal as social vaccine to overcome COVID-19 health & economic crisis*
[1142] Kundera, J., *The Future of EU: Towards a two Speed Europe*, European Research Studies Journal, 22, 3, 261-281, 2019
[1143] Sobotka, B., *Two-speed Europe is a mistake,* POLITICO, 6th of December 2017

a "green diplomacy" and an international climate finance[1144] are needed, as also stressed by the European Commission[1145]. In this sense, a stronger a united Europe would serve as an example in the international arena.

Provided that the European Green Deal will effectively reduce the European emissions, results will be evident in the long-term period. However, we are already facing huge migratory fluxes. What should Europe's approach be for the short and middle period?

3.2.2 Short and middle-period policies

Broadening the refugee status

According to the 1951's Refugees Convention, a refugee is someone who "is unable or unwilling to return to its country of origin owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion"[1146]. Recently, however, a growing number of publications stressed the need to include in the definition of refugee "people leaving their countries due to extreme climatic event" too[1147]. Those who are not defined as refugees such as "economic migrants" indeed, do not possess the credentials to benefit from the international protection granted by the 1951 Convention and their position must be determined by the host State[1148]. Already in 1990, the IPCC stated that climate change would have impacted on human migration, but so far the definition of refugee hasn't changed yet; however, according to Behrman and Kent, University of London and University of East Anglia, the same legal framework that applies to political refugees (the responsibility of the international community when people are no longer protected by their national states – must be used for the climate refugees, since the state from which they come is no longer able to protect them as it lacks resources, is hit by extreme weather events or is disappearing (as in the case of the islands)[1149]. As climate change effects are going to worsen, we can argue that more and more people will find themselves in need of international protection: to establish the status of climate refugee might therefore be an incentive to address the issue of climate change in the international *fora*.

Avoiding deaths in the Mediterranean: the humanitarian corridors

In addition to grant the international protection to climate refugees, however, other policies must be pursued. In the short-period, indeed, European authorities must cope with the issue of refugees that will arrive or which have already arrived. In order to avoid humanitarian disasters such as the shipwrecks we daily hear of, alternative solutions to dangerous crossing of the Mediterranean must be provided for refugees who have the

[1144] European Commission*, International climate finance,* accessed on 23th of May 2021
[1145] European Commission, *EU climate action and the European Green Deal,* accessed on 23th of May 2021
[1146] UNHCR, *Text of the 1951 Convention Relating to the Status of Refugees,* 1951
[1147] Behrman, S., Kent, A., *Climate Refugees: Beyond the Legal Impasse?* Taylor and Francis, ebook, 2018
[1148] UNHCR, *UNHCR Resettlement Handboo and country chapters, Refugee status and resettlement,* 2018
[1149] Behrman, S. and Kent, A., *Climate Refugees: Beyond the Legal Impasse?* cit.

credentials to obtain the international protection. In the current situation, indeed, even those who are eligible for the status of refugee have no choice but to risk the dangerous crossing of the Mediterranean so to be recognized as refugees in Europe; in order to respond to such a situation, in recent years private organizations started to develop a solution, the *humanitarian corridors*, which provides a legal entry in Europe to those who possess the refugee credentials[1150]. The humanitarian corridors indeed, are based on article 25 of the European Visa Code, which allows states to grant visas for humanitarian or national interest reasons; refugees apply in so called *transit countries* (Jordan, Lebanon, Ethiopia) and are flown to Europe via plane. Then, once arrived, they are immediately welcomed in local communities so to avoid marginalization, while they are also initiated to work[1151]. This approach is also considered a disincentive for the dangerous crossing but also help contrasting illegal human trafficking too[1152]. So far, humanitarian corridors took people to Italy, France, Germany, San Marino, and Andorra from Ethiopia, Jordan, Lebanon and Greece, but also from Mexico to the USA[1153]. In the face of growing migratory fluxes, humanitarian corridors could be therefore a viable alternative to agreements with departing countries.

Integrating migrants into the labour market

The humanitarian corridors approach reminds us of the resettlements of the Germanic tribes into the Roman Empire; actually, based on what we have seen, we can grasp that these populations' transfers were motivated by the absence of sufficient labour. Historians, indeed, argue that these people were settled in "deserted lands"[1154]. Interestingly, we have also previously stated that Europe is now facing a demographic decline; the majority of EU's MS, indeed, will experience declining labour force size, a process which will accelerate in the following decades due to the past demographic trends[1155]. By 2050, the European working age population (20-54) will decrease by 49 million, while in the USA it will increase by 20 million, and most importantly, it will reach 1.3 billion in Sub-Saharan Africa[1156]. In this sense, a study published by the European Union argued that a more labour integration of immigrants can decrease the expected decline of the employed population by half, while, on the other hand, non-integration might double the decline[1157]. Moreover, according to another study, in Southern European countries in particular, immigrants are already highly employed in the shadow economy, which, in 2002, accounted for "28.3 per cent of GDP in Greece, 26.2 per cent of GDP in Italy and

[1150] Ricci, C., *The Necessity for Alternative Legal Pathways: The Best Practice of Humanitarian Corridors Opened by Private Sponsors in Italy*, German Law Journal, Cambridge University Press, 21, 265-283, 2020; Rolando, F., Naso, P, *Humanitarian Corridors to Italy: An Interview With Professor Paolo Naso*, Harvard International Review, 39,2, 64-67, 2018

[1151] Rolando, F., Naso, P, Humanitarian Corridors to Italy: An Interview with Professor Paolo Naso, cit.

[1152] *Ibidem*

[1153] Sant'Egidio, *Humanitarian corridors,* accessed on 24th of May 2021

[1154] Mathisen, R., *Peregrini, Barbari, and Cives Romani: Concepts of Citizenship and the Legal Identity of Barbarians in the Later Roman Empire*, cit.

[1155] Marois, G., Potančoková, M., *Scenarios of labour force participation and employment integration of immigrants in the EU: demographic perspective*, JRC Technical report, European Commission, 2020

[1156] European Commission, *Demographic trends of workforce,* accessed on 24th of May 2021

[1157] Marois, G., Potančoková, M., *Scenarios of labour force participation and employment integration of immigrants in the EU: demographic perspective*, cit.

22.3 per cent of GDP in Portugal and Spain"[1158]. According to the authors of the study, the number of undocumented migrant workers would be in the hundreds of thousands in these countries. Moreover, according to a recent study, extra-UE immigrants are already the 13% of the key workers (teaching professionals, skilled agricultural workers, science and engineering associate professionals, personal care workers and cleaners and helpers), but they are also overrepresented in many European countries in this category, especially among the low skilled key workers[1159].

It is becoming evident, indeed, that Europe actually needs immigrants, as a 1992 work already stated: immigration inflows would ensure population stabilization, but also reinforce the population of working age[1160]. Interestingly, a 2019 proposal made by a study published by the Centre for European Policy Studies called for the creation of a "EU-Africa partnership for human capital formation and skill mobility"[1161]. The authors argued that Europe must fund vocational training programmes in Africa based on the needs of both the African and European labour market, issue working permits and involve the private sector to facilitate job seeking across the Mediterranean[1162]. Such a policy of integration of migrant workers would help boosting the European economy, while also giving migrants the possibility to develop working skills that could also support a potential future business activity in their countries[1163]. In this sense, this approach is linked to possible European investments in Third World countries, in order to create the conditions for a sustainable economic growth that can prevent people from migrating.

Boosting the Third World (green) economy

To give refugees the chance to enter Europe legally and safety is a short-period solution; on the other hand, migrants and refugees should also be given the possibility to remain in their countries and to find work and study opportunities there. As stated in the previous chapter, actually, Europe is already the world's largest contributor of development aid and the largest donor of financial aids aimed to mitigate climate change as the 20% of the current budget is dedicated to climate finance[1164]. To invest in the rural areas, for instance, would help people not seeking job opportunities elsewhere: moreover, Africa for instance, contains half of the world's uncultivated lands that could be used for producing food, but spends 35 billion on food imports yearly[1165]. However, Africa's potential agricultural export is enormous since the continent could export – for instance –

[1158] Peixoto, J., et al., *Immigrants, markets and policies in Southern Europe,* in Immigrants, markets and policies in Southern Europe, Trends, Structures and Policy Implications, edited by Marek Okólski, IMISCOE Research, Amsterdam University Press, 2012
[1159] European Commission, *Immigrant Key Workers: Their Contribution to Europe's COVID-19 Response,* 24th of April 2021
[1160] Coleman, D., *Does Europe Need Immigrants? Population and Work Force Projections,* The International Migration Review,26, 2, Special Issue: The New Europe and International Migration,413-461, 1992
[1161] Barslund, M., et al., *EU-Africa partnership for human capital formation and skill mobility,* CEPS, MEDAM, 2019
[1162] *Ibidem*
[1163] UNCTAD, *Promoting refugee and migrant entrepreneurship in East Africa, the Andean region, and the Middle East*, accessed on 25th of May 2021; Fondazione ISMU, *Migranti africani fanno impresa grazie a un percorso di formazione e mentoring – Comunicato stampa 12.10.2020,* 12th of October 2020
[1164] European Commission, *International development aid,* accessed on the 10th of May 2021
[1165] IFAD, *Investment in Africa's rural areas will curb economic migration, IFAD President tells ministers,* 04th of July 2016

in the neighbouring region of Middle East, which is predominantly made of arid lands[1166]. On the other hand, it is also important to create the conditions for the integration of developing countries in the world market: FDIs are essentials to boost the economic growth and the exports[1167]. However, it is also important to remember, as previously mentioned, that trade can help reducing poverty, but economic underdevelopment in these countries is also favoured by widespread corruption, poor governance, and insufficient human rights protection, among other factors. Policymakers should therefore also consider this issue.

Moreover, developed countries must also help developing countries in creating the basis for a sustainable development, from a social, economic, and environmental point of view. This is, for instance, the approach of the cooperation between the European Union and the African Union, which aims to improve market access for young farmers and smallholders with the aim to sustain the agrobusiness development. Moreover, as recently stated by President of the EU Commission Ursula Von der Leyen, "the potential for green economy in Africa is massive" and the green transition can create jobs and boost a sustainable growth in the post-pandemic, both in Africa and in Europe[1168]. Furthermore, green energy would help developing countries be less dependent on the international market volatility, according to UNCTAD[1169]. In addition, a large study, "Inclusive Green Growth. Advances in African Economic, Social and Political Development", concluded that green business in Africa ameliorates the quality of life in rural areas of the Continent, boosts innovation, provides job creation and poverty alleviation[1170]. This is also confirmed by the report published by UNEP, "Green economy, developing countries success stories", according to which green economy and sustainable urban planning have beneficial effects in terms of economic growth in developing countries[1171]. However, it is also important that these policies also take in account local practices of adaptation to climate change[1172], in order to be more successful.

The importance of a sustainable growth lies in the fact that it both creates job opportunities in the middle period and lessen the effects of climate change in the long run. However, mitigation strategies must always go hand in hand with development projects: indeed, already in 1988, a study published by the US National Academy of Science argued that protected areas will not survive in a human environment which struggles with hunger[1173]. Indeed, forests are burnt in order to produce food for family sustenance, thus the need to both

[1166] LCLUC, Dryland Degradation in the Middle East, accessed on 25th of May 2021
[1167] European Commission, Communication from The Commission to The European Parliament, The Council and the European Economic and Social Committee, Trade, growth and development, 27th January 2012
[1168] European Commission, *EU-Africa Business Forum: over 3 000 participants focus on the transition to green and sustainable energy in Africa,* 28th of April 2021
[1169] UNCTAD, *Green energy could help developing countries diversify their economies,* 12th of October 2017
[1170] Ngondjeb, D., et al*., Insights on Africa's Future in its Transition to the Green Economy,* In: Atewamba C., Yong Ngondjeb D. (eds) Inclusive Green Growth. Advances in African Economic, Social and Political Development. Springer, Cham, 2020
[1171] Sukhdev, P., et al., *Green economy, developing countries success stories,* UNEP, 2010
[1172]Nyong, A., et al., *The value of indigenous knowledge in climate change mitigation and adaptation strategies in the African Sahel,* Mitigation and Adaptation Strategies for Global Change, 12, 787–797, 2007
[1173] Brady, N., International Development and the Protection of Biological Diversity, in Biodiversity, Wilson E.O. editor, National Academies Press, 1988

provide alternative forms of sustainment and save biological diversity. For instance, the same study suggests the use of multipurpose tree species in the agricultural activities, mixing trees with food crops and increasing the environmental education[1174], thus providing an example of the kind of approach which is needed.

Urbanization planning in developing countries

Massive urbanization, we have seen, is considered one of the major causes of biodiversity loss and therefore, of climate change; however, this is not only true for developed countries, but increasingly for developing ones[1175]. Importantly, it is projected that there will be nearly 2 billion more urban residents by 2030, the most of which in small cities in developing countries: this urbanization will therefore have important effects on mankind and on the environment[1176].

Developing countries have less resources to devote to land protection in cities and therefore biodiversity loss might not be a priority[1177]; however, as these countries are projected to host the great majority of the new population in the years to come, the international community must foresee possible policies in order to prevent a huge natural habitat disruption. The research "The Future of Global Urbanization and the Environment", by McDonald et al., argues that possible policies could be to treat ecosystems as urban utilities, make a global effort to protect biodiversity during the urbanization process and to coordinate at the international level to provide guidelines for the urban sustainability[1178].

Increasing urbanization is not only linked to the possible disruption of habitats, but also to bushmeat consumption. Which, we have seen, is linked to zoonotic spill over. Importantly, according to McDonald et al., the bushmeat trade can possibly increase in West Africa due to the proximity of natural habitats to cities that will grow[1179]; moreover, another study claims that trade of parts of animals recently rose and the great global market demand will influence the habitat loss and degradation, as well as the pattern of urbanization[1180]. Population growth will also increase the demand for bushmeat; however, importantly, bushmeat consumption

[1174] *Ibidem*

[1175] Pauchard, A., *Multiple effects of urbanization on the biodiversity of developing countries: The case of a fast-growing metropolitan area (Concepción, Chile),* Biological Conservation, 127, 3, 272-281, 2006

[1176] McDonald, R., et al., *The implications of current and future urbanization for global protected areas and biodiversity conservation,* Biological Conservation, 141, 6, 1695-1703, 2008

[1177] Elmqvist, T., et al., *Urbanization, habitat loss and biodiversity decline, solution pathways to break the cycle,* In: K.C. Seto, W.D. Solecki, C.A. Griffith (Eds.), The Routledge Handbook of Urbanization and Global Environmental Change. Routledge, Abingdon, Oxon, UK, 139 – 151, 2016

[1178] McDonald, R., et al., The Future of Global Urbanization and the Environment, Solutions, 2016

[1179] McDonald, R., et al., *The implications of current and future urbanization for global protected areas and biodiversity conservation,* cit.

[1180] Güneralp, B., *Urbanization in Africa: challenges and opportunities for conservation,* Environmental Research Letters, 13, 1, 2017

has also been linked to poverty and political instability (in the fact that lack of law enforcement reduces the availability of alternative food)[1181].

In order to act on the bushmeat hunting, indeed, there must be distance between people and wildlife: protected areas must be promoted and human settlement there must be prohibited, while human movement within the protected areas must be controlled. Moreover, land zoning has been successful in reducing bushmeat hunting in areas where human settlements bordered on reserves[1182].

3.2.3 Preventing the next pandemic

As said, preventing habitat disruption is aimed to prevent bushmeat consumption which, in turn, is aimed to prevent possible zoonotic spill over. Policies must therefore address the causes of wildlife consumption, or disruption of habitats, which, we have seen, also include poverty and lack of food. However, this approach must also be accompanied by the abolition or the limitation of wildlife trade, as China recently did in the wake of the Covid-19 pandemic[1183]. According to Kolby, J., National Geographic, a "clean trade" might reduce risk of spreading pathogens: this would include testing before transport and at the border, as it usually is for cattle[1184]. Surveillance of wildlife for high-risk pathogens and surveillance and risk reduction in people at high risk of contact with wildlife must also be enforced[1185]. A global effort is also needed: in the case of Covid-19 the virus came from China, but other "emerging disease hotspots" are also South Asia, sub-Saharan Africa, and Latin America: international sanitary organization should therefore improve surveillance in these areas[1186]. An holistic approach which combines surveillance and control, reinforced health system, ecosystem management and collaboration with social sciences, might be a possible solution to prevent the next pandemic[1187].

Moreover, epidemiologist Michael Osterholm and author Mark Olshaker, argue that SARS, MERS, the "swine flu", Ebola and Zika should have been a "wake up call" for international authorities, but they were not. Furthermore, lack of a rapid response was also one of the main causes of the spread of Covid-19: Chinese authorities admitted only later that the virus was out of control while American authorities underestimated the risk, despite several studies argued that there could have been a devastating effect[1188]. In 1918 – the authors

[1181] Lindsey, P., *The bushmeat trade in African savannas: Impacts, drivers, and possible solutions*, Biological Conservation, 160, 80-96, 2013
[1182] *Ibidem*
[1183] Mallapaty, S., *China set to clamp down permanently on wildlife trade in wake of coronavirus,* Nature, 21st of February 2020
[1184] Kolby, J., *To prevent the next pandemic, it's the legal wildlife trade we should worry about,* National Geographic, 7th of May 2020
[1185] Daszak, P., et al., *A strategy to prevent future epidemics similar to the 2019-nCoV outbreak,* Biosafety and Health, 2,1, 6-8, 2020
[1186] *Ibidem*; Roche, B., et al., *Was the COVID-19 pandemic avoidable? A call for a "solution-oriented" approach in pathogen evolutionary ecology to prevent future outbreaks,* Ecology Letters, 23, 11, 1557-1560, 2020
[1187] Roche, B., et al., *Was the COVID-19 pandemic avoidable? A call for a "solution-oriented" approach in pathogen evolutionary ecology to prevent future outbreaks,* cit.
[1188] Osterholm, M., Olshaker, M., Chronicle of a Pandemic Foretold, Foreign Affairs, 99, 4, 10-25, 2020

recall – cities which reacted early to the flu pandemic had less casualties; however, this requires reliable information and responsiveness from the beginning, which, on the other hand, lacked in several cases. Interestingly, in October 2019 The Johns Hopkins Centre for Health Security hosted a high-level pandemic exercise – Event 201 – which highlighted the need to cooperate among industries, national governments, and International Organizations[1189]; however, the authors of the article argue that this event and the past ones demonstrated a general lack of coordination and confusion[1190]. Moreover, the article claims that Covid-19 should not be considered a "one in a hundred year event"[1191], for the reasons we have analysed yet: increasingly connected world, fast urbanization which creates the conditions for malnutrition and poor hygienic conditions, and millions of people living in contact with animals.

Furthermore, we have to bear in mind medical aspects too: as we have seen during the early stages of the pandemic, States competed with each other to ensure the necessary medical devices; national production of vaccines and health technologies should therefore be promoted globally to respond to the immediate needs of the population. For instance, Europe has recently announced that it will promote the manufacturing and access to vaccines, medicines and health technologies in Africa[1192].

Ultimately, international cooperation is needed: Osterholm and Olshaker, indeed, argue that smallpox was eradicated following the decision of both the USA and the USSR to collaborate[1193]. However, collaboration in such a divided world seem unlikely, at least for now. Cooperation, however, is needed in the health sector and in the exchange of information: international conferences which aims to study the annual new strains of flu and to program the vaccine production are already in place, but this kind of cooperation must be strengthen. Remarkably, we must stress that even though there are more IOs than during the Spanish flu pandemic, States nonetheless adopted unilateral approaches; however, this does not mean that international cooperation is doomed to fail, but rather that there is a unwillingness or an ambivalence on cooperating at the international level[1194]. This is exemplified, for instance, by the very WHO, to which States assigned increasing tasks while limiting its independence. According to Stewart Patrick, Senior Fellow in Global Governance at the Council of Foreign relations, "multilateral institutions are what states and their leaders make of them": this is, at least, the lesson drawn from the G-20 response to the 2008 economic crisis, which was coordinated by President Obama and helped avoiding another Great Depression[1195]. Furthermore, as for the current pandemic, a global response was blocked by China's lack of transparency and unwillingness to pass an important resolution at the Security Council, as well as by the US response. In a cosmopolitan world, Patrick argues, this would have not

[1189] Center For Health Security, *Event 201,* accessed on the 26th of May 2021
[1190] Osterholm, M., Olshaker, M., *Chronicle of a Pandemic Foretold,* cit.
[1191] *Ibidem*
[1192] European Commission, *€1 billion Team Europe initiative on manufacturing and access to vaccines, medicines and health technologies in Africa*, 21st of May 2021
[1193] Osterholm, M., Olshaker, M., *Chronicle of a Pandemic Foretold,* cit.
[1194] Patrick, S., *When the system fails,* Foreign Affairs, 99, 4, 40-51, 2020
[1195] *Ibidem*

happened, but in recent years democracies have staggered under the blows of nationalism and populism, thus neglecting international cooperation[1196]. Furthermore, unwillingness to cooperate at the international level went along with the unwillingness to implement commitments such as the ones requested by the WHO, which, in turn, has little leverage on the national governments.

To conclude, we agree with the author of "When the system fails": governments are interested in a multilateral system which can provide an effective response to crisis such as the Covid-19 but are less willing to renounce to their sovereignty in such a delicate issue as health[1197]. However, the current analysis showed that international cooperation is needed in such an interconnected world, be it on the issue of climate change, of refugees, of economy or pandemics. Until States won't be willing to fully cooperate on these issues, we will probably continue experiencing the effects of climate change, wars, migrations, and pandemics.

3.3 Avoiding another Migration period

In the previous paragraph we have analysed possible policies that could help avoiding thousands of deaths in the Mediterranean, preventing people from leaving their homes, boosting a "green" economic growth, preventing another pandemic and mitigating the effects of climate change. Studies showed indeed that we can effectively mitigate climate change: we can thus avoid its disruptive effects: it's a matter of cooperation. Importantly, we have mainly analysed *already existing* policies and best practices which must be enhanced and favoured, along with the climate mitigating actions: these policies and actions, indeed, have a great potential, but require a global effort to have sustainable and durable results. The European Green deal is to yet to be approved and is already facing oppositions; the humanitarian corridors have been implemented by a few European countries and by Canada and the US only; green and migrant start-ups are still small and limited realities so far, and the current pandemic of Covid-19 highlighted the general unwillingness to cooperate at the international level. Nonetheless, if Europe will manage to overcome its internal division and commit itself to curb the emissions, it might represent a powerful example for the international community; moreover, we claim that micro-level best practices and policies such as the humanitarian corridors and the migrants' enterprises provide important approaches which can be easily followed. We previously claimed that the current global interconnection facilitates for instance the spread of pandemics, but it can also facilitate the adoption of these best practices. Indeed, social networks, the very symbols of our global era, are becoming more and more important to vehiculate messages and examples: this was evident for the abovementioned *Arab springs*, but also for the global youth movement "Fridays for future". Such global movements have the potential to change and influence the global agenda and will surely play an important role in the next future.

[1196] *Ibidem*
[1197] *Ibidem*

This last chapter, therefore, was aimed not only to provide possible policies, but also to show that the current global situation of crisis can potentially help providing a global response. When presenting the aforementioned diagram, we claimed that climate change might provoke pandemics, conflicts and migrations. However, studies also claimed that even though conflicts (and thus migrations) are caused by a variety of situations, they are more likely to take place in countries with low human development[1198] – which can easily enter in a conflict trap – or in countries affected by horizontal inequality[1199]. Therefore, abovementioned policies might not only avoid migration, but also conflicts, thus creating a positive spiral between economic growth and climate change mitigation. Moreover, trade has been also associated to peace in the sense it not only creates economic growth and interdependence, but according to political philosophers, it also favours the understanding of each other's culture[1200]. Trade, therefore, might also increase international cooperation, while boosting global economic growth; international cooperation, on the other hand, is what is needed to approach global issues such as the ones we discussed before. Indeed, according to Nicholas Stern, former World Bank Chief Economist, climate change might also provoke collateral effects on society and international cooperation, thus reducing global GDP by 20%[1201].

In conclusion, we might argue that we already got the keys to avoid another Migration Period, that is to say to avoid further pandemics or the negative effects of climate change. Summarizing, we could say that both international cooperation and micro-level best practices are needed: in such a globalized world, indeed, a small virus and a local best practice can have a worldwide impact.

[1198] Humphreys, M., *Economics and violent conflicts,* Harvard University, 2003
[1199] *Ibidem*
[1200] *Ibidem*
[1201] Mastrojeni, G., Pasini, A., *Effetto guerra, effetto serra,* cit.

Conclusions

The current study was guided by a consideration which humanists usually trace to a phrase from Cicero's *De Oratore*: "*Historia vero testis temporum, lux veritatis, magistra vitae, nuntia vetustatis*": History [is] the witness of time, the light of truth, the life of memory, the directress of life, the herald of antiquity[1202]. In other words, history is often to be studied because it could help grasping modern trends, foresee possible evolutions and enlighten processes through the lens of past events. The research question *Are we living in another Migration period?* was thus inspired by the willingness to approach the study of a period like the contemporary one which can be defined of crisis, or, at least, of epochal changes. Just like the Migration period was.

The choice to focus on the Migration Period was mainly motivated by two reasons. First of all, the Migration Period is also known in Italian and French as the period of the "barbarian invasions". Such a striking difference (invasions/migrations) is particularly interesting as it drives the attention on the different interpretation and meaning that men could give to the same historical process. In particular, the "Roman" world clearly saw this period as negative as it meant the end of the Roman Empire, while the "Germanic" one considered the same era as a period of migrations motivated by several factors, as migrations usually are. Given these two opposite interpretations, a question naturally arises: how will our period be seen?

Another reason to focus on the Migration Period was given by the new interpretations according to which the Germanic tribes' movements were also influenced by a changing climate. This new approach drives again the attention on our period: the current climate is changing too, and this will certainly drive more people out of their countries.

A single study could have been therefore dedicated to the comparison between the past and the current migrations only: however, interestingly, both the Migration Period and the current era are characterized by several pandemics, the repeated outbreaks of the Justinian Plague and the various zoonotic diseases of the twentieth century. How these diseases interact with migratory movements? And there could be a link between climate change and pandemics?

The current study was thus aimed to investigate such links through comparison in order to foresee possible evolutions and provide policies on how to cope with such historical challenges.

From the very beginning, the study aimed to include in the analysis different views and disciplines, in order to pursue an holistic approach. Such an approach, indeed, is needed in a globalized world as the one we are living in. However, even though we cannot properly define the Migration period's world as "globalized" in the current meaning of the term, it actually was, and the current study demonstrates it. Trade routes and social

[1202] Cicero, *On oratory and orators,* Watson, J.S., Harper & Brothers, New York, 1860

networks are certainly more developed in these days than they were in the Early Medieval Ages, but there were connections and social networks as well. The importance of studying the past from this view, indeed, lies in the fact that the world became increasingly interconnected: the more social networks there are, the more trends are accelerated. We can contend that technologies are different between the two periods, but historical trends do not differ: migrations are still driven by the same factors (violence, economic reasons, appeal of the society of arrival, changing climatic conditions) and can be thus studied and compared. Pandemics still have the same effects on societies, and we can therefore provide interesting analysis.

As mentioned, therefore, such an holistic approach was needed: throughout the current analysis, indeed, we considered several studies from different branches of science: medicine, epidemiology, sociology, economy, physics, biology and naturally history. Indeed, we claim that even though they are different kind of sciences (social, humanistic, medical…) they all deal with humanity; in a globalised world, there is no place for the separateness of sciences. But, actually, has there ever been? Cooperation is thus needed. Actually, cooperation is needed both between sciences and nations. This is, indeed, the conclusion to which we have arrived. Humanity, indeed, already possesses the solutions to deal with climate change and its effects. Nonetheless, these solutions have not been fully implemented or are marginal; as we are living in the era of online social network, though, these best practices have the potential to become global, to be widely discussed and change the global agenda. Increasing social networks, indeed, do not only mean more rapid spread of viruses, but also more rapid and wide spread of information, beliefs and knowledge. Which is what humanity needs to cope with such historical challenges.

A (more) globalised world, therefore, is both a challenge and a solution. Differently from the Migration Period, humanity can mitigate the effects of climate change and act on it. Furthermore, since in the future climate change might become the main cause of pandemics and migrations, to act on it might solve the other problematic issues. Global interconnections are also at the basis of disputes, violence, inequality; however, investing on green economy in developing countries, for instance, means to create the conditions for a "green" growth which might both mitigate the effects of climate change and avoid dangerous crossings of the Mediterranean. Furthermore, an inclusive and sustainable economic growth might also reduce the risk of conflicts. Importantly, this does not mean that investing on green business will solve the world's main problems; however, we can argue that it could effectively provide the basis for a lasting peace. Europe indeed, after having been the epicentre of two global conflicts in the span of a generation, has not experienced internal wars following the beginning of the process of economic and political integration[1203]. Now Europe must commit itself to promote pacification and economic growth in the other parts of the world; actually, these

[1203] Lopez, I., *La Unión Europea como factor de paz,* Agenda internacional, XI, 22, 25-53, 2005

interventions are already taking place, but they will only be successful if they will also include cooperation with international stakeholders and if they will have an holistic approach.

To conclude, we might ask ourselves the previously mentioned question: How will our period be considered? Europe (and the world) is at a crossroad; throughout the current analysis we have seen that the processes that are taking place and which took place in the Migration period are extremely similar, thus being possibly studied with a comparative approach. However, since the Migration period the world became more and more connected thanks to increasing trade routes, internet and wider social networks, among other factors. This actually poses new challenges and solutions: Europe might avoid other pandemics and migrations within its borders but cannot prevent the effects of climate change from reaching it anyway. Will Europe close to the world? A global perspective and an holistic approach, on the other hand, might provide possible solutions.

We are at the edge of another Migration period: looking at the past can thus mean changing our future.

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Summary

Pandemics, migrations, and climate change: a summary of 2020, one would say. We are not talking of our time, tough. The same events, indeed, occurred during the so-called *Migration Period*, an historical period stretching from the 3rd to the 9th century, during which populations across Eurasia left their original homeland. This was due to several factors, but increasing evidence and studies reveal that a major role was played by climate changes. Notably, the same is happening now. It is sometimes said, indeed, that climate change will make people leave their homes in the future: data, however, reveal that changing climate conditions are already having a major role in important conflicts which are driving millions of people out of their country. The present study is thus aimed to compare the two historical periods (i.e. migration period and the current era) in order to grasp similarities and common trends. The purpose is to foresee possible future evolutions and provide policies to tackle the challenges that migratory waves and pandemics, both triggered by climate change, might pose to our societies. The study is based on two key points. First of all, in our opinion, globalization is intrinsic to mankind; it is a fact that early Medieval Europe was less "globalized" than it is now, though it was. Globalization (and diseases, for instance) travelled along trade routes, while migrations connected distant parts of the world. Importantly, as the world is much more globalized than it was 1,500 years ago, trends are now accelerated: the Justinian Plague took less than one year to reach Constantinople from Pelusium, where the first outbreak of the disease was recorded, while Covid-19 probably took less than one day to reach New York from Wuhan. Hence the importance of studying similar trends to deal with possibly immediate evolutions. Such a view is linked to the second main point: we do believe in the collaboration between sciences. this is made urgent by the consciousness that in such a globalized world a tiny virus can have huge economic consequences, or that the disruption of natural environments might lead to increasing conflicts and migratory waves. In this research, indeed, we refer to studies of different branches of science: medicine, epidemiology, physics, ecology, statistics, economy, sociology and, naturally, history. This holistic approach gave us the possibility of identifying policies for the short, medium and long term.

Chapter I – The Migration period

The Migration period has been defined as a *caesura* between the Roman era and the Middle Ages. That period, indeed, was not only characterised by the end of the Roman Empire, but also by the contemporaneous migrations of Euro-Asiatic tribes into Europe and by the outbreak of the Justinian Plague. As concerns the disease, however, we lack certainties on the number of deaths as well as on its effective diffusion. Therefore, our approach was to analyse and focus on the historical sources (Procopius, John of Ephesus, Evagrius, Gildas and Paul the Deacon). Importantly, even though ancient historians provided important and useful descriptions of the symptoms of the plague, they were dubious about how it spread, and could not explain why, for instance, certain areas, cities or people were not infected. At the same time, contemporary historians debate on the actual death toll of the plague; in fact, even though we cannot be sure of the actual number of losses (statistics state

that 33-40% of the world's population died from the consequences of the disease), we can speculate about its diffusion thanks to the archaeological and textual evidence.

According to the sources, the first outbreak was recorded in 541 in Pelusium, an Egyptian port; one year later the pestilence arrived in Constantinople, and by 543 it had reached northern Gaul and Iberia. At that time, Italy was at the centre of the dispute between the Goths and the Byzantine, and within 25 years it would be invaded by the Lombards; political instability, indeed, was the norm during the migration period and this makes it difficult to pinpoint the passage of the plague, though Paul the Deacon claims that entire crops and settlements were abandoned in Italy. In the rest of Europe, the Visigoths reigned in modern France and Spain, but these two countries were also ruled by the Byzantines and the Suebi (Spain), as well as by the Franks (France). Literary sources are scarce, although we can find evidence of the passage of the plague there: in Spain we find both massive burials and reference to the "inguinal plague [that] devastated almost all of Hispania"; as for France, Gregory of Tours stated that several parts of Gaul did not experience the plague, while territories along trade routes and rivers did. In Great Britain, Gildas (died around 570) mentions a "well-known pestilence" that provoked high mortality, while the Irish Annals refer to a "great mortality" in 545. Particularly interesting, however, is the issue of the purported arrival of the plague in Northern Europe, about which we can only make hypotheses on the basis of some mass burials and a general change in burial customs. Moreover, some authors claim that the disease might have reached Scandinavia notwithstanding the absence of the grey rat; indeed, there the black rat was absent also during the Middle Ages, but casualties were recorded in Northern Europe too. Additionally, recent research has shown that the plague could also be carried by fleas alone, without the help of rats, as commonly believed. This could help further our knowledge of the acutal spread of the Justinian Plague.

As regards the socio-economic effects of the disease, historians provide important information: a general sense of uncertainty was evident in the people's behaviour, while the abandonment of lands and settlements, provoked by the demographic decline, had repercussions on the economy. Protests and bread riots were widespread, workers demanded subsidies, and trade declined. Furthermore, a general fortification is evident in the countryside, probably triggered by the political uncertainty and the fear of a mysterious disease coming from outside. The plague, indeed, had also geopolitical effects: the contemporaneous reduction inf the Eastern Roman Empire's military budget and the depopulation of the Balkans probably paved the way, according to some historians, to the migration of the Slavs into the peninsula. Moreover, people moved from a place to another, escaping the plague – although they probably spread it - while years of plague epidemics, famine, and wars triggered mass hysteria. Changes in burial habits are also evident, as people became accustomed to mass graves: this caused widespread distress, as Procopius' account suggests. Actually, the same author tells us that Justinian appointed a "referendarius", who "supervised"; this can be interpreted as an allusion to a reorganization of power due to the crisis situation. Moreover, we find a reference to a possible strengthening of power during the pandemic, while the Visigoths dominion in Spain probably collapsed also due to the

effects of the Plague. In addition, even though we find evidence of magical spells to try to cure the disease, there was also a development in health care: new facilities were developed, and the first hospitals started to appear in Europe.

Finally, after repeated outbreaks throughout three centuries, the Plague mysteriously disappeared, just like its actual provenience is still unknown. According to ancient sources, it is thought to have started in south-west India, though this could probably also refer to modern-day Ethiopia. Recent research has shown that the basal strain of *Yersinia pestis* (which causes bubonic plague) was present in the mountains of China three centuries before the first recorded outbreak, though it is not clear how it arrived on the Mediterranean coast. We suggest that it may have been carried by the Hephthalite Huns, who moved from the mountains of China to India in the early sixth century, when a geopolitical shift was taking place in the Indian Ocean. The African Axumite kingdom was indeed extending its commercial influence as far as India and Axumite merchants probably also arrived in the Hephthalite cities; we can thus probably conjecture that in doing so they brought *Yersinia pestis* to Egypt, where the spill-over between an intermediate host and humans might have taken place. The plague would then have arrived in Europe via the maritime Silk Road. Alternatively, it has been argued that it may have arrived via the inland Silk Road or through the movement of the Huns into Europe. What is certain is that the Migration Period was a period of movement of people, in which the Huns played an important role. It is thus time to focus on the migratory flows of that time.

Descended from Scandinavia, the Germanic tribes lived beyond the *limes,* the Roman border, in the so-called *Barbaricum.* Germans were once nomads, but they changed their way of living between the period of Cesar and Tacitus, after which their demographic growth led to the formation of federations such as the ones of the Alemanni, the Franks, the Saxons and the Thuringians. It is also important to underline that throughout the centuries, the Germanic tribes were also welcomed in the Empire as *foederati*, that is to say they were given lands on the condition that men would fight for the Roman army. This happened since the time of August, with emperors welcoming huge numbers of settlers, ranging from tens of thousands to hundreds of thousands of people. Sometimes, on the other hand, tribes forcibly entered the Empire, ending up as far as Africa (as the Franks did). The first "crisis", however, took place in 376, when thousands of Goths begged to be accepted within the Empire due to the arrival of a powerful enemy: the Huns. These *ante litteram* refugees were welcomed within Dacia and helped to cross the Danube, but they then revolted due to the shortages of food and the mismanagement of this "refugee crisis"; Rome, indeed, was at the eve of its socio-political decline and failed to do what it had always done, settling and moving Germanic tribes into its border. Under the lead of Alaric, the Goths tried to come to an agreement with the Emperor, asking for lands where to settle, which they finally obtained after the sack of Rome (410). They would then settle in the Garonne valley with the promise to fight the Alans, the Suebi and the Vandals, who had moved from *Barbaricum* for the same reason as the Visigoths: the Huns' push. Desperate as they were, these Germanic tribes attempted a dangerous crossing of the Danube in winter and arrived in Spain, where they were probably given the *status* of *foederati*.

Meanwhile, modern-day France was experiencing a period of crisis also due to the first incursions of the Franks and the Saxons, some of whom, however, settled as *foederati* and helped fight the other Germanic tribes. In the crucial year 405, indeed, many Germanic tribes left *Barbaricum* (including the above-mentioned Alans, Suebi and Vandals) due to the pressure of the Huns, who even punished one of this "secessionist" attempts in agreement with Rome: according to some studies, indeed, they were willing to create a Germanic belt to defend the core of the Hun empire. This strategy was probably aimed to subject the Roman Empire to vassalage. However, following the battle of the Catalaunian plains (452) and the death of Attila, the Hun Empire collapsed. The victory did not prevent Roman rule from waning; among the Franks emerged Childeric, who laid the foundations of the future Frankish kingdom. Roman rule in what is now France collapsed for a number of reasons, including the *bacaudae*¸ riots in which some Britons who were escaping the Saxons also took part. Indeed, although we usually refer to the migration of the "Anglo-Saxons", this migratory movement actually also included Scandinavians, Franks, Alemanni, Thuringians and Jutes, at least in the early period. We do not know the real reasons that brought these people to *Britannia*, though we are told that the Saxons reached the island in the same year as the Vandals', Suebi and Alans' raided, probably pushed by the aforementioned Huns. According to new studies, the Saxons arrived before the 5th century, probably as raiders and then as *foederati*; only later on between 100,000 and 200,000 people would have moved to *Britannia.* The island was in fact abandoned by the Romans, in the midst of their socio-political crisis. Other movements would follow: the Scots moved from Ireland to Cornwall, while the Britons, fleeing the general instability, left for Brittany and Galicia. Italy, on the other hand, was experiencing an increasing influence of the Germanic populations in the Army, which gave the Germanic people the possibility to have a say in political decisions: in this context, Odoacer, leader of the Germanic troops in the Roman Army, deposed the Emperor Romulus Augustulus (476) in order to be given land to settle his troops and was recognised as a patrician by the Roman Senate but refused to be named Roman Emperor. However, ten years later, a Germanic population, the Ostrogoths (200-250,000 people, 30,000 of whom were warriors) moved to Italy under the leadership of Theodoric, following an agreement with the Eastern Roman Emperor. Less than one century later, the Lombards, who had originally come from Scandinavia and moved along the Elbe valley to Pannonia between the 1st and the 5th century, moved to Italy in 568 once they had obtained the status of *foederati* from Justinian and established their kingdom, in accordance with the newly-arrived Avars, an Asian population related to the Huns. Thus, the Avars played an important role in the history of Europe, even though they settled on its periphery; not only did they drive the Lombards to Italy, but they also influenced the Slavs, who, after being "reorganized", were able to settle in the Balkans. Under the influence of the Avar,s they managed to conquer the lands left by the Germanic tribes as far as the Elbe estuary and Bavaria. Once settled there, the various Slavic tribes would become the backbone of the Medieval Slavic States and in the northern lands of the Baltic they would also encounter another Germanic population, whose expansion marks the end of the Migration Period: the Norsemen. From the meeting between the Slavs and the Norsemen came the Kievan Rus'.

How can we explain these migratory movements which marked the beginning of a new era? Contemporary approaches refer to "push and pull factors" and we have applied the same criteria to the Migration Period in the light of our comparative study. First of all, we have to stress that the Germanic tribes were not simply opposed to the Romans: the Rome/Barbarians dichotomy did not exist. Rather, German ethnogenesis was actually influenced by the Roman Empire, which provided a model for Germanic leaders, who received gifts and power by the Romans. Moreover, the Roman Empire offered prestige, wealth and more power and this raised the stakes in Germanic politics. In addition, the 212 reform enacted by Caracalla granted the Roman citizenship to many of the Germanic descendants settled within the Empire by past Emperors, thus providing another incentive to try to move into the Roman territory. Furthermore, we must also say that the causes which would lead to the end of the Empire and its weakness, also evident from its reorganization after Theodosius and the mismanagement of the "Gothic crisis", probably gave another motivation for the Germans to move. On the other hand, among the "push factors", we must include the social transformations that were taking place within *Barbaricum* and even in *Hibernia* (Ireland): new elites were forming, and this made more and more people decide to leave their homeland. But what was behind these contemporaneous transformations that began in the third century?

Such a general transformation makes us ponder about a broad phenomenon that was taking place in Europe. Recently, new studies have claimed that climate change may have been behind the crisis that brought the Empire to its end. The Roman Empire, indeed, grew and reached its apex during the period known as "Roman climatic optimum", while its decline occurred during a period of general cooling. In the current study, we have not focused on the effects this might have had on the Empire, but rather on the migratory movements of Germanic tribes. The Mediterranean area was indeed experiencing droughts, while northern Europe was undergoing increasingly heavy rains, especially between 350 and 450: there, temperatures fell, reaching in some areas the lowest levels of the last 2,000 years, while summers became generally cooler from the 4th to the 7th century. Moreover, in central Asia the worst mega-drought of the last two millennia was probably behind the displacement of the Avars: curiously, according to ancient sources, this population was forced to leave due to a "mysterious cloud". Could it have been an *ante litteram* "dust bowl?" In addition, data from the Carpathian Basin, where the Goths and the Huns were based, reveal that temperatures dropped and the climate became drier, probably leading to a societal reorganization of the Huns, who began to demand gold from the Romans. Meanwhile, the general cooling and the increasing rainfall probably caused flooding and aggravated soil erosion, leading to reduced crop productivity or crop failure. This probably had an impact on the social structure of the Germans. New research is linking the movement of Germanic tribes to this collapsing trend: for instance, one study argued that 59 out of 61 movements, attacks or settlements of Germanic peoples in the Roman Empire occurred in years with low agricultural growth rates. A similar analysis focuses on the Oder region and reveals that the there was a general abandonment of settlements at the same time as the cooling period.

In addition to this period of general cooling, sources describe 536 as the year of a mysterious "dust veil" or the "year without summer": now we know that a volcanic explosion contributed to the further cooling of the climate during a period which has been labelled the "Little Antique Ice Age". This epoch was particularly challenging in Northern Europe, where the rate of abandoned settlements reached peaks of 90-95% in some regions. Interestingly, it has been proposed that the Ragnarök myth describes the changes that took place during that period: climatic, cultural, social and burial changes show that this was indeed an era of enormous social distress. This period of cooling also probably affected human health: the "dust veil" was caused by volcanic ashes reaching the atmosphere: this affected both agriculture and probably the photosynthesis of vitamin D in human skin, the lack of which negatively affects human health. This may have played a role in the subsequent spread of the Justinian Plague. Furthermore, crop losses may have also driven people into towns, overcrowding them, and creating the basis for the spread of the disease. Moreover, studies have also found interesting links between changing climatic conditions and the reintroduction of the plague.

Thus, the Migration Period was a time of refugees fleeing wars and famine, pandemics and climate change: is it therefore possible to make a comparison with our era? We must now focus on contemporary times.

Chapter II – The contemporary era

Ebolavirus, AIDS, SARS, "swine flu", MERS, Zika, and finally Covid-19. These diseases are not only the epidemics and pandemics that have taken place in the 21st century. They are also all examples of zoonotic diseases, i.e. illnesses that originate in animals and then spill over to humans. This is a point we will return to later because of its increasing importance; however, for now, we will focus primarily on Covid-19, which is the pandemic with the most important effects on Europe in the 21st century and with the highest death toll.

It is important to note, that excess mortality varied among European countries, from 97% recorded in Poland in November 2020 to the -12% in Denmark in March 2021. The economic effects also varied among countries: while exports decreased by 20% in France and Luxembourg, they even increased by 20% and 12%, respectively, in Slovenia and Estonia. Retail trade, on the other hand, followed the measures adopted: it went up during the period of less stringent measures and decreased in April and November 2020, while supermarket sales rose in March 2020 and fell thereafter. Furthermore, it was noted that GDP contraction followed precisely the decline in employment (in the number of hours worked). It should also be stressed that the pandemic increased the inequality rate, in the sense that jobs for workers with low education decreased in all European countries, while job offers requiring university degrees and professional skills increased. This was also associated with the possibility of tele-working, which, importantly, varied among countries (those in northern Europe had the highest work capacity during lockdown). Job loss thus increased inequality and drove more and more people into economic hardship: before Covid-19, 92.4 million Europeans were at risk of poverty and this number is likely to have increased in recent months. Indeed, there has been a 30% increase in food parcels and a general rise in the number of people asking for help in religious centres. It is interesting to note, on the

other hand, that the number of volunteers has also increased, according to NGOs, although episodes of discrimination and scapegoating have increased as well. This is consistent with the reaction of a society stressed by local lockdown and the overnight change of habits: moreover, social distancing measures have had important effects too, especially on the most fragile, including children. In terms of job opportunities, indeed, children who did not have the possibility to attend school from home were often also those who usually relied on schools for food security. Given the already high number of young Europeans who dropped out of education before the pandemic, such measures could also affect their future employment opportunities, contributing to an increase in the level of inequality. Moreover, we must also consider the ongoing decline in fertility rates in Europe, which, especially in southern countries, is linked to future insecurity and also to brain drain and internal and external migration. A crisis such as the one we are currently experiencing could further exacerbate this trend.

An important debate concerns the adoption of emergency powers during crises: democracies foresee this possibility and there are established balances to avoid authoritarian involutions in the emergency situations. However, two European countries, Hungary and Poland, have been accused of continuing their already ongoing illiberal backsliding; Hungary, for instance, has adopted a state of emergency with an indefinite expiry date. Furthermore, the health emergency could also become a matter of geopolitical dispute: tensions over vaccine exports between the UK and the EU, as well as fake news about Western serums (allegedly from Russia and China), and divisions among European countries clearly demonstrates it. Furthermore, job losses were also recorded in several African and Middle Eastern countries, from which people decided to move also considering the news coming from Europe: the number of deaths made many people believe that there would be job vacancies. Again, this also demonstrates the geopolitical effects the pandemic is having.

Europe, indeed, is not only experiencing a health crisis, but also a migration one, which started with the Arab revolutions in 2011. Since then, people from the Middle East and Africa started to reach European shores. Migrants often come from distant countries such as Eritrea, Somalia, Afghanistan or Bangladesh and cross dangerous borders, deserts and seas on foot or by car, with the help of smugglers; then, once in the countries of departure, they try to enter through the so-called western, central and eastern Mediterranean routes and even through the Balkan route, for those who arrive in Greece and decide to continue northwards. We have therefore analysed the countries of departure according to the routes, in order to focus on the main causes of outmigration. Those who arrive in Greece, for instance, are mainly Afghanis, Syrians or Pakistanis; those who try to reach Spain and the Canary Islands are predominantly from Western Africa and the Maghreb, and those who arrive in Italy are mainly Maghrebi, Eritreans and Somalis.

Since we divided between push and pull factors when analysing the causes of migration of Germanic tribes, we have used the same approach for recent events: among the pull factors, we mainly list the “image” and “reputation” of certain countries, the importance of a safer and more secure life in Europe, the presence of migrants’ networks and democracy. On the other hand, among the push factors, we find violence and poverty,

although the latter is not considered a main reason to migrate, if taken alone. These two reasons are particularly evident in West Africa, where terrorist and guerrilla groups such as Boko haram, the Movement of Democratic Forces of Casamance in Senegal or the Black Axe Brotherhood are considered threats to life. Interestingly, even where violence is not a main driver of migration, the lack of prospects usually leads youths to join terrorist or violent groups, thus driving their countries into a migration/violence trap. This is also true for Somalia, where the rise of the terrorist group Al Shabaab continues to create thousands of refugees: migration from East Africa, however, is also motivated by a complex mix of violence and environmental issues. Years of droughts have further exacerbated land disputes and tensions over resource management, affecting agriculture, on which much of the population relies. Once again, violence is the main driver of migration from Afghanistan, Iraq and Syria. The rise of ISIS and the Taliban has forced and is again forcing more and more people to leave, so as to escape persecutions. However, migrants from these countries also choose to leave due to the lack of job opportunities, which is also the main reason why Pakistanis and Bangladeshis migrate. Furthermore, the lack of good learning opportunities is another reason for moving.

Against the backdrop of an already serious migration crisis, the Covid-19 pandemic has created a number of unemployed persons equal to the number of migrants who have moved throughout Africa in the last ten years, i.e. 20 million people. This gives an idea of the emergency we could face in the coming months or years. What should Europe do? And above all, are we responsible for this situation? In the last decades, media and States have become increasingly aware of the effects that human activities have on the environment: greenhouse gases, produced by anthropic activities, impact the atmosphere, thus raising temperatures, melting ice sheets which in turn make sea levels rise; furthermore, the same greenhouse gases provoke ocean acidification, which affects the maritime ecosystem. In addition, extreme events such as droughts and floods are also linked to the effects of greenhouse gases. Scientists now agree that humans are the main driver of climate change, and IOs and international scientific organizations are now committed to studying these phenomena, which will have a major impact on our livelihoods.

It is important to note that rising temperatures and extreme events are already affecting people's livelihoods in Europe: the Sami population, an indigenous nomadic people living mainly on reindeer herding in Lapland, are already changing their lifestyles as higher temperatures are attracting resource extraction and more people to these lands. We have labelled them the "first European climigrants", as many of them are choosing to migrate due to their inability to carry out their ancestral activities. However, climate change is also having an impact in countries far away, and we are seeing its first effects on European shores. Indeed, floods, droughts, and extreme events are already driving people out of their countries; deteriorating climatic conditions are responsible for reduced agricultural productivity and economic losses, which affects people's livelihood. In turn, competition for land triggers tensions and violence, which also fuel outmigration. This is a common pattern in the Middle East and Africa. In West Africa, for instance, the drying up of Lake Chad and Lake Faguibine is causing people to abandon their traditional way of living and transformed regional economies;

on the other hand, 56% of the coastline of Benin, Cote d'Ivoire, Senegal and Togo is already eroding as a consequence of changing maritime patterns, which also affect fish stocks. Growing tensions between fishermen, but also between herders and farmers, driven by changing climate conditions, are exacerbating existing fragilities, triggering more violence, while youths have no choice but migrate or join terrorist groups such as the above-mentioned Boko Haram. A similar situation is happening in East Africa, where years of droughts, tropical storms and flash floods have driven millions of people out of their lands; similarly to West Africa, poverty and lack of alternatives are making people more susceptible to join a terrorist group like Al-Shabaab, which, in turn, is responsible for increasing tension and displacement in the region. Moreover, existing contrasts exacerbated by climate change such as those between herders and farmers, have also been exploited in political conflicts such as the Darfur war, or in Kenya during the Moi regime. Importantly, violence and tensions do not automatically follow climatic shifts, but as the latter are accelerating, cooperation is made difficult, as people have less time to negotiate access to or division of resources. This is also demonstrated by the example of Syria and the Maghreb, where major droughts have contributed to declining agricultural productivity and job losses, which in turn have led to migration to urban areas. Interestingly, after the 2007-10 drought in the Fertile Crescent, rising prices and urban migration triggered increasing tensions and the same urban areas into which migrants poured, later became the centre of the Syrian civil war. In neighbouring Iraq, the same drought has increased complaints against the government, paving the way for the spread of violence generated by the Syrian civil war and for the rise of ISIL. Moreover, the Arab revolution of 2011 was also triggered by higher prices in commodities, which in turn were provoked by agricultural losses. Turning to Afghanistan, the same violence between Pashtun herders and sedentary Hazaras responsible for the displacement of millions of people is also triggered by competition for land; in particular, the conflict is also fuelled by the Taliban, who support the Pashtuns. In Pakistan and Bangladesh, on the other hand, deteriorating climatic conditions have already created millions of Internal Displaced People: the last flood occurred in 2020 and was the worst since 1988, inundating a third of Bangladesh's territory. In 2004 it was predicted that between 3 and 10 million people would leave the country by 2040. However, in the period between 2005 and 2011 alone, more than 3.5 million people left Bangladesh.

Lastly, it has been demonstrated that the disruption of the environment not only reduces the amount of greenhouse gases naturally absorbed by trees (that thus help to reduce them) but also creates the possibility of spill-over of zoonotic diseases. Indeed, the aforementioned SARS, MERS, AIDS, as well as other diseases and even Covid-19 are zoonotic diseases, naturally occurring among animals, that can spill over to humans. This possibility is increased by the disruption of natural environments, which is intended both to create new land for cultivation and to expand urban areas. This process is increasingly evident in some areas of the world, such as South Asia, Africa and Latin America, where bushmeat is also sold in "wet markets", further increasing the possibility of genetic recombination of viruses and spill-over to humans.

In sum, we have tried to link climate change with pandemics and migrations. Greenhouse gases emissions by human activities are responsible for extreme phenomena such as droughts and floods, while deforestation and habitat disruptions create the conditions for the spill-over of zoonotic diseases, which have the potential to become pandemics. Both pandemics and extreme phenomena, in turn, trigger economic losses, food insecurity and social problems, which underlie social tensions, conflicts and migration. It is important to note that migration may generate conflicts among different social groups, but conflicts may lead people to migrate too. Both factors can lead to an increased influx of people into cities, and this in turn creates further disruption of natural areas, as newcomers settle or farm in the areas surrounding urban ones; this process creates the basis for pandemics of zoonotic diseases, besides contributing to climate change, which eventually triggers the whole process again. This, therefore, might be called "the anthropogenic climate change trap". Nonetheless, can we escape this trap? And what can we learn from the past? And which policies can we suggest? These are the main themes of the last chapter.

Chapter III – Are we living in another Migration Period?

In the course of our research, we have noticed several similarities between the Justinian Plague and Covid-19: importantly, one difference is mainly due to the different level of globalization, exemplified by the main long-distance means of transport of the two periods: the boat and the plane. The aeroplane made "every local outbreak a new disease, meaning that viruses or bacteria spread more rapidly than by boat, but trade routes still play a significant role in spreading infections. This was true for the Justinian Plague, indeed, whose spread probably followed commercial routes. However, by comparing a map based on the number of simultaneous trade and travel routes between Europe and China and another one referring to possible early outbreaks of Covid-19, we found an interesting correlation that confirms the importance of trade routes in the spread of the virus. We then tried to compare population density, the globalization index and the health consumption index with the number of cases per 100,000 habitants, but we only noticed a possible correlation with population density. This led us to conclude that political decisions on social distancing and restrictions may have played an important role. In times of crisis, indeed, State authorities tend to concentrate their powers, and this is true both for the Migration Period and for our time: Justinian's appointment of a "*referendarius*" and the contemporary state of emergency might be seen as driven by the need to cope with scarcity of goods, social unrest and economic problems. Importantly, these reconfigurations of power could also lead to authoritarian descents, as is evident for instance in contemporary Hungary and Poland, but also perhaps in Justinian's time, as mentioned earlier. The issue becomes even more relevant if we consider that societies tend to adopt an inward-looking approach when facing crisis such as a pandemic or migration. The general fortification we saw in Europe during the Migration Period could easily resemble the contemporary nationalist approach whose aim is to close a country's border. However, as climate change worsens and new pandemics and more migrants might arrive in Europe, what will Europe's response be? In order to answer these questions, we need to analyse some similar trends between the two periods. Both periods, indeed, are characterised by a general demographic

decline in Europe, triggered by the difficulties experienced; the poor, who are the most affected by the crisis, pay the highest price and this in the past led to a reorganization of society. During the Justinian Plague people migrated and abandoned established settlements, while now more and more people have difficulties with mortgages and starting a family. Socio-economic problems, triggered by a period of crisis, often increase inequality; as we are likely to face new challenges in the future, we might also consider this issue. Moreover, such periods of crisis also change the mentality of a society: intimate habits such as the burial habit, indeed, are profoundly changed during epidemics and this was also evident from historical sources from the Migration Period, while in our time we have been deeply impressed by the photos of mass graves too. Geopolitical effects are also to be included among the changes that can occur during a pandemic. In Justinian's time, the Eastern Roman Empire probably lost the Balkans and part of the Middle East because of the plague, whereas nowadays States are fighting over vaccine exports and fake news. Moreover, the migration of the Slavs into the Balkans resembles the current waves of migration caused by the reduction of remittances and the loss of jobs in the countries of origin.

Climate change, as we have seen, nowadays acts mainly as a "threat multiplier", worsening already existing trends, while it could become the main driver of migration in the future. However, when analysing contemporary drivers of migration, we must adopt a *longue durée* approach, discussing whether the causes of the underdevelopment of some African states depend on the European colonization process. In particular, the Roman Empire's approach with *Barbaricum* was similar to the process mentioned above. Romans appointed rulers in their favour, deeply influencing the social organization of the Germans through the cultural example. Rome, therefore, indirectly shaped the societal reorganization of the *Barbaricum,* given also the large number of Germans who settled in the Empire and later became Roman citizens. Thus, once the Roman-Germans kingdoms came into being, Roman culture and laws continued to be enacted, further demonstrating the great appeal the Roman world had for the "Barbarians". Similarly, Europeans appointed local authorities in their colonies, changing the existing social patterns and influencing the evolution of states, while laying the foundations for economic underdevelopment, also due to low accountability of rulers, which is the basis for continued predatory attitudes. It is not surprising, therefore, that migrants continue to be attracted to their distant colonising countries. Moreover, we must also bear in mind that Rome's intervention in *Barbaricum* had probably fostered the creation of confederations, which also fought among themselves. At the same time, the colonial powers favoured some tribes or social groups among others, creating the conditions for post-independence tensions, as we have seen, for instance, in Rwanda. Foreign intervention, therefore, also created the basis for the violence, conflict and underdevelopment that continue to drive migration.

However, both in the Migration Period an in our times, state entities interposed in agreement with the dominant European powers prevented migrants from reaching the rich lands of Europe: in Early Medieval Europe, the Hun Empire controlled the Germanic tribes and prevented them from entering the Empire and subjecting it to vassalage. Indeed, at that time in history, the Empire, which had always welcomed the Germanic tribes, was

no longer able to do it, due to its internal difficulties. Nowadays, countries such as Turkey, Libya, and Morocco, often accused of not respecting human rights, are increasing their bargaining power vis-à-vis Europe thanks to agreements made with EU authorities to prevent migrants from arriving on the European shores. However, as climate change will drive more people to migrate, will Europe continue to increase the power of its neighbouring states? The main lesson we can learn from the past is that these migratory movements, since they are triggered by climate change, must be seen as historical movements that cannot be stopped. We thus have to focus on their main causes. In particular, we need to consider three factors: firstly, the population of Africa and the Middle East will double by 2050, reaching 3 billion people; secondly, both Africa and the Middle East are the regions hosting the largest number of refugees today; thirdly, and most importantly, these two regions are among those that will suffer the worst effects of climate change. It is foreseeable, indeed, that a large part of this population will try to move to Europe; however, even within Europe, southern Europeans might consider moving north, as their countries are considered to be among those in Europe that will experience the most challenging effects of climate change. So what lessons can we learn from the past?

As mentioned above, we have to learn that the migratory movements we have analysed in both the Migration Period and the present era were and are caused by both socio-economic causes and climate change and therefore have to be seen as historical phenomena we have to deal with. Moreover, we have already acknowledged the simultaneous effects of the Justinian Plague and migratory movements on European societies. That period of crisis can be exemplified, for instance, by the loss of knowledge, which can be measured by the number of literary productions: the number of manuscripts, indeed, only increased again between the eighth and ninth century, which, interestingly, is when temperature began to increase again. The huge impact of that period was also evident in the myth of Ragnarök, which was influenced by social unrest also related to the changing climate. It is important to emphasise that we are not claiming that Europe will experience wars and cultural decadence, but it could still face major challenges given the globalised world we are living in. Large-scale conflicts could arise, for example, between India, China and Pakistan in connection with the melting of the Himalayan glaciers and would also have an impact on Europe. Similar tensions might also surface between Iraq, Syria, Jordan, and Turkey over the management of the Jordan River water, or even between Egypt, Sudan, and Ethiopia over the Nile. Inter- or intra-state conflicts would also bring more population to Europe's shores. And what about pandemics? As mentioned earlier, if we continue to disrupt natural habitats, they will become more frequent. However, more frequent pandemics will lead to additional socio-economic damages, which will also fuel further conflicts. Even in Europe, during the early stages of the Covid-19 pandemic, States were divided and fought over health supplies; remarkably, societal reactions were similar to those triggered by the migration crisis, which continues to divide EU Member States. Will European States adopt an inward-looking approach? Will we experience democratic decay? Importantly, even if our societies prove to be resilient, we might nonetheless face pressures from outside; in such a worsening climate scenario, the current agreement to contain the migratory flows may still be useless in the face of increasing

migration inflows. However, an important difference between the climate change during the Migration Period and in the current one is that the latter is anthropogenic; thus, we could act on it, mitigating its effects. This is actually the scope of the international meeting devoted to reducing global greenhouse gas emissions. Nonetheless, an international consensus on the matter is difficult to achieve, as carbon cuts are also becoming a geopolitical dispute, with states such as China, India and Brazil arguing that Western states should play the biggest part, while on the other hand, the USA has decided to leave the Paris Agreement on carbon emissions' cutting. In this context, studies are revealing that in order to limit the temperature increase to 2°C, states must curb their emissions by 25% by 2030, while if the current trend continues, there will only be a 1% reduction by then. It is important to note that, among mitigation strategies, cutting emissions is the one with the greatest impact, while other strategies or technologies, apart from reforestation or afforestation, are difficult to adopt or have dubious effects. In such an internationally divided context, the EU is planning to unilaterally cut its emissions and become carbon-neutral by 2050: this is the core of the 'European Green Deal', unveiled in December 2019. The plan aims to decarbonise the energy sector, provide cleaner forms of private and public transport, ensure more energy-efficient buildings and support industry to innovate in a "greener" way. Moreover, the "green transition" is intended to be an opportunity to increase the market of sustainable and labour-intensive activities. The EU will also work towards a just transition, helping regions that are most dependent on fossil fuels and carbon-intensive activities. Nonetheless, despite this ambitious plan, some states have already criticized it and EU MSs are divided on cutting emissions. Europe risks finding itself in the same situation as in the international arena, i.e. divided by different national interests. However, assuming that the EU succeeds in adopting the Green Deal, what other policies could be adopted to avoid another Migration Period?

We have distinguished between short- and medium-term policies that should be pursued, provided that curbing emissions is the best in the long run. In our view, one of the main short-term policies should be to include a "*climate refugee status"* in the official refugee definition, as a state might not be able to protect its citizens if it lacks resources or is hardly hit by extreme events. This would not only give migrants the right to resettle but would also provide a further incentive to address the climate issue. However, nowadays, even those who are recognized as refugees and thus entitled to international protection, often have no choice but to risk a dangerous journey across deserts or the Mediterranean. This, in turn, also encourages illegal human trafficking. For these reasons, private NGOs and states are organizing *humanitarian corridors*, legal routes by which refugees (i.e., those who are entitled to international protection) can safely arrive in countries that accept them. This solution, if adopted on a large scale, would reduce the number of people risking dangerous journeys, while also reducing illegal human trafficking. Moreover, we must also bear in mind that Europe is facing a demographic decline: by 2050, indeed, Europe's working-age population will fall by 49 million, while the sub-Saharan population will reach 1.3 billion. It is also important to consider that *immigrant workers* already make up 13% of Europe's key workers, and, especially in southern European countries, they are also heavily

employed in the shadow economy, which in these countries ranges from 20% to 26% of GDP. Europe, therefore, needs migrants both to reverse the demographic decline and to supply its working population. Interestingly, this was the same approach adopted by the Roman Empire, which settled thousands of Germanic people within its border to cultivate abandoned lands. Proposals such as an "EU-Africa Partnership for Human Capital Formation and Skill Mobility" must be implemented: migrants should also be equipped with labour skills that could be useful in stimulating the economic growth of their countries, once they return home. This leads us to the following policy proposal.

Regarding the medium-term approach, we concluded that in order to reduce migration flows, people must also be given the opportunity to find work in their own countries; however, this requires an international effort to create the basis for socially and environmentally sustainable economic growth in developing countries. As recently stated by the President of the EU Commission, Ursula Von der Leyen, green transition can create jobs and stimulate sustainable growth in the post-pandemic era, both in Africa and Europe. Such green transition would mitigate the effects on climate change while also giving the possibility to avoid migration. Furthermore, green energy would help developing countries to be less dependent on the volatility of the international market, according to UNCTAD. However, international efforts must also focus on the causes of economic underdevelopment, such as widespread corruption, poor governance, and insufficient protection of human rights, among other factors. Furthermore, massive and uncontrolled urbanization is considered one of the major causes of biodiversity loss, especially in developing countries. However, as these countries are expected to host most of the new population in the years to come, the international community must consider possible policies to prevent massive disruption of the natural habitat. New studies are providing achievable solutions, but this would require a global effort to ensure urban sustainability. In addition, adopting such an approach would also help reduce the possibility of zoonotic spill-over, responsible for possible pandemics; indeed, urbanization is bound to increase the bushmeat trade, especially in West Africa. This leads us to the last point.

To prevent future pandemics, the international community must act on the real causes of the bushmeat trade, such as poverty and political instability. Poverty is also the main driver of forest disruption, which reduces the natural habitats of animals to make way for new farmland for families. However, international authorities must not only act on the causes of poverty, but also adopt strict rules and supervision on the legal trade in animals, including border testing. In addition, we need to keep other aspects in mind: as we saw during the early stages of the pandemic, states were competing with each other to secure the necessary medical supplies; domestic production of vaccines and health technologies should therefore be promoted globally to meet the immediate needs of the population. For instance, Europe has recently announced that it will *promote the production of and access to vaccines*, medicines and health technologies in Africa, so that this continent will not experience vaccine shortages in the future, as is the case now. Moreover, international cooperation in the health sector is needed: extensive information sharing is vital to cope with emergencies such as pandemics. International cooperation was weak during the early stages of the Covid-19 pandemic, as states were divided by their

national interests and strategies. Indeed, although there are more IOs today than during the Spanish flu pandemic, States still adopted unilateral approaches. On the other hand, during the 2008 economic crisis, the G20 proved efficient in coordinating policies to avoid another Great Depression. Indeed, IOs are what states make of them; governments are interested in a multilateral system that can provide an effective response to crises such as the Covid-19, but are less willing to give up their sovereignty. However, sensitive and transnational issues such as climate change, pandemics, and migration flows must trigger international cooperation: in the words of the UN Secretary-General, countries, international and national organizations and civil society are called upon to work together in this "pivotal year".

In conclusion, we decided to focus on the above policies because they are already in place; indeed, we argue that best practices and micro-level policies such as humanitarian corridors and migrants-led businesses provide important approaches that can be easily followed. We have previously claimed that the current global interconnectedness facilitates, for instance, the spread of diseases, but it can also facilitate the adoption of the above best practices. Indeed, internet social networks, the very symbols of our global era, are becoming more and more important for conveying messages and examples: this was evident for the abovementioned *Arab revolutions* but also for the global youth movement "Fridays for future". These global movements have the potential to change and influence the global agenda and will certainly play an important role in the near future. Moreover, if Europe manages to overcome its internal division and commits to curbing emissions, it could be a powerful example for the international community. A (more) globalised world, therefore, is both a challenge and a solution. Unlike the Migration Period, humanity can mitigate the effects of climate change and act on it. What is more important, tackling climate change could also solve other problematic issues; at the same time, investing in the green economy in developing countries aims to create the conditions for "green" growth that could both mitigate the effects of climate change and avoid dangerous Mediterranean crossings in response to the lack of alternatives. Furthermore, inclusive and sustainable economic growth might also reduce the risk of conflicts. This does not mean that investing in green businesses will solve the world's major problems; however, we can argue that it could actually provide the basis for lasting peace. Indeed, after being the epicentre of two global conflicts in the span of a generation, Europe has not experienced internal wars since the beginning of the process of economic and political integration.

In the course of this analysis, we have dealt with different kind of sciences. Our globalised world, indeed, needs cooperation between the sciences. In fact, cooperation is needed both between sciences and between states. Humanity already has the solutions to tackle climate change and its effects: they just need to be implemented on a large scale. Europe and the world are therefore at a crossroad: the processes that are taking place now and that took place during the Migration period are extremely similar. But what will Europe's response be nowadays? A global perspective and a holistic approach could provide possible solutions. We are at the verge of another Migration period: looking at the past may therefore mean changing our future.