

## Teacher Outline

### Change: Europe, a Continent of Change

#### Geography

##### *Conceptual Strand:*

Place and Environment - Students learn about how people perceive, represent, interpret, and interact with places and environments. They come to understand the relationships that exist between people and the environment.

##### *Achievement Objective(s):*

##### *Level 6:*

- Understand that natural and cultural environments have particular characteristics and how environments are shaped by processes that create spatial patterns.

##### *Level 7:*

- Understand how the processes that shape natural and cultural environments change over time, vary in scale and from place to place, and create spatial patterns.
- Understand how people's perceptions of and interactions with natural and cultural environments differ and have changed over time.

##### *Level 8:*

- Understand how people's diverse values and perceptions influence the environmental, social, and economic decisions and responses that they make.
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##### **Possible Achievement Standards which could use a European Context:**

- AS 91008 1.2 Demonstrate geographic understanding of population concepts
- AS 91241 2.2 Demonstrate geographic understanding of an urban pattern
- AS 91429 3.4 Demonstrate understanding of a given environments(s) through selection and application of geographic concepts and skills

##### *Geographic Concept:*

Change involves any alteration to the natural or cultural environment. Change can be spatial and/or temporal. Change is a normal process in both natural and cultural environments. It occurs at varying rates, at different times and in different places. Some changes are predictable, recurrent or cyclic, while others are unpredictable or erratic. Change can bring about further change.

***Skills:***

- Geographic resource interpretation skills –interpretation of tables, identifying spatial and temporal patterns
- Geographic resource construction skills – construction of a multi-bar graph, construction of a flow diagram, construction of an interaction diagram.
- Communication skills – writing paragraphs

**Notes on the possible use of this resource:**

- These resources were designed to be practise for AS 91429 3.4 Demonstrate understanding of a given environments(s) through selection and application of geographic concepts and skills
- They could also be adapted for the following uses:
  - As a case study of European Migration for AS91427 Demonstrate understanding of how a cultural process shapes geographic environment(s)
  - As a case study of European Migration for AS91427 Demonstrate geographic understanding of population concepts

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**Resource Booklet: Europe, a Continent of Change**

**Resource One: Projected share of foreign background persons in selected EU Member States  
between 2011 and 2061 (%)**

Country	% of foreign background persons in 2011	Projected % of foreign background persons in 2060
Cyprus	18	53
Luxembourg	36	65
Austria	17	43
Spain	16	39
Germany	14	37
Italy	8	29
Portugal	9	30
Denmark	10	30
Greece	13	32
The United Kingdom	13	31
Ireland	17	36
Belgium	15	32
The Czech Republic	5	22
Slovenia	13	29
Sweden	15	29
Malta	7	20
The Netherlands	12	24
Hungary	4	15
Finland	5	15
Lithuania	6	15
Bulgaria	1	8
France	12	16
Romania	1	4
Slovakia	4	7
Poland	2	4
Estonia	16	9
Latvia	15	6
EU Average	12	25

Source: Fewer, older and multicultural? Projections of the EU populations by foreign/national background by Giampaolo Lanzieri, 2011

## Resource Two: Projected Population changes in the EU 2008 to 2060 with and without migration

	Births	Deaths	Natural change	Net migration	Total change	Population 1.1.2061
With migration	255	305	-50	59	9	505
Without migration	219	301	-82	0	-82	414
Difference	36	4	32	59	91	91

Source: Fewer, older and multicultural? Projections of the EU populations by foreign/national background by Giampaolo Lanzieri, 2011

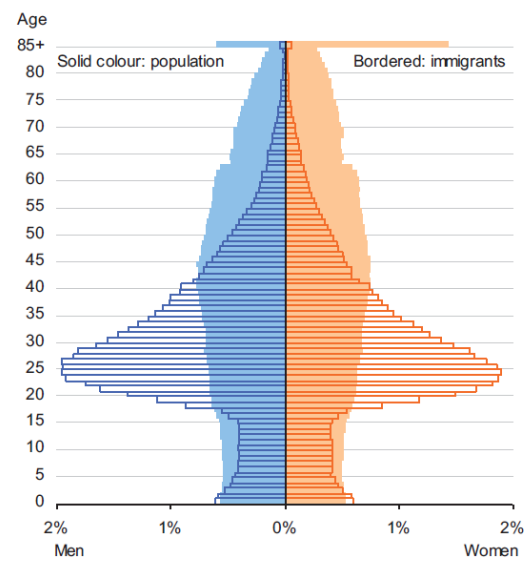
### Resource Three: Demographic Changes as a result of Immigration to the EU

#### *Population Growth*

Much of the population growth experienced across the EU region has been fuelled through migration. Countries where population growth in 2009 and 2010 is largely attributable to net migration gain are; Belgium, Czech Republic, Denmark, Greece, Luxembourg, Slovenia, Finland and Sweden, and all but eight countries experienced at least some net migration gain. Between 2004 and 2008 a net inflow of migrants contributed an average of 1.7 million people per year. In 2008 this represented 71% of the total population increase. Immigration appeared to have peaked in 2007 with numbers dropping since then in line with global trends and reflecting the reality of the job market in the current euro-zone crisis.

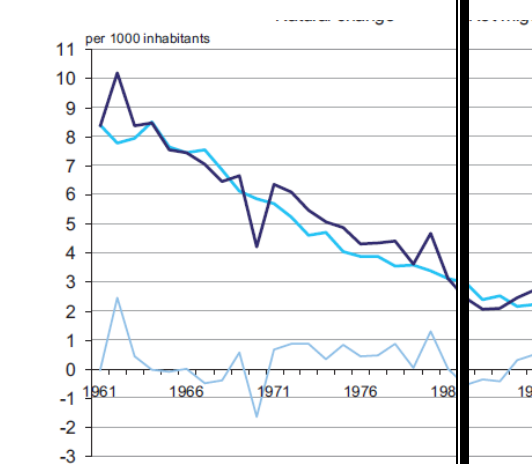
Coupled with net migration gain as a driver of population growth is the higher total fertility rate (TFR) of migrant groups. Fertility rates had declined steeply since the 1980s resulting in the very real possibility of a future population decline. Sobotka (2008) concludes that TFRs among immigrant women typically ranges between 2.0 and 2.5 and are 0.3 to 0.8 higher than the native population. There is, however, considerable differences within this group with migrant woman from Africa and the Indian Sub-continent having considerably higher TFRs than migrant women from other EU states. The TFR moreover, declines the longer the woman has been living in the destination country or the younger she was when she arrived. Second and third generation migrant women have TFRs which are on a par or even lower that of the native-born population. The proportion of births to immigrant mothers has skyrocketed in some countries, most notably in Southern and Eastern Europe. In England Wales for example it has risen from 13.3% in 1980 to 21.9% in 2006, while in Spain it was 3.3% in 1996 and had risen to 16.5 by 2006. Sobotka's research finds that the effect of migrant TFR on Total EU TFRs is not as large as assumed, only causing a 0.05 to 0.10 increase but that this nevertheless does represent a significant contribution to overall population growth through births. Migration, however, will not be able to prevent the population from shrinking long term given current TFR projections.

**Figure 2: Age structure of the EU-27 Population in 1<sup>st</sup> January 2009 and of immigrants to EU-27 states in 2008**



EU-27 immigration data excluding BE, EL, CY, RO and UK  
**Source:** Eurostat (online data code: migr\_pop2ctz, migr\_imm2ctz)

**Figure 1: Population Change by Component**



(1) Including statistical adjustment.  
**Source:** Eurostat (online data code: demo\_gind)

### Ageing Population

An increase in total population is not the only effect of this net gain of migrants. Because migrants are

typically younger than the general population, migration has offered a respite from population aging in some countries. Figure 2 shows the considerably different shape of the population pyramids of the general EU population and the population of migrants, with the migrant population having a greater proportion in the 20 to 40 bracket and considerably fewer in the 60 plus age group. These are the main reproductive and most productive working years and coupled with the higher fertility rates among many migrant groups a slight delaying in population aging is anticipated. Migrants have higher overall labour market participation (this includes all age groups) than the native population and this, coupled with a lower use of welfare, in particular pensions and health services (closely linked to aging) means that they are a net contributor to government revenue, helping to offset a little the economic burden of the baby boomers.

The median age within the EU-27 was 40.6 years while for immigrants it was considerably lower at 28.4 years. Differences were also discernable between the areas of origin of the immigrants, with other EU nationals being 29.3 and non-EU nationals being 27.5, while the figure for returning nationals was 30.2.

### Resource Four: A short Overview of Polish Migration

Recent Polish migration has been characterised by emigration, however, a significant change which has emerged is that while historically this movement was likely to be permanent, in recent times it is more likely to be short term and circular.

Contrary to the current situation Poland has in the past been an immigrant receiving country. During the medieval period there had been a history of German expansion into what is now know as Poland. This Eastward movement was called the Ostseidlung (settlement in the East) and it carried on with varying levels of intensity for several hundred years. As a consequence there were a number of ethnic German enclaves within the territory which post-World War I would become the nation of Poland, this being especially the case for East Prussia, Pomeranian and Silesia.

The 1800's saw a net negative movement of close to two million labour migrants leaving these German-Polish territories to fill the rapidly rising demand for workers in the coal field and heavy industry of the Ruhr region.

This exodus of ethnic Germans saw the Prussian government introduce the Prussian Settlement Commission in order to continue the Germanisation of Poland. Under its jurisdiction 8 % of the total land in Posen and West Prussia was purchased, and a total of 21,886 German families were settled (154,704 persons). This followed earlier attempts by "Fredrick the Great" in which around 300,000 immigrants were moved into the newly annexed Polish territory in an attempt to drive natives Poles out. Political repression in the Polish territories and greater economic activity in the countries of Western Europe and the United States in the second half of the 19th century and first half of the 20th century's was a catalyst for a large amount of emigration. Between 1871 and 1918 almost 3.5 million people immigrated and a further 2.1million left between World War I and II.

The creation of the Republic of Poland in 1918 saw an end to German colonisation and in fact a reversal of the process as many Germans, especially those in the Polish Corridor sought to leave. In 1919 France and Poland signed a convention allowing skilled Polish contract workers and miners to settle in France and between 1919 and 1938 around 600,000 people had taken settled thus Poland continued to be an exporter of labour for the larger Western European economies.

The shifting of Poland's borders westward at the end of World War II resulted in the mass displacement of some eight million people of Polish, Ukrainian, Belarusian and German origin, this movement included people moving into and out of the new country. The annexation of a large chunk of Eastern Poland by the USSR saw the implementation of a policy of 'repatriation' (or resettlement or expulsion depending on your viewpoint), resettling roughly 1,167,000 Poles during 1945 and 1946. These people were forced to leave the westernmost republics of the Soviet Union (Belarus, Ukraine and Lithuania) as they were seen as a potential threat to Soviet hegemony within the region. In mid-1946 it was estimated that there were 4.5 to 4.6 million German nationals (Reichsdeutsche) or ethnic Germans (Volksdeutsche) on Polish territory and so began the process of transferring them back to a vastly different Germany<sup>1</sup>. By 1950, 3,155,000 German civilians had been expelled and 1,043,550 were naturalised as Polish citizens. 170,000 Germans considered "indispensable" for the Polish economy were retained; virtually all had left by 1960.

Post World War II migration was very much shaped by the policy of the Polish Peoples Republic which, in common with other communist-bloc countries, was isolationist. Entry and exit was restricted by very strict visa regulations, the control of passport issuing and a policy that anyone who left would not be able to return. The main destination at this time was West Germany, where anyone who could prove Aussiedler (German ancestry) could stay even if entry was not legal. During this period the government continued in its attempt to make Poland an ethnically homogenous nation by encouraging ethnic Germans and Jews to leave and helped repatriated Poles from the Soviet Union become better assimilated into mainstream Polish culture. The 1945 to 1989 period saw Poland become one of the most ethnically uniform countries in Europe.

With the fall of the communist regime in 1989 migration regulations were relaxed, mainly due to a government that had very little experience in dealing with migration matters and a lack of policy and regulations in place. This lack of direction resulted in several new trends. These included:

- Movement of people into Poland from the former Soviet Union, much of this short term
- Labour migration of Poles to Western Europe
- Inflows of asylum seekers
- Lower levels of emigration
- Polish citizens returning home from abroad

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<sup>1</sup> This figure includes former military personal, German Poles and German refugees from other territories.



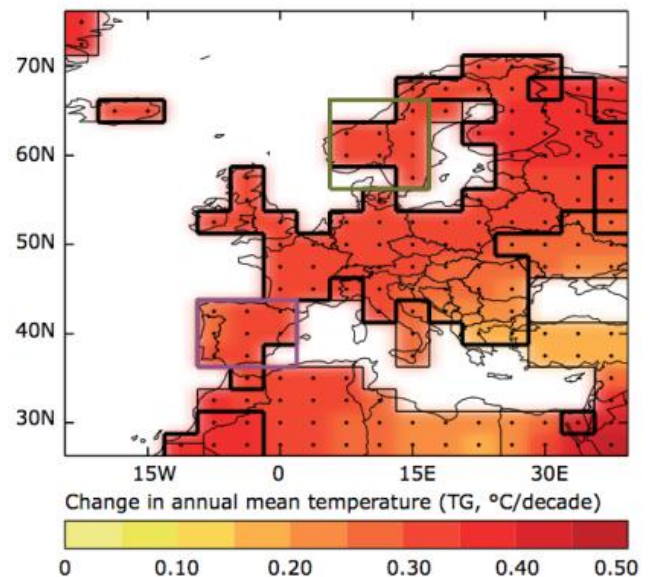
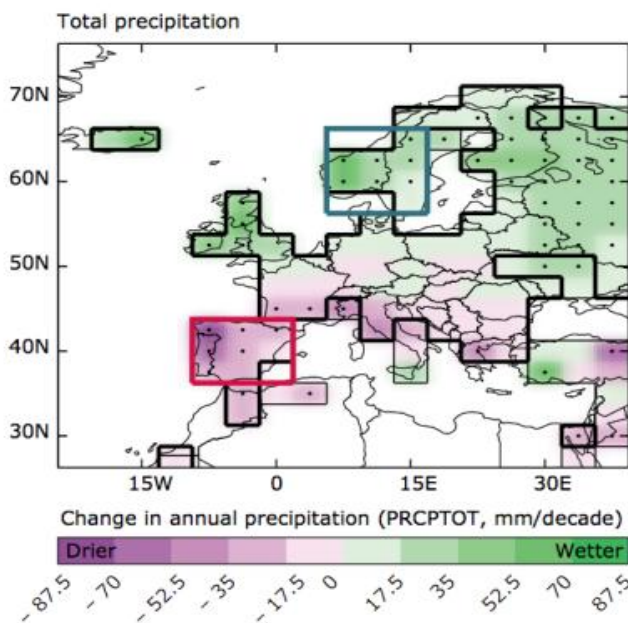
The 1997 Polish Aliens Act was an attempt to tighten up on migration and provide a legal framework with which to regulate the entry and residency of foreigners and prevent the entry of “undesirable” foreigners. In 2000 further legislation, the Repatriation Act, was enacted to control the growing influx of ethnic Poles from the former Soviet Union who were seeking entry into Poland. This law stipulated that anyone applying for a visa under the Polish repatriation banner must meet a number of criteria which included ancestry conditions as well as a clear commitment to Polish language, culture and customs.

The run up to ascension to the EU in 2004 saw Polish migration policy adapt to meet the requirements of the Schengen Accord, namely, the securing of its Eastern borders, an alignment of its asylum policy to that of the EU and an introduction of mandatory visas for its eastern neighbours. 2006 saw a large increase in emigration, up to nearly 47,000 from an average of 20,000 to 25,000 between 1990 and 2005, resulting in a net migration loss of -36,100 people. This jump was largely made up (31 %) of Polish workers moving to the UK, as one of the countries which immediately opened up its borders to the citizens of the A-9 countries. This gave rise to a situation where there was a shortage of highly skilled workers and unskilled workers. In an attempt to redress this imbalance the Polish government gave workers of Ukraine, Belarus and Russia the right to work in Poland without visas for three months within a six month period (later extended to six months within a 12 month period). IN 2005 38 % of residency permits issued went to citizens of former Soviet States, with Ukrainians being the single largest group with 25 %. This net outflow of citizens has slowed down as Poland’s economy continues to be one of the better performing ones within the EU in recent times.

**Resource Five: Trends in Annual Precipitation and Temperature across Europe (1960-2012)**

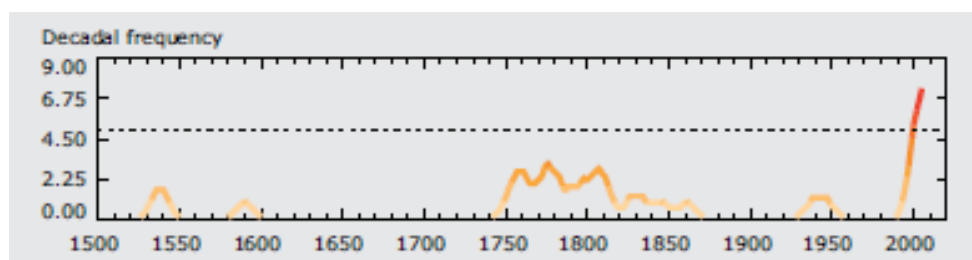
**Map 2.5 Trends in annual precipitation across Europe (1960–2012)**

**Map 2.1 Trend in annual temperature across Europe (1960–2012)**

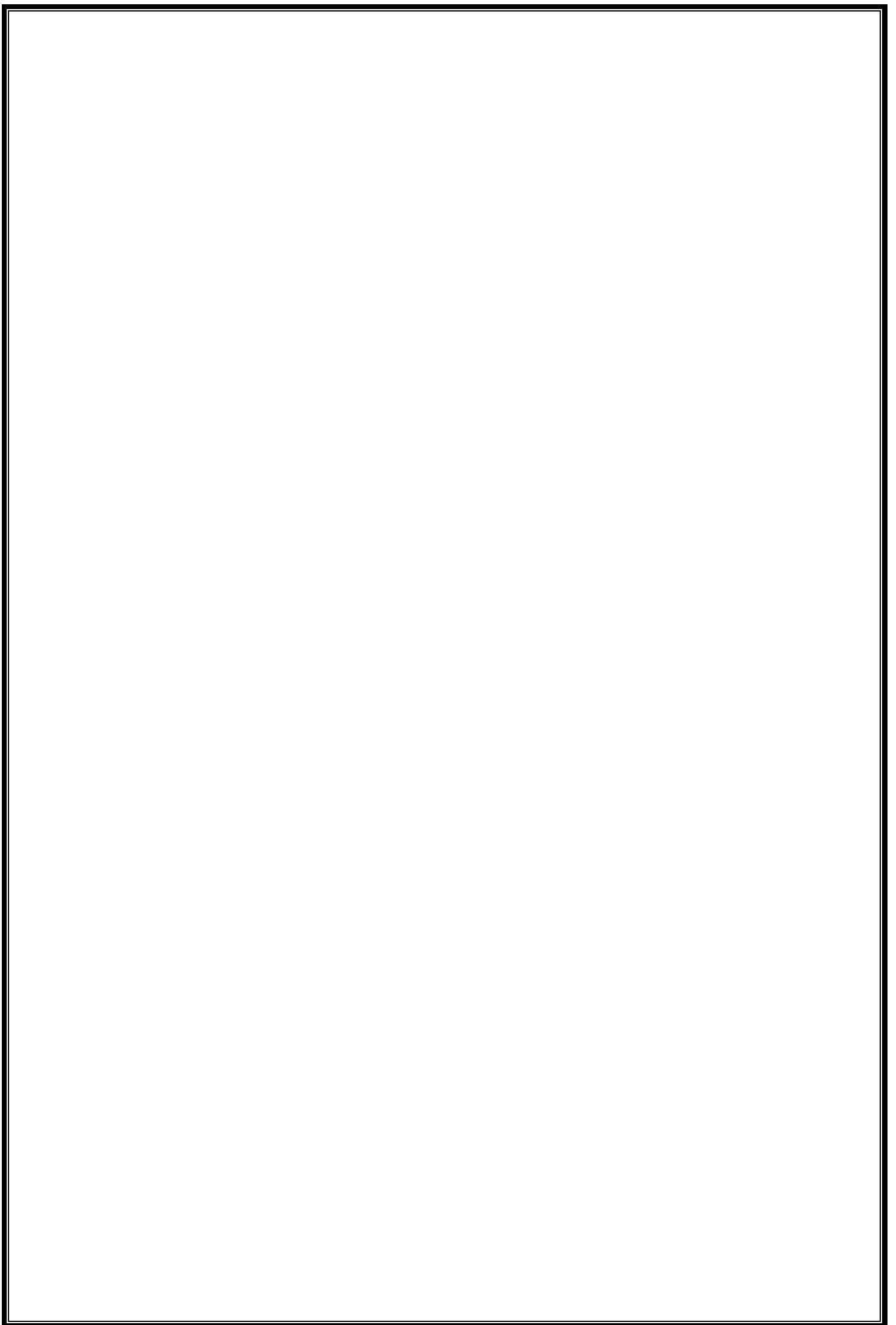


Source; Climate change, impacts and vulnerability in Europe 2012, EEA Report No 12/201

**Resource Six: Frequency of Extreme Warm Summers by Decade 1500-2012**



Source; Climate change, impacts and vulnerability in Europe 2012, EEA Report No 12/201



## Resource Seven : Climate change evident across Europe, confirming urgent need for adaptation

Published : Nov 21, 2012 Last modified : Feb 06, 2013 12:04  
Jacqueline McGlade, EEA Executive Director

<http://www.eea.europa.eu/pressroom/newsreleases/climate-change-evident-across-europe>

Climate change is affecting all regions in Europe, causing a wide range of impacts on society and the environment. Further impacts are expected in the future, potentially causing high damage costs, according to the latest assessment published by the European Environment Agency today.



Image © istockphoto

The report, '[Climate change, impacts and vulnerability in Europe 2012](#)' finds that higher average temperatures have been observed across Europe as well as decreasing precipitation in southern regions and increasing precipitation in northern Europe. The Greenland ice sheet, Arctic sea ice and many glaciers across Europe are melting, snow cover has decreased and most permafrost soils have warmed.

Extreme weather events such as heat waves, floods and droughts have caused rising damage costs across Europe in recent years. While more evidence is needed to discern the part played by climate change in this trend, growing human activity in hazard-prone areas has been a key factor. Future climate change is expected to add to this vulnerability, as extreme weather events are expected to become more intense and frequent. If European societies do not adapt, damage costs are expected to continue to rise, according to the report.

Some regions will be less able to adapt to climate change than others, in part due to economic disparities across Europe, the report says. The effects of climate change could deepen these inequalities.

Jacqueline McGlade, EEA Executive Director said: "Climate change is a reality around the world, and the extent and speed of change is becoming ever more evident. This means that every part of the economy, including households, needs to adapt as well as reduce emissions."

### Observed climate change and future projections – some key findings

The last decade (2002–2011) was the warmest on record in Europe, with European land **temperature** 1.3° C warmer than the pre-industrial average. Various model projections show that

Europe could be 2.5–4° C warmer in the later part of the 21st Century, compared to the 1961–1990 average.

**Heat waves** have increased in frequency and length, causing tens of thousands of deaths over the last decade. The projected increase in heat waves could increase the number of related deaths over the next decades, unless societies adapt, the report says. However, cold-related deaths are projected to decrease in many countries.

While **precipitation** is decreasing in southern regions, it is increasing in northern Europe, the report says. These trends are projected to continue. Climate change is projected to increase **river flooding**, particularly in northern Europe, as higher temperatures intensify the water cycle. However, it is difficult to discern the influence of climate change in flooding data records for the past.

**River flow droughts** appear to have become more severe and frequent in southern Europe. Minimum river flows are projected to decrease significantly in summer in southern Europe but also in many other parts of Europe to varying degrees.

The **Arctic** is warming faster than other regions. Record low **sea ice** was observed in the Arctic in 2007, 2011 and 2012, falling to roughly half the minimum extent seen in the 1980s. Melting of the **Greenland ice sheet** has doubled since the 1990s, losing an average of 250 billion tonnes of mass every year between 2005 and 2009. **Glaciers** in the Alps have lost approximately two thirds of their volume since 1850 and these trends are projected to continue.

**Sea levels** are rising, raising the risk of coastal flooding during storm events. Global average sea level has risen by 1.7mm a year in the 20<sup>th</sup> century, and by 3mm a year in recent decades. Future projections vary widely, but it is likely that 21<sup>st</sup> century sea-level rise will be greater than during the 20th century. However sea level rise at European coasts varies, for example due to local land movement.

Besides heat-related health impacts, **other human health effects** are also important, the report says. Climate change plays a part in the transmission of certain diseases. For example, it allows the tick species *Ixodes ricinus* to thrive further north, while further warming may make parts of Europe more suitable for disease-carrying mosquitos and sandflies. The pollen season is longer and arrives 10 days earlier than 50 years ago, also affecting human health.

Many studies have measured widespread **changes in plant and animal characteristics**. For example, plants are flowering earlier in the year, while in freshwater phytoplankton and zooplankton blooms are also appearing earlier. Other animals and plants are moving northward or uphill as their habitats warm. Since the migration rate of many species is insufficient to keep pace with the speed of climate change, they could be pushed towards extinction in the future.

While there may be less water available for **agriculture** in southern Europe, growing conditions may improve in other areas. The growing season for several crops in Europe has lengthened and this is projected to continue, alongside the expansion of warm-season crops into more northerly latitudes. However the yield is projected to fall for some crops due to heat waves and droughts in central and southern Europe.

As temperatures rise, **demand for heating** has also fallen, saving energy. However, this must be balanced against higher energy demands for cooling during hotter summers.

**Innovation: environment and health**

Efforts to fight climate change will improve air quality. The European Union's Climate and Renewable Energy (CARE) package aims to:

- reduce greenhouse gas emissions by 20 % by 2020
- increase the share of renewable energy by 20 % by 2020
- improve energy efficiency by 20 % by 2020.

The efforts required to meet these targets will also cut air pollution in Europe. For example, improvements in energy efficiency and increased use of renewable energy will both lead to reduced fossil fuel combustion — a key source of air pollution. These positive side effects are referred to as the 'co-benefits' of climate change policy.

It has been estimated that the above package will cut the annual cost of meeting EU air pollution targets by billions of euros. And the savings to the European health services could be as much as six times greater.

## Resource Eight: Health in a changing climate

Published : Jul 05, 2011 Last modified : Feb 06, 2013 12:04 PM

<http://www.eea.europa.eu/signals/signals-2011/articles/health-in-a-changing-climate>

In August 2007, local health authorities in Italy detected a high number of cases of an unusual illness in Castiglione di Cervia and Castiglione di Ravenna, two small villages divided by a river. Almost 200 people were affected and one elderly man died (Angelini et al., 2007).



Image © John McConnico

After detailed investigation, the illness was found to be Chikungunya, an insect-borne virus transmitted to humans by the *Aedes* or 'tiger' mosquito more common in Africa and Asia. The source of the infection was traced to a man holidaying in the region.

It is believed that the sick man was infected before travelling to Europe but was bitten by a tiger mosquito in Italy. The tiger mosquito is a vector or carrier of the virus and the insect in question is

believed to have spread the virus to another person in the village. This set off a chain reaction, with tiger mosquitoes biting infected people and spreading the virus until a mini-epidemic developed.

### **A web of interactions**

The outbreak of Chikungunya depended on an intricate web of interactions and conditions that reveal some of the health risks and challenges we face in a globalised world. Tourism, climate change, trade, movement of species and public health all played a part in the situation.

The tiger mosquito is believed to have been introduced to Europe via a range of imported goods — from ornamental plants such as 'lucky bamboo' to used tyres. The mosquito larva has been found in many parts of Europe but only survives outdoors in warmer, southern countries or in greenhouses further north — in the Netherlands, for example.

Dengue and West Nile Fever are also now found in Europe and are also transmitted by mosquito bites. According to the European Centre for Disease Prevention and Control (ECDC) in Stockholm, Sweden, since the first large outbreak in Romania in 1996, West Nile Fever infection has become recognised as a major cause of public health concern in Europe. No vaccine is currently available and the main preventive measures are aimed at reducing exposure to mosquito bites.

### **Intensive food production**

We may be creating the conditions necessary for the spread of infectious disease — conditions that didn't exist before. The industrialisation of food production, for example, is a cause for major concern.

By intensively breeding one type of animal, we risk producing 'monocultures' with little genetic variability. These animals are very susceptible to diseases created by poor hygiene or infection from wild animals, such as birds. Once inside the monoculture, the diseases can easily mutate and spread even to the people working with the animals in question. Overuse of antibiotics has become an accepted method of compensating for the lack of natural resistance — a practice that could cause its own problems.

'Modern efficient agriculture, just like public health, looks to science and medicine to meet some of the demands of a globalised world. Although modern agriculture has benefited many of us with cheaper and plentiful food supplies it can also lead to unforeseen pressures and problems,' says Dr Marc Sprenger, Director of the ECDC.

'For example, as a result of the extensive use of antibiotics in agriculture, their effectiveness may decrease as bacteria become more resistant, which can potentially have an impact on humans too,' Dr Sprenger says.

### **Joining up the dots in Europe**

New species and new diseases arriving in Europe are just some of the health impacts of climate change. Many more environmental and social impacts may ultimately affect human health through changes in the quality and quantity of water, air and food, and altered weather patterns, ecosystems, agriculture and livelihoods.

Climate change may also exacerbate existing environmental problems, such as air pollution, and disrupt sustainable water supplies and sanitation services.

The heat wave in Europe in summer 2003, with a death toll exceeding 70 000, highlighted the need for adaptation to a changing climate. The elderly and people with particular diseases are at higher risk, and deprived population groups are more vulnerable. In congested urban areas with high soil sealing and heat absorbing surfaces, the effects of heat waves can be exacerbated due to insufficient cooling at night and poor air flows.

For populations in the EU, mortality has been estimated to increase by 1–4 % for each degree increase of temperature above a (locally specific) cut-off point. In the 2020s, the estimated increase in heat-related mortality resulting from projected climate change could exceed 25 000 per year, mainly in central and southern European regions.

The discussion connecting health, land use, agriculture, tourism, trade and climate change needs to develop in an imaginative way. We may not be connecting public health and environment or climate change appropriately right now,' Dr Sprenger says.

'For example, I recently visited a department of health and asked who was in charge of climate-change-related issues and was told no one was. This is not passing judgement on any particular department or authority but it does illustrate that we need to change the way we think about these problems as they are all connected,' Dr Sprenger says.

'Public health systems must begin to adapt and open up to the possibility of new disease and new climate conditions. People may be misdiagnosed at the moment because their doctor is not familiar with a new virus. Many look and feel like flu. We need new tools to deal with the new challenges such as training, and facilities such as laboratories have to be flexible and adaptable,' he says.



### **Invasive species**

The Asian tiger mosquito or *Aedes albopictus* is one of the most widespread examples of an 'invasive species'. Its traditional range is from Pakistan to North Korea. It is now found all over the world and has been described as the 'most invasive mosquito in the world'.

The mosquito is just one example of a much wider threat to Europe's biodiversity as alien or non-native species establish and spread across the continent as a result of human activities. Alien species can be found in all European ecosystems. Globalisation, particularly increased trade and tourism, has resulted in an upsurge in the number and type of alien species arriving in Europe.

About 10 000 alien species have been registered in Europe. Some, such as the potato and the tomato, were introduced on purpose and remain economically important to this day. Other species, called 'invasive alien species', can create serious problems to gardening, agriculture and forestry, as vectors of diseases or by damaging constructions such as buildings and dams.

Invasive alien species also change the ecosystems they live in and affect the other species in those ecosystems. The UN Convention on Biological Diversity identifies invasive alien species as one of the major threats to biodiversity worldwide.

