

## Analysis of climate challenges in European regions

### 1. Scope

This section presents a snapshot mapping of the main climate issues at regional level in several European Member States and across PROTECT's five application domains, with a focus on adaptation and resilience challenges, whereas the previous section took a stronger (but not exclusive) climate change mitigation lens, not least due to the weight of the Energy sector. It is also based on comprehensive desktop research carried out within the framework on T1.1. The countries included in this mapping have been chosen in agreement with the whole consortium and notably with the partner leading on the innovation procurement analysis. While it does not exclude any of the other countries potentially eligible for a PCP, this allows initial focus on a smaller set of countries which show promising potential to apply innovation procurement and PCP to climate services. Those are: Belgium, Finland, France, Germany, Greece, Italy, Lithuania, the Netherlands, Poland, Slovakia and Spain. The spatial resolution adopted for this mapping is that of EU Territories in the sense of the Smart Specialisation Platform. The mapping restricts itself to those climate challenges that are directly relevant to at least one of the five application domains. Cross-reference is made to country-level priorities as identified in national adaptation strategies and plans.

The mapping is available as the end of the document.

### 2. Methodology

Due to the current lack of unified and comprehensive terminologies, norms and indicators to identify the main climate challenges facing European regions, measure their relative scale and impact, and classify them in order of priority, providing even a quick and simplified snapshot of these climate challenges requires to deal with a range of sources that diverge in format, content and intent, to the point where drawing comparisons between regions can be difficult and subject to multiple interpretation biases. This is much more marked for adaptation and resilience challenges, which form the bulk of the mapping than for mitigation challenges. In that sense, the mapping exercise is somewhat 'impure' by construction.

In this mapping, we draw whenever available on documents and syntheses published either by regional authorities and regional public bodies or on scientific reports that inform regional adaptation and resilience strategies and action plans. The overarching logic is that the main challenges are identified here from a combination of academic research on their reality and intensity at national and regional scales and the perception that each region, represented by its public governance, has of the most pressing or significant challenges. For some regions, other surveys have been made by consultancies and other private organisations, but these were deemed less appropriate to that logic.

It is worth noting that the way regions present their main challenges in official documents is widely variable. Some documents consist mostly of scientific data deriving e.g., from IPCC WP1 reports: these tend to be more comprehensive and quantitative while saying little about how the regions hierarchize the range of challenges described. In such cases, we allow ourselves a margin of interpretation to identify which of the challenges described seemed to be the most prominent in each regional context,



confirming this interpretation with complementary documents when available. At the other end of the spectrum, some documents largely skip the data and facts and focus primarily on the actions prioritized by the regions in their climate adaptation or mitigation plans. In such cases, we look for scientific reports that provide data and facts and apply the official documents as filters to identify which of the challenges described by scientific communities are effectively perceived as priority by public authorities. (Many regions opt for combinations of the two approaches.)

The degree of detail and granularity provided in such official documents also varies a lot, for instance in terms of geographic scale, of sectoral focus, of emphasis on very specific challenges that are being addressed through dedicated action lines. In this mapping, we opt for a relatively low degree of detail and granularity and seek similar formulations for largely common challenges, mainly to keep the mapping within workable dimensions and to help spot similar challenges across regions. While we are aware that this choice entails loss of information, the rationale is that once possible cases for PCPs have been identified, the documents referenced will still allow to bring back finer elements for analysis and deeper comparison for each of those cases. However, we do not attempt to achieve a very homogeneous level of detail and specificity across all regions, as we consider that variations between regions reflect to some extent the way they approached the range of their respective climate challenges. Moreover, some of the regions are still in the process of deciding on their priority topics for climate action, meaning that the snapshot provided here is only temporary; we must accept this as a fact. In a few countries, official documents relevant for this mapping exercise have not been identified at the level of regions: in such situations, we have worked on national documents and retain the elements that are relevant for each region. We also acknowledge that in some cases, EU territories in the sense of the Smart Specialisation platform do not correspond to levels of political decision. The choice of this spatial resolution is meant to facilitate further links with Smart Specialization Strategies (S3), also considering that NUTS1 and NUTS2 levels both pose similar problems.

The mapping takes the lens of PROTECT's five application domains. This is rather straightforward for regions where official documents are (partly) structured by sector and theme, which often correspond to one domain or part of one domain. When a sector or theme spans more than one application domain, we list the corresponding challenge in each of the relevant domains. More broadly, if, for instance, a chapter of the official document deals with water challenges, we may reference these under several of PROTECT's application domains (e.g. AFOLU, Marine and Coastal, Critical Infrastructures) as relevant, even when the corresponding chapters in the document do not mention water again. When regions do not present their climate challenges by sector, more work is required to reference each challenge under the relevant application domain(s). (It should be kept in mind that a number of climate challenges do not pertain to any of the five application domains and may thus be left out of this mapping, despite being fully relevant to climate action in a particular region.)

Finally, we apply another lens of country-level priority areas for climate adaptation and resilience. Here as well, the way such priorities are identified in national adaptation strategies and plans differs a lot from one country to another, as does the number of such priorities. For this mapping, we base ourselves on syntheses provided by Climate-ADAPT, complemented, when necessary, by direct use of official documents from national adaptation strategies and plans. These national priorities are indicated in column H of the mapping, each priority being designated by an abbreviation of one or more letters in square brackets. (Please note that the abbreviations are country specific – the same abbreviation may not correspond to the same priority or field in two different countries.) For each challenge identified at regional level, a reference is then added to every national priority to which the challenge is closely related. The aim of this cross-referencing is to connect national and regional scales and to provide gateways that can facilitate linking main regional climate challenges with supportive national policies and regulations down the line. (*NB.* Ultramarine regions are not referenced in elow but they are included in the mapping in the Annex.)



## 3. Results

### *Energy and Utilities*

Several challenges are widely shared across Europe. Increased frequency of droughts and of heatwaves is a concern from Lithuania and Poland to Spain, from Belgium to France, Germany, Italy and Greece, with consequences both on water quality and quantity and indirectly on other economic sectors, e.g. energy production (water scarcity in highly industrialised regions of western Germany and in Marche, impact of hotter waters in parts of Belgium, France, Italy, Lithuania). More broadly, hydrogeological instability threatens regional water balance and availability, from southern Germany to southern Italy. The multiplication of extreme events – flooding, either extreme rainfall or sea level rise, threatens to disrupt energy production in Germany, Lithuania, Poland; frost is mentioned as a disrupting factor in some Polish regions, but also in Tuscany (affecting water provision), as can be tree falls resulting from storms e.g. in Finland. Increase in other more specific risks ranges from water pollution, landfill flooding and fires (Lithuania) to peak flood discharges (northern Germany) or consequences of ocean acidification on infrastructures (western France). Besides energy and water, extreme events as well as longer term processes such as soil shrinking and swelling also threaten railways and roads (e.g. in some French regions). Systemic risks such as coupled issues on water availability or quality and energy production are amplified in densely populated areas such as the Berlin and Paris regions. Cascading effects are expected as energy demand rises (e.g. during heatwaves, in Italy but also in less hot countries such as the Netherlands or Slovakia), water reserves are put under growing strain, and the effects of suboptimal insulation and energy efficiency of buildings across Europe are aggravated by climate change.

### *Sustainable urban communities*

Cities are affected by many the challenges linked to other application domains, often at more acute levels due to the concentration of population and economic activities. Classic examples are heatwaves, who are generally expected to rise in frequency, duration and intensity, and urban heat islands mostly in meridional regions. Heatwaves are mentioned in almost every region of the mapping. Being characterised in comparison with average local temperatures, they remain globally hotter in more southern regions; however, they also come on top of climate challenges in regions that are generally cooler (from the northeast of France to the southern half of Finland) as local populations are much less used to dealing with abnormally high temperatures, both biologically and in terms of housing design, insulation and equipment. In many cases, e.g. in Spain and in parts of Italy, heatwaves and degradation of air quality (as well as increase in allergens such as pollens, often linked to northbound migration of vegetal species, and in infectious diseases gaining ground) are coupled and amplify each other's negative impact on human health. Droughts, water quality and quantity concerns appear wherever they also affect energy and utilities: they have been a major challenge in the southern half of Europe for many years, where they are often linked with water scarcity including drinking water, but they are now also concerning countries such as Belgium, the Netherlands, the south of Germany. One other frequently recurring challenge is the growing risk of flooding in urban areas, coming from heavy rainfall or from river overflow, marine submersion or sea level rise, often aggravated by soil degradation, itself amplified by droughts. Almost every province in Belgium and in the Netherlands is affected, as are some Greek, Italian, Polish and inland French regions. Swelling and shrinking soils are also an increasingly common consequence of hydrogeological instability, for instance in southern France and in Italy: they primarily affect agriculture and land use but also create vulnerability for building foundations in urban areas, and sometimes landslide risks.

### *Marine and coastal environment*



With the exception of Slovakia, all countries addressed by this mapping have coastal regions. Risks of erosion are increasing (northern Germany, northern and southern Italy, Spanish Atlantic and Mediterranean coast), with quality degradation of coastal waters (French Atlantic and Mediterranean coast), shrinking natural areas (Netherlands, Normandy) including beaches (e.g. Asturias, Provence Côte d'Azur), lagoons (Occitania), coastal sediment stocks (Nouvelle-Aquitaine). Flooding risks are mentioned in almost all coastal regions, associated with sea level rise (French Mediterranean coastline, Liguria, Andalusia, Balearic Islands, but also northern Germany and Poland, Asturias, Friuli Venezia Giulia), marine submersion (North and Baltic seas, Cantabria, Liguria, Provence Côte d'Azur), extreme rainfall, thunderstorms and gales (Poland, Cantabria), combinations of those factors (e.g. northern Germany, northern Spain, Netherlands, Lithuania, French Atlantic coast), general hydrogeological instability (western and eastern Italy) combined with more frequent droughts and change in rainfall regime (e.g. Liguria). Coastal water issues include increased saltwater intrusions, risks of salinization and freshwater & drinking water shortages (western France, Emilia-Romagna, Spain, the Netherlands...), decreased water quality (Lithuania, Tuscany, bathing water quality in the Netherlands), stress on the aquatic ecology notably due to high water temperatures, sea acidification (northern Germany, Canarias, Galicia, Murcia with reduced capacity of carbon storage), toxic algae (Catalonia, Italian lakes). Fishing and aquaculture are also affected (Galicia, northern Italy, France), sometimes with mixed effects linked to e.g. migration of species or jellyfish proliferation. Effects of climate change are also seen inland: higher risks of land subsidence and of peat oxidation (northern Netherlands), of landslides (Pomerania), biodiversity loss, affected endorheic ecosystems, eutrophication of water bodies, damaged ecosystem services (Asturias, Emilia-Romagna, Galicia, Bremen), but also potential threats on inland waterway transport (e.g. Antwerp, Bremen). Systemic issues are highlighted, such as the increasing tension between urbanisation and vulnerable natural environments or the challenge of high emissions from major ports.

#### **Agriculture, Forestry and other Land use (AFOLU)**

Climate challenges and risks for AFOLU are rather more extensively documented than other application domains in regional climate reports.

Drought and water related issues are threats found in the largest number of regions. More frequent and longer periods of drought are notably expected in Germany (Baden-Württemberg, Brandenburg, Saxony, Thuringia), northern and southern Italy, across the Netherlands and Spain (Andalusia, Castilla-Mancha, Canarias, Catalonia, Extremadura, Galicia); they are often coupled with water quality and quantity concerns (Brussels region and several Flemish regions, Emilia-Romagna, Lombardy, Apulia, Aragon, most regions across France, Lithuania), causing competition for water between urban and agricultural use (e.g. Sardinia), stress in natural ecosystems, agriculture and forestry (north-western Germany, Balearic Islands), risks of desertification (Basilicata, Calabria, Emilia-Romagna, Sicilia). Closely related is the issue of water scarcity and associated threats of lower water recharge and decrease in aquifer levels (e.g. PACA, Apulia, Piedmont, Balearic Islands, the Netherlands), risks on pastures and fodder (Poland) and vegetation areas (e.g. Thuringia). Precipitations are expected to overall decrease in a few regions such as Bratislava and western Slovakia, with reduced river flows (e.g. Pays de la Loire), higher transpiration and water stress (Murcia, Navarra, Île-de-France). Impacts shall be aggravated as more frequent or abundant irrigation should be required in the agricultural sector (e.g. North Rhine-Westphalia, Tuscany, Aosta Valley, Galicia), while water shortages are expected to create negative impact on industrial and agricultural production (e.g. Bremen).

Soils will also be affected. Erosion, increased soil vulnerability and degradation will happen across the continent (e.g. Île-de-France, Saarland, Saxony, Thuringia, Mecklenburg-Vorpommern with stronger winds, Lombardy, Marche, Lithuania, Slovakia, Andalusia, Castilla-Leon, Valencian Community, Asturias...), possibly provoking run-off and mudflows (Normandy), landslide risks (Åland, Lappi, Lower Saxony) and desertification (Galicia). Swelling and shrinking soils should notably affect much of France



(Île-de-France, Bourgogne Franche-Comté, Auvergne Rhône-Alpes, Nouvelle-Aquitaine, Occitania, PACA); soil degradation may trigger various negative effects such as impairment or loss of soil functions (Bremen), decrease of soil moisture (Lazio) with desiccation and salinization of soil in Slovak low lands; risks of land subsidence and peat oxidation will increase (northern Netherlands), combining with increasing soil consumption (e.g. Abruzzo, Campania, Emilia-Romagna). Thermal stress will further increase in southern regions such as Canary Islands, Catalonia, Extremadura, Castilla-La Mancha. As mentioned above, coastal regions will be affected by higher risks of salinization (e.g. northern Netherlands), sea water intrusions combined with the risk of sea level rise (e.g. Andalusia).

More frequent or intense extreme events shall also impact land use, often in combinations (floodings, droughts, heavy rains, storms) from southwestern (Emilia Romagna, Lombardy, Aragon) to north-eastern Europe (Lithuania, Poland). Flooding risk will increase notably in agricultural areas (e.g. Åland, Lappi, Île-de-France, Thuringia, Sardinia, Veneto, Canary Islands...), amplified by destructive storms (e.g. east of France), more intense rainfall episodes (Friuli-Venezia Giulia, Tuscany) and globally increased precipitation (e.g. northern Slovakia). These events are often causing faster surface run-off, less soil hydration and erosion (e.g. Poland). Another fast-increasing risk, as abundantly seen in the summer of 2022, concerns forest fires and wildfires, for instance in Wallonia, Antwerp province, in the southern half of Finland, northern and central Italian regions as well as Sicily, in most French regions, across Germany from Saarland to Bavaria or Berlin, several Greek regions, Spain from the south to central inland regions up to Catalonia. In the Netherlands, extreme events combined with the risk of longer wet periods will be affecting harvests, while mountainous regions may see an increase in torrents and avalanches (e.g. Bavaria).

Climate change will hit productivity. Agricultural yield may decrease in very different contexts (Centre-Val de Loire, Saarland, Berlin, Hessen, Mecklenburg-Vorpommern, Emilia Romagna, Liguria, Marche, Sardinia, Tuscany, the Netherlands, Castilla-Leon, Murcia...), linked with higher evaporation (southern Spain), shorter crop maturation due to higher average temperatures (Galicia), higher risk of loss of nutritional value (Sardinia). Plants and animals may reach their adaptation limits (e.g. Hessen, Saxony). Impacts on agriculture will often depend on species. A risk on fruit and vine already observed with increasing frequency is linked to frost risk during flowering, which can trigger earlier harvests (e.g. PACA). Other challenges come from thinner snow cover (alpine Italian regions), higher volatility of snow cover and vegetation periods (Lithuania), negative consequences on permafrost (Trentino Alto Adige). Generally, there are fears of more inadequacy of precipitation cycles to seasonal agricultural needs (e.g. in Poland). Forests shall suffer as well with degradation risks (e.g. PACA, Saarland), high vulnerability of species to droughts and parasites (Wallonia, Grand Est, Île-de-France, Pays de la Loire); in contrast, forests are expected to extend further in Lappi, which may provoke albedo reduction. Higher risks of infectious diseases, pests, fungi, also invasive species are foreseen everywhere, linked or not to the migration of species (e.g. Grand Est, Galicia, Bavaria, North Rhine-Westphalia, Saxony, Thuringia, northern Italy, regions across Spain – Aragon, Asturias, Canary Islands, Extremadura, Navarra, Valencian Community); longer wet periods and modified climate patterns will probably increase diseases, mosquitoes and pests (the Netherlands). Other negative developments concern eutrophication in the summer (e.g. Saarland), increased oxidation by ozone and high concentrations of ozone and air pollutants in dry seasons that can also affect plant growth (Île-de-France, Saarland), risks on pasture lands (PACA), even threats to reindeer husbandry (Lappi – the rest of Finland expects mixed or overall slightly positive effects of climate change).

Biodiversity threats are also more and more emphasised (Antwerp, Brussels, most French regions and half of Spanish regions including Canary Islands, Lower Saxony, Emilia Romagna, Liguria, Aosta Valley...); more broadly, biodiversity displacement and change, migration of alien species, combined with other phenomena such as tropicalisation, might have more mixed impacts (Bavaria, North Rhine-Westphalia, Saxony, Thuringia, Friuli Veneto Giulia, Piedmont, Murcia, Poland...). Other expected changes whose effects have yet to be further assessed include changes in seasonal rhythms,



modification of flowering cycles (e.g. Centre-Val de Loire), potentially longer and more productive agricultural seasons as well as timber production expected to increase but more vulnerable to the extreme weather events (Aosta Valley), extension of the growing period and vegetation cycles (eastern Slovakia, Poland).

### **Civil security and protection**

A large part of the risks mentioned for the other four application domains also translate into challenges for civil security and protection. Some are very widely shared across countries and regions, notably those related to flooding risks and a range of others, separately or in combination: heavy rainfall, storms and hailstorms, sea level rise, groundwater rise, river overflow, marine submersion, landslides, mudflows, avalanches... affecting land use, urbanised areas and built environments, critical infrastructures, energy and water production, transportation and mobility; to severe droughts and acute water scarcity; to forest fires; to increasingly intense, frequent and longer heatwaves, which can also trigger cascading effects and disrupt key value chains; to swelling and shrinking soils.

Other widespread risks pertain to human health. In particular, problems are anticipated with increasing dissemination and often migration of pollens and other allergens (e.g. Centre-Val de Loire, Île-de-France, PACA, Thuringia, the Netherlands, Andalusia, Canary Islands, Castilla-La Mancha, Navarra, Valencian Community, Murcia); of infectious bacteria (e.g. Finland, Auvergne Rhône-Alpes, Bourgogne Franche-Comté, Corsica, Grand Est, Île-de-France, Normandy, Occitania, PACA, Bremen, the Netherlands, Aragon, Castilla-La Mancha, Catalonia, Navarra, Valencian Community, Extremadura, Murcia); with ozone and other air pollution risks (e.g. Auvergne Rhône-Alpes, Île-de-France, Normandy, Occitania); with heat-related illnesses (e.g. Brandenburg, Bremen, and more generally regions where local populations are not yet physically prepared nor equipped to face impacts of intense heatwaves).

## **4. Conclusions**

Within the limitations and the caveats indicated in the sections above, this mapping provides some valuable insights.

While many of the challenges encountered here are present to some extent in all or most of the regions, they do not always appear among the main risks and threats highlighted by the referenced documents. In that sense, what is not mentioned for a given region and application domain can be as interesting as what is mentioned. It is not based on robust and universally agreed metrics and indicators in the way an equivalent mapping on mitigation issues could be, but it incorporates some perspective from (mainly public) actors on how they perceive the importance and urgency of those challenges within their respective regional contexts. This, in turn, informs strategic priorities for regional authorities and, directly or indirectly, the speed and level at which demand for climate services is likely to develop at those scales in a foreseeable future.

Another interesting perspective is given by taking the angle of application domains and types of risks. While stakeholders and, in particular, public procurers may be aware to a degree of the main climate risks affecting their own regions, seeing which other regions across Europe also view similar risks as priorities can enable new connections and create opportunities to exchange knowledge and open questions. Such connections, which are quite often not very intuitive in geographic terms, can allow clusters of regions to shape demand that is both more consistently formulated and possibly richer and more comprehensive, while also exploring how generically similar challenges can call either for similar or for quite different approaches and combinations of solutions, depending on each regional context.



This is also a way to help individual users that are confronted to specific needs in positioning those needs more clearly within, or in connection with the landscape of climate adaptation and resilience challenges in their regions (and in other regions with comparable challenges). It shall facilitate the aggregation of specific user needs at organisation or community levels, while ensuring that the way aggregated demand is formulated, and sets of solutions are identified and co-designed in dialogue with the climate service market, will then contribute more effectively to addressing priority adaptation and resilience challenges at regional level, better integrating systemic interactions and interdependencies between those challenges.

## ANNEX

The mapping of analysed regions and related climate risks is available in the pages to follow.

DRAFT



Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
<b>BELGIUM</b> <b>Adaptation priorities/fields (climate adapt):</b> <b>National level: [b] Biodiversity, [c] Crisis management, [e] Energy, [h] Health, [ic] International cooperation, [r] Research, [t] Transversal issues</b> <b>Regional level: [a] Climate adaptive agriculture and food chain, [ce] Climate adaptive and circular economy, [gb] Green blue networks and biodiversity, [h] Health, [ie] Climate adaptive infrastructure and environment, [sp] Spatial planning, [w] Water management</b>						
Antwerpen	Massive emissions from Port of Antwerp and petrochemical cluster (world no. 2) [e] <i>Geothermal energy potential [e]</i>	Massive emissions from Port of Antwerp and petrochemical cluster [e] High emissions from very dense road network and from heating of buildings [h][ie][sp] Untapped potential of residual heat [e]	Massive emissions from Port of Antwerp and petrochemical cluster (second largest in the world) [e] Potential threats on inland shipping [c][ie]	More frequent droughts, water quality and quantity concerns [c][h][a][gb][ie][w] Higher forest fire risk [c][h][gb] Biodiversity threats [b][gb][h]	Higher flooding risk [c][gb][ie][sp][w] Higher forest fire risk [c][h][gb]	<a href="https://www.gouverneurantwerpen.be/sterk-antwerpen/klimaat-en-energie.html">https://www.gouverneurantwerpen.be/sterk-antwerpen/klimaat-en-energie.html</a>
Brabant Wallon	More frequent droughts, water quality and quantity concerns [c][h][a][gb][ie][w] Impact of hotter waters on energy production [c][e][ie][w]	More frequent heatwaves [h][ie][sp] Higher flooding risk [c][gb][ie][sp][w] More frequent droughts, water quality and quantity concerns [c][h][a][gb][ie][w]	n/a	Higher forest fire risk [c][h][gb] High vulnerability of forest species to droughts and parasites [c][gb]	Higher flooding risk [c][gb][ie][sp][w] Higher forest fire risk [c][h][gb]	CPDT Wallonie (incl. <a href="https://cpdt.wallonie.be/sites/default/files/pdf/dt2_defi_2.pdf">https://cpdt.wallonie.be/sites/default/files/pdf/dt2_defi_2.pdf</a> )
Bruxelles-Capitale	Greater pressure on energy consumption [e][ie]	More frequent heatwaves, heat island effect [h][ie][sp] Higher flooding risk [c][gb][ie][sp][w] More frequent droughts, water quality and quantity concerns [c][h][a][gb][ie][w]	n/a	More frequent droughts, water quality and quantity concerns [c][h][a][gb][ie][w] Biodiversity threats [b][gb][h]	Higher flooding risk [c][gb][ie][sp][w]	<a href="https://document.environnement.brussels/opac_css/elecfile/Clim_06">https://document.environnement.brussels/opac_css/elecfile/Clim_06</a>
Hainaut	More frequent droughts, water quality and quantity concerns [c][h][a][gb][ie][w] Impact of hotter waters on energy production [c][e][ie][w]	More frequent heatwaves [h][ie][sp] Higher flooding risk [c][gb][ie][sp][w] More frequent droughts, water quality and quantity concerns [c][h][a][gb][ie][w]	n/a	Higher forest fire risk [c][h][gb] High vulnerability of forest species to droughts and parasites [c][gb]	Higher flooding risk (incl. groundwater rise in former mining areas) [c][gb][ie][sp][w] Higher forest fire risk [c][h][gb]	CPDT Wallonie (incl. <a href="https://cpdt.wallonie.be/sites/default/files/pdf/dt2_defi_2.pdf">https://cpdt.wallonie.be/sites/default/files/pdf/dt2_defi_2.pdf</a> )
Liège	More frequent droughts, water quality and quantity concerns [c][h][a][gb][ie][w] Impact of hotter waters on energy production [c][e][ie][w]	More frequent heatwaves [h][ie][sp] Higher flooding risk [c][gb][ie][sp][w] More frequent droughts, water quality and quantity concerns [c][h][a][gb][ie][w]	n/a	Higher forest fire risk [c][h][gb] High vulnerability of forest species to droughts and parasites [c][gb]	Higher flooding risk [c][gb][ie][sp][w] Higher forest fire risk [c][h][gb]	CPDT Wallonie (incl. <a href="https://cpdt.wallonie.be/sites/default/files/pdf/dt2_defi_2.pdf">https://cpdt.wallonie.be/sites/default/files/pdf/dt2_defi_2.pdf</a> )



Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
Limburg	More frequent droughts, water quality and quantity concerns [c][h][a][gb][ie][w]	More frequent heatwaves [h][ie][sp] Higher flooding risk [c][gb][ie][sp][w] More frequent droughts, water quality and quantity concerns [c][h][a][gb][ie][w]	n/a	More frequent droughts, water quality and quantity concerns [c][h][a][gb][ie][w]	Higher flooding risk [c][gb][ie][sp][w] Higher forest fire risk [c][h][gb]	<a href="https://klimaat.vmm.be/tools/impact">https://klimaat.vmm.be/tools/impact</a>
Luxembourg	More frequent droughts, water quality and quantity concerns [c][h][a][gb][ie][w] Impact of hotter waters on energy production [c][e][ie][w]	More frequent heatwaves [h][ie][sp] Higher flooding risk [c][gb][ie][sp][w] More frequent droughts, water quality and quantity concerns [c][h][a][gb][ie][w]	n/a	Higher forest fire risk [c][h][gb] High vulnerability of forest species to droughts and parasites [c][gb]	Higher flooding risk [c][gb][ie][sp][w] Higher forest fire risk [c][h][gb]	NBRACER project proposal (currently in GAP phase)
Namur	More frequent droughts, water quality and quantity concerns [c][h][a][gb][ie][w] Impact of hotter waters on energy production [c][e][ie][w]	More frequent heatwaves [h][ie][sp] Higher flooding risk [c][gb][ie][sp][w] More frequent droughts, water quality and quantity concerns [c][h][a][gb][ie][w]	n/a	Higher forest fire risk [c][h][gb] High vulnerability of forest species to droughts and parasites [c][gb]	Higher flooding risk [c][gb][ie][sp][w] Higher forest fire risk [c][h][gb]	CPDT Wallonie (incl. <a href="https://cpdt.wallonie.be/sites/default/files/pdf/dt2_defi_2.pdf">https://cpdt.wallonie.be/sites/default/files/pdf/dt2_defi_2.pdf</a> )
Oost-Vlaanderen	More frequent droughts, water quality and quantity concerns [c][h][a][gb][ie][w] Impact of hotter waters on energy production [c][e][ie][w]	-	n/a	Higher water erosion of the fertile arable land in hilly areas [a][gb][ie][w]	Higher flooding risk (rainfall, fluvial) [c][gb][ie][sp][w]	NBRACER project proposal (currently in GAP phase)
Vlaams-Brabant	More frequent droughts, water quality and quantity concerns [c][h][a][gb][ie][w] Impact of hotter waters on energy production [c][e][ie][w]	More frequent heatwaves [h][ie][sp] Higher flooding risk [c][gb][ie][sp][w] More frequent droughts, water quality and quantity concerns [c][h][a][gb][ie][w]	n/a	More frequent droughts, water quality and quantity concerns [c][h][a][gb][ie][w]	Higher flooding risk (rainfall, fluvial) [c][gb][ie][sp][w]	<a href="https://klimaat.vmm.be/tools/impact">https://klimaat.vmm.be/tools/impact</a>
West-Vlaanderen	More frequent droughts, water quality and quantity concerns [c][h][a][gb][ie][w] Impact of hotter waters on energy production [c][e][ie][w]	-		More frequent droughts, water quality and quantity concerns [c][h][a][gb][ie][w]	Higher flooding risk (rainfall, fluvial, marine), heightened by polder structure under sea level [c][a][gb][ie][sp][w]	NBRACER project proposal (currently in GAP phase)

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
<b>FINLAND</b>						
<b>National adaptation priorities/fields (climate adapt): [b] Biodiversity, [c] Buildings and construction, [e] Environmental protection, [l] Land use, [w] Use and management of water resources</b>						
Åland	-	-	Some flooding risk (limited) [e]	-	Some flooding risk (limited) [e]	<a href="https://www.regeringen.ax/miljo-natur/klimat">https://www.regeringen.ax/miljo-natur/klimat</a>
Etelä-Karjala	Risk of disrupted energy production (tree fall...)	More frequent heatwaves [c][e]	n/a	Higher flooding risk [e][l][w] Erosion and landslide risk [e][l][w] Higher forest fire risk [e][l]	Higher flooding risk [e][l][w] Landslide risk [e][l][w] Higher forest fire risk [e][l] Risk of disrupted energy production Higher risk of infectious bacteria [e][l][w]	<a href="https://www.stat.fi/tup/khkinv/luku6">https://www.stat.fi/tup/khkinv/luku6</a>
Etelä-Pohjanmaa	Risk of disrupted energy production (tree fall...)	-	n/a	Higher flooding risk [e][l][w] Erosion and landslide risk [e][l][w]	Higher flooding risk [e][l][w] Landslide risk [e][l][w] Risk of disrupted energy production Higher risk of infectious bacteria [e][l][w]	<a href="https://www.stat.fi/tup/khkinv/luku6">https://www.stat.fi/tup/khkinv/luku6</a>
Etelä-Savo	Risk of disrupted energy production (tree fall...)	More frequent heatwaves [c][e]	n/a	Higher flooding risk [e][l][w] Erosion and landslide risk [e][l][w] Higher forest fire risk [e][l]	Higher flooding risk [e][l][w] Landslide risk [e][l][w] Higher forest fire risk [e][l] Risk of disrupted energy production Higher risk of infectious bacteria [e][l][w]	<a href="https://www.stat.fi/tup/khkinv/luku6">https://www.stat.fi/tup/khkinv/luku6</a>
Kainuu	Risk of disrupted energy production (tree fall...)		n/a	Higher flooding risk [e][l][w] Erosion and landslide risk [e][l][w]	Higher flooding risk [e][l][w] Landslide risk [e][l][w] Risk of disrupted energy production Higher risk of infectious bacteria [e][l][w]	<a href="https://www.stat.fi/tup/khkinv/luku6">https://www.stat.fi/tup/khkinv/luku6</a>

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
Kanta-Häme	Risk of disrupted energy production (tree fall...)	More frequent heatwaves [c][e]	n/a	Higher flooding risk [e][l][w] Erosion and landslide risk [e][l][w] Higher forest fire risk [e][l]	Higher flooding risk [e][l][w] Landslide risk [e][l][w] Higher forest fire risk [e][l] Risk of disrupted energy production Higher risk of infectious bacteria [e][l][w]	<a href="https://www.stat.fi/tup/khkinv/luuku6">https://www.stat.fi/tup/khkinv/luuku6</a>
Keski-Pohjanmaa	Risk of disrupted energy production (tree fall...)	-	Increased risk of erosion and quality degradation of coastal waters [e][w]	Higher flooding risk [e][l][w] Erosion and landslide risk [e][l][w]	Higher flooding risk [e][l][w] Landslide risk [e][l][w] Risk of disrupted energy production Higher risk of infectious bacteria [e][l][w]	<a href="https://www.stat.fi/tup/khkinv/luuku6">https://www.stat.fi/tup/khkinv/luuku6</a>
Keski-Suomi	Risk of disrupted energy production (tree fall...)	-	n/a	Higher flooding risk [e][l][w] Erosion and landslide risk [e][l][w]	Higher flooding risk [e][l][w] Landslide risk [e][l][w] Risk of disrupted energy production Higher risk of infectious bacteria [e][l][w]	<a href="https://www.stat.fi/tup/khkinv/luuku6">https://www.stat.fi/tup/khkinv/luuku6</a>
Kymenlaakso ( Kymmenedalen )	Risk of disrupted energy production (tree fall...)	More frequent heatwaves [c][e]	Increased risk of erosion and quality degradation of coastal waters [e][w]	Higher flooding risk [e][l][w] Erosion and landslide risk [e][l][w] Higher forest fire risk [e][l]	Higher flooding risk [e][l][w] Landslide risk [e][l][w] Higher forest fire risk [e][l] Risk of disrupted energy production Higher risk of infectious bacteria [e][l][w]	<a href="https://www.stat.fi/tup/khkinv/luuku6">https://www.stat.fi/tup/khkinv/luuku6</a>
Lappi	Risk of disrupted energy production (tree fall...)	-	Increased risk of erosion and quality degradation of coastal waters [e][w]	Extension of forests and albedo reduction [e][l] Threats to reindeer husbandry [l]	Higher flooding risk [e][l][w] Landslide risk [e][l][w] Risk of disrupted energy production Higher risk of infectious bacteria [e][l][w]	<a href="https://www.stat.fi/tup/khkinv/luuku6">https://www.stat.fi/tup/khkinv/luuku6</a>

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
Päijät-Häme	Risk of disrupted energy production (tree fall...)	More frequent heatwaves [c][e]	n/a	Higher flooding risk [e][l][w] Erosion and landslide risk [e][l][w] Higher forest fire risk [e][l]	Higher flooding risk [e][l][w] Landslide risk [e][l][w] Higher forest fire risk [e][l] Risk of disrupted energy production Higher risk of infectious bacteria [e][l][w]	<a href="https://www.stat.fi/tup/khkinv/luku6">https://www.stat.fi/tup/khkinv/luku6</a>
Pirkanmaa	Risk of disrupted energy production (tree fall...)	More frequent heatwaves [c][e]	n/a	Higher flooding risk [e][l][w] Erosion and landslide risk [e][l][w] Higher forest fire risk [e][l]	Higher flooding risk [e][l][w] Landslide risk [e][l][w] Higher forest fire risk [e][l] Risk of disrupted energy production Higher risk of infectious bacteria [e][l][w]	<a href="https://www.stat.fi/tup/khkinv/luku6">https://www.stat.fi/tup/khkinv/luku6</a>
Pohjanmaa	Risk of disrupted energy production (tree fall...)	-	Increased risk of erosion and quality degradation of coastal waters [e][w]	Higher flooding risk [e][l][w] Erosion and landslide risk [e][l][w]	Higher flooding risk [e][l][w] Landslide risk [e][l][w] Risk of disrupted energy production Higher risk of infectious bacteria [e][l][w]	<a href="https://www.stat.fi/tup/khkinv/luku6">https://www.stat.fi/tup/khkinv/luku6</a>
Pohjois-Karjala	Risk of disrupted energy production (tree fall...)	-	n/a	Higher flooding risk [e][l][w] Erosion and landslide risk [e][l][w]	Higher flooding risk [e][l][w] Landslide risk [e][l][w] Risk of disrupted energy production Higher risk of infectious bacteria [e][l][w]	<a href="https://www.stat.fi/tup/khkinv/luku6">https://www.stat.fi/tup/khkinv/luku6</a>
Pohjois-Pohjanmaa	Risk of disrupted energy production (tree fall...)	-	Increased risk of erosion and quality degradation of coastal waters [e][w]	Higher flooding risk [e][l][w] Erosion and landslide risk [e][l][w]	Higher flooding risk [e][l][w] Landslide risk [e][l][w] Risk of disrupted energy production Higher risk of infectious bacteria [e][l][w]	<a href="https://www.stat.fi/tup/khkinv/luku6">https://www.stat.fi/tup/khkinv/luku6</a>

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
Pohjois-Savo	Risk of disrupted energy production (tree fall...)	-	n/a	Higher flooding risk [e][l][w] Erosion and landslide risk [e][l][w]	Higher flooding risk [e][l][w] Landslide risk [e][l][w] Risk of disrupted energy production Higher risk of infectious bacteria [e][l][w]	<a href="https://www.stat.fi/tup/khkinv/luku6">https://www.stat.fi/tup/khkinv/luku6</a>
Satakunta	Risk of disrupted energy production (tree fall...)	More frequent heatwaves [c][e]	Increased risk of erosion and quality degradation of coastal waters [e][w]	Higher flooding risk [e][l][w] Erosion and landslide risk [e][l][w] Higher forest fire risk [e][l]	Higher flooding risk [e][l][w] Landslide risk [e][l][w] Higher forest fire risk [e][l] Risk of disrupted energy production Higher risk of infectious bacteria [e][l][w]	<a href="https://www.stat.fi/tup/khkinv/luku6">https://www.stat.fi/tup/khkinv/luku6</a>
Uusimaa (Nyländ)	Risk of disrupted energy production (tree fall...)	More frequent heatwaves [c][e]	Increased risk of erosion and quality degradation of coastal waters [e][w]	Higher flooding risk [e][l][w] Erosion and landslide risk [e][l][w] Higher forest fire risk [e][l]	Higher flooding risk [e][l][w] Landslide risk [e][l][w] Higher forest fire risk [e][l] Risk of disrupted energy production Higher risk of infectious bacteria [e][l][w]	<a href="https://www.stat.fi/tup/khkinv/luku6">https://www.stat.fi/tup/khkinv/luku6</a>
Varsinais-Suomi (Egentliga Finland)	Risk of disrupted energy production (tree fall...)	More frequent heatwaves [c][e]	Increased risk of erosion and quality degradation of coastal waters [e][w]	Higher flooding risk [e][l][w] Erosion and landslide risk [e][l][w] Higher forest fire risk [e][l]	Higher flooding risk [e][l][w] Landslide risk [e][l][w] Higher forest fire risk [e][l] Risk of disrupted energy production Higher risk of infectious bacteria [e][l][w]	<a href="https://www.stat.fi/tup/khkinv/luku6">https://www.stat.fi/tup/khkinv/luku6</a>
<b>FRANCE</b>						
<b>National adaptation priorities/fields (climate adapt): [a] Agriculture, [fa] Fishing and aquaculture, [fi] Finance and insurance, [fw] Forestry and its wood sector, [nbe] Nature, biodiversity and environmental heritage, [pr] Prevention and resilience to extreme events, [t] Tourism</b>						
Auvergne-Rhône-Alpes	More frequent heatwaves [pr] More frequent droughts, water quality and quantity concerns [a][fa][pr]	More frequent heatwaves [pr] Swelling and shrinking soils [a] Higher flooding risk [fi][pr] More frequent droughts, water quality and quantity concerns [a][pr]	n/a	Higher forest fire risk [fi][fw][pr] Swelling and shrinking soils [a] Biodiversity threats [nbe]	Higher forest fire risk [fi][pr] Higher flooding and landslide risk [fi][pr] Higher ozone pollution risk Higher risk of infectious bacteria in hotter fresh water [fa]	

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
		Degradation of roads and railways [fi][t]				
Bourgogne-Franche-Comté	More frequent heatwaves [pr] More frequent droughts, water quality and quantity concerns [a][fa][pr]	More frequent droughts, water quality and quantity concerns [a][pr] Higher flooding risk [fi][pr] More frequent heatwaves and heat islands (low tolerance of local populations) [pr] Swelling soils	n/a	More frequent droughts, water quality and quantity concerns [a][fa][fw][nbe][pr] Swelling and shrinking soils [a] Higher risk of destructive storms [a][fi][fw][pr] Higher forest fire risk [fw][pr] High vulnerability of forest species to droughts and parasites [fw] <i>Earlier vine harvests and sweeter wines [a]</i>	Higher flooding and landslide risk [fi][pr] Higher risk of infectious bacteria and tiger mosquito Higher forest fire risk [fi][pr] Higher risk of destructive storms [a][fi][pr]	<a href="https://www.alterrebourgognefranchecomte.org/_recherche-images/download/8965/pdf/488/0">https://www.alterrebourgognefranchecomte.org/_recherche-images/download/8965/pdf/488/0</a>
Bretagne	More frequent heatwaves [pr] More frequent droughts, water quality and quantity concerns [a][fa][pr]	More frequent heatwaves [pr] More frequent droughts, water quality and quantity concerns [a][pr]	Higher risk of marine submersion (incl. touristic areas) [fi][pr][t] Risk on fishing and shellfish farming [fa]	More frequent droughts, water quality and quantity concerns [a][fa][fw][nbe][pr] Biodiversity threats [nbe]	Higher sea and river flooding risk [fi][pr]	<a href="https://bretagne-environnement.fr/contenus?f%5B0%5D=field_tag_th_matique_gemet%3A1200">https://bretagne-environnement.fr/contenus?f%5B0%5D=field_tag_th_matique_gemet%3A1200</a>
Centre-Val de Loire	More frequent heatwaves [pr] More frequent droughts, water quality and quantity concerns [a][fa][pr]	More frequent heatwaves [pr] More frequent droughts, water quality and quantity concerns [a][pr]	n/a	Higher forest fire risk [fi][fw][pr] More frequent droughts, water quality and quantity concerns [a][fw][nbe][pr] Modification of flowering cycles [a][nbe] Limited productivity (soft wheat) [a] Biodiversity threats [nbe]	Higher forest fire risk [fi][pr] Higher pollen allergy risk	<a href="https://www.centre-val-de-loire.developpement-durable.gouv.fr/changement-climatique-r1396.html">https://www.centre-val-de-loire.developpement-durable.gouv.fr/changement-climatique-r1396.html</a>
Corse	More frequent heatwaves [pr] More frequent droughts, water quality and quantity concerns [a][fa][pr] Risk on hydroelectricity	More frequent heatwaves [pr] More frequent droughts, water quality and quantity concerns [a][pr]	Higher risk of marine submersion (incl. ports, touristic beaches) [fi][pr][t] Higher risk of sea level rise [fi] Risk on fishing and shellfish farming [fa]	Higher forest fire risk [fi][fw][pr] More frequent droughts, water quality and quantity concerns [a][fa][fw][nbe][pr] Biodiversity threats [nbe]	Higher forest fire risk [fi][pr] Higher flooding risk [fi][pr] Higher risk of infectious bacteria and tiger mosquito [fa]	<a href="https://www.cerema.fr/system/files/documents/2021/06/analyse_des_effets_du_changement_climatique_en_corse_vfinale.pdf">https://www.cerema.fr/system/files/documents/2021/06/analyse_des_effets_du_changement_climatique_en_corse_vfinale.pdf</a>

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
Grand Est	Impact of hotter waters on energy production	More frequent heatwaves (low tolerance of local populations) [pr] More frequent droughts, water quality and quantity concerns [a][pr]	n/a	Higher forest fire risk [fi][fw][pr] More frequent droughts, water quality and quantity concerns [a][fw][nbe][pr] Potentially higher risk of infectious diseases (vine, corn) [a] High vulnerability of forest species to droughts and parasites [fw]	Higher forest fire risk [fi][pr] Higher risk of ground collapse due to underground cavities [fi][pr] Higher risk of infectious human diseases	<a href="https://www.grand-est.developpement-durable.gouv.fr/changement-climatique-r6352.html">https://www.grand-est.developpement-durable.gouv.fr/changement-climatique-r6352.html</a>
Guadeloupe	More frequent droughts, water quality and quantity concerns [a][fa][pr] Risk of salination of sweet water ecosystems [nbe]	More frequent droughts, water quality and quantity concerns [a][fa][pr] More frequent and intense cyclones [pr] Higher risk of marine submersion [fi][pr][t]	Some risk of sea level rise [fi][t] Higher risk of marine submersion [fi][pr][t] Higher risk of coastal erosion [nbe][t] Risk of salination of sweet water ecosystems [nbe] Risk on aquaculture (cyclones, coral reef degradation) [fi]	Risk of massive agricultural productivity drop (sugar cane, banana) [a] Higher impact of water scarcity on fodder [a] Biodiversity threats (marine and terrestrial) [nbe] Higher impact of cyclones on forests and mangroves [fw]	Higher risk of marine submersion [fi][pr][t] More frequent and intense cyclones [pr] Higher flooding risk [fi][pr]	<a href="https://guadeloupe.ademe.fr/sites/default/files/profil-vulnerabilite-guadeloupe-changement-climatique-2018.pdf">https://guadeloupe.ademe.fr/sites/default/files/profil-vulnerabilite-guadeloupe-changement-climatique-2018.pdf</a> <a href="https://www.ecologie.gouv.fr/sites/default/files/ONERC_Rapport_2012_OutreMer_WEB.pdf">https://www.ecologie.gouv.fr/sites/default/files/ONERC_Rapport_2012_OutreMer_WEB.pdf</a>
Guyane française	More frequent droughts, impact on hydroelectricity [pr] Risk of salination of sweet water ecosystems [nbe]	Higher risk of marine submersion [fi][pr][t] Higher risk of coastal erosion [nbe][t] Higher flooding risk [fi][pr] Risk of increased thermal stress	Higher risk of marine submersion [fi][pr][t] Higher risk of coastal erosion [nbe][t] Risk of salination of sweet water ecosystems [nbe] Negative impact of higher sea temperatures on fishing, ecosystems Higher risk of marine submersion [fi]	Higher impact of water scarcity on fodder and on agricultural productivity, subsequent increase in deforestation [a] Loss of agricultural land due to coastal erosion [a] Higher forest fire risk [fi][fw][pr] Higher risk of drought [fw] High vulnerability of forest species to climate change, threats on biodiversity [fw][nbe]	Higher risk of marine submersion [fi][pr][t] Higher flooding risk [fi][pr] Higher forest fire risk [fi][fw][pr] Higher risk of development for tropical diseases Higher risk of landslides [fi][pr]	<a href="https://guyane.ademe.fr/sites/default/files/rapport-changement-climatique-pistes-reflexion-adaptation-regionale.pdf">https://guyane.ademe.fr/sites/default/files/rapport-changement-climatique-pistes-reflexion-adaptation-regionale.pdf</a> <a href="https://www.ecologie.gouv.fr/sites/default/files/ONERC_Rapport_2012_OutreMer_WEB.pdf">https://www.ecologie.gouv.fr/sites/default/files/ONERC_Rapport_2012_OutreMer_WEB.pdf</a>
Hauts-de-France	More frequent heatwaves [pr]	More frequent heatwaves (low tolerance of local populations) [pr]	Higher risk of marine submersion [fi][pr][t] Risk on fishing? [fa]	Water scarcity [a][fw][nbe] More frequent droughts, water quality and quantity concerns [a][fa][fw][nbe][pr]	Higher risk of marine submersion [fi][pr]	observatoireclimat-hautsdefrance.org (incl. <a href="https://www.observatoireclimat-hautsdefrance.org/Les-grandes-questions/Changement-climatique-en-Hauts-de-France-ou-en-sommes-nous">https://www.observatoireclimat-hautsdefrance.org/Les-grandes-questions/Changement-climatique-en-Hauts-de-France-ou-en-sommes-nous</a> )

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
Île-de-France	<p>More frequent heatwaves (risk of electric grid disruption) [pr]</p> <p>Increased flooding risk [pr]</p> <p>Indirect impact of hotter waters on energy availability</p> <p>Impact of heatwaves and extreme rainfall on railways [pr]</p> <p>More frequent droughts, water quality and quantity concerns [a][fa][pr]</p> <p>Amplified systemic risk (very dense urban area)</p>	<p>More frequent heatwaves [pr]</p> <p>Heat islands, hot summer nights [t]</p> <p>(Somewhat) more intense extreme rainfall events, increased flooding risk [fi][pr]</p> <p>(Somewhat) more frequent droughts [a][pr]</p> <p>Low air quality</p> <p>Urban biodiversity threats [nbe]</p> <p><i>Adaptation of public buildings and housing to increased thermal stress [pr]</i></p>	n/a	<p>Higher forest fire risk [fi][fw][pr]</p> <p>(Somewhat) more frequent droughts [a][fw][nbe][pr]</p> <p>Water quality and quantity concerns, stress on humid areas [a][fa][nbe]</p> <p>Swelling and shrinking soils [a]</p> <p>Increased soil vulnerability [a][fw]</p> <p>Increased flooding risk [a][fi][fw][pr]</p> <p>Increased oxidation by ozone [a][fw][nbe]</p> <p>Biodiversity threats [nbe]</p> <p>High vulnerability of forest species and agriculture to droughts and parasites [fw][nbe]</p>	<p>More frequent heatwaves [pr]</p> <p>Increased flooding risk [fi][pr]</p> <p>Increased risk on energy availability</p> <p>Continuing ozone pollution risk</p> <p>Higher risk of infectious human diseases, pollen allergies</p> <p>Swelling and shrinking soils (risk for built areas)</p>	<p><a href="https://www.arec-idf.fr/fileadmin/NewEtudes/000pack3/Etude_2851/20221115_diag_PRACC.pdf">https://www.arec-idf.fr/fileadmin/NewEtudes/000pack3/Etude_2851/20221115_diag_PRACC.pdf</a></p>
Martinique	<p>More frequent droughts, water quality and quantity concerns [a][fa][pr]</p> <p>More frequent droughts, impact on hydroelectricity [pr]</p> <p>Higher risk of landslides, threat on water availability [fi][pr]</p> <p>Potential positive effect on solar energy</p>	<p>More frequent droughts, water quality and quantity concerns [a][fa][pr]</p> <p>More frequent and intense cyclones [pr]</p> <p>Higher risk of marine submersion [fi][pr][t]</p> <p>Higher flooding risk [fi][pr]</p>	<p>Some risk of sea level rise [fi][t]</p> <p>Higher risk of marine submersion [fi][pr][t]</p> <p>Higher risk of coastal erosion and beach &amp; ecosystem destruction [nbe][t]</p> <p>Risk on aquaculture (cyclones, coral reef degradation) [fi]</p> <p>Higher flooding risk [fi][pr]</p>	<p>Risk of massive agricultural productivity drop (sugar cane, banana) [a]</p> <p>Higher impact of water scarcity on fodder [a]</p> <p>Biodiversity threats (marine and terrestrial) [nbe]</p> <p>Higher impact of cyclones on forests and mangroves [fw]</p>	<p>More frequent and intense cyclones [pr]</p> <p>Higher flooding risk [fi][pr]</p> <p>Higher risk of marine submersion [fi][pr][t]</p> <p>Higher risk of landslides, threat on water availability [fi][pr]</p>	<p><a href="http://www.biodiversite-martinique.fr/sites/default/files/etude_et_evaluation_des_impacts_de_la_vulnerabilite_et_de_ladaptation_de_la_martinique_a_u_changement_climatique_climpact_2012.pdf">http://www.biodiversite-martinique.fr/sites/default/files/etude_et_evaluation_des_impacts_de_la_vulnerabilite_et_de_ladaptation_de_la_martinique_a_u_changement_climatique_climpact_2012.pdf</a></p> <p><a href="https://www.martinique.developpement-durable.gouv.fr/IMG/pdf/diagnostic_vf.3.pdf">https://www.martinique.developpement-durable.gouv.fr/IMG/pdf/diagnostic_vf.3.pdf</a></p> <p><a href="https://www.ecologie.gouv.fr/sites/default/files/ONERC_Rapport_2012_OutreMer_WEB.pdf">https://www.ecologie.gouv.fr/sites/default/files/ONERC_Rapport_2012_OutreMer_WEB.pdf</a></p>
Mayotte	<p>Risk of salination of sweet water ecosystems [nbe]</p>	<p>Higher risk of sea level rise [fi]</p> <p>Higher risk of marine submersion [fi][pr][t]</p> <p>Risk of salination of sweet water ecosystems [nbe]</p>	<p>Higher risk of sea level rise [fi]</p> <p>Higher risk of marine submersion [fi][pr][t]</p> <p>Risk of salination of sweet water ecosystems [nbe]</p>		<p>Higher risk of marine submersion [fi][pr][t]</p> <p>Higher risk of development for tropical diseases</p>	<p><a href="https://www.ecologie.gouv.fr/sites/default/files/ONERC_Rapport_2012_OutreMer_WEB.pdf">https://www.ecologie.gouv.fr/sites/default/files/ONERC_Rapport_2012_OutreMer_WEB.pdf</a></p>



Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
Normandie	Risk of strongly decreased water quantity (both on the ground and underground) [a] Concern on water quality (soil erosion, chemical concentration, saltwater intrusions) [a][fa]	More frequent heatwaves [pr] Increased risk of skin diseases More frequent droughts, water quality and quantity concerns [pr] Increased air quality concerns	Widespread coastal erosion, cliff collapse [nbe][pr][t] Increased flooding risk (sea level, rivers) [fi][pr] Increased saltwater intrusions [a] Risk of environmental contamination in estuaries [a][fa][nbe] Threats on oyster farming + several other shellfish (positive impact for scallops)[fa] Decrease of cod population (and probably temperate and cold water fish)[fa]	Increased soil erosion, run-off and mudflows [a][pr] Increased thermal stress (impact on grain, cattle) [a] (Partially) higher risk of droughts [a][fw][nbe][pr] Decrease of agricultural yield [a]	Higher sea and river flooding risk [fi][pr] Higher mudflow risk [pr] Higher ozone pollution risk Higher risk of infectious bacteria in hotter fresh water [fa]	<a href="https://www.normandie.fr/giec-normand">https://www.normandie.fr/giec-normand</a> (several synthetic and more extended reports)
Nouvelle-Aquitaine	More frequent heatwaves [pr] More frequent droughts, water quality and quantity concerns [a][pr]	More frequent heatwaves [pr] Swelling and shrinking soils [a] More frequent droughts, water quality and quantity concerns [a][pr]	Higher coastal risk of marine flooding (storms, erosion, modified rainfall and waves) [fi][pr][t] Higher risk of saltwater intrusions Disappearance of coastal sediment stocks [a]	Higher forest fire risk [fi][fw][pr] More frequent droughts, water quality and quantity concerns [a][fw][nbe][pr] Swelling and shrinking soils [a] Biodiversity threats (esp. coastal, mountain) [nbe]	Higher forest fire risk [fi][pr] Higher flooding and landslide risk [fi][pr]	Changement climatique en Aquitaine : quels impacts pour les risques naturels et comment s'y adapter ? (INP Bordeaux)
Occitanie	More frequent heatwaves [pr] More frequent droughts, water quality and quantity concerns [a][fa][pr]	More frequent heatwaves [pr] Swelling and shrinking soils [a] More frequent droughts, water quality and quantity concerns [a][pr]	Higher risk of marine submersion (incl. touristic beaches) [fi][pr][t] Higher risk of sea level rise [fi] Risk of lagoons disappearing [nbe] Risk on fishing and shellfish farming [fa]	Higher forest fire risk [fi][fw][pr] More frequent droughts, water quality and quantity concerns [a][fw][nbe][pr] Swelling and shrinking soils [] Biodiversity threats (esp. coastal, mountain) [nbe]	Higher forest fire risk [fi][pr] Higher sea and river flooding risk [fi][pr] Higher landslide risk [fi][pr] Higher ozone pollution risk Higher risk of infectious bacteria in hotter fresh water [fa]	<a href="https://www.occitanie.developpement-durable.gouv.fr/changement-climatique-r1610.html">https://www.occitanie.developpement-durable.gouv.fr/changement-climatique-r1610.html</a>

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Pays de la Loire	<p>More frequent and longer heatwaves [pr]  More frequent and intense, longer droughts, water quality and quantity concerns [a][fa][pr]  Risk on infrastructures due to ocean acidification [fa]  More frequent extreme rainfall, risk of rainwater overflow, energy supply disruption [pr]  Risk of road infrastructure deformations (brutal temperature change, swelling and shrinking soils, storms, heavy rainfall) [pr]</p>	<p>Higher flooding risk (sea level, river overflow) [fi][pr]  More frequent and longer heatwaves, higher risk for ageing population [pr]  Heat islands  Risk of drinking water shortages [pr][t]  Higher vulnerability to storms [fi][pr]</p>	<p>Higher risk of marine submersion [fi][t]  Higher risk of sea level rise [fi]  Higher risk of coastal erosion [t]  Increasing tension between urbanisation and vulnerable natural environments [nbe][t]  Risk of environmental contamination in estuaries [a][fa][nbe]  Threats on some species (e.g. salmon) [fa][nbe]</p>	<p>More frequent and intense, longer droughts [a][fw][nbe][pr]  Higher forest fire risk [fi][fw][pr]  High vulnerability of forest species and agriculture to droughts and parasites [fw]  High biodiversity threats (both coastal and inland) [nbe]  Reduced river flows [a][fa][nbe]</p>	<p>Higher risk of marine submersion [fi][pr]  Higher risk of coastal erosion  More frequent extreme rainfall, risk of rainwater overflow, energy supply disruption [pr]  Risk of road infrastructure deformations (brutal temperature change, swelling and shrinking soils, storms, heavy rainfall) [fi][pr][t]  Higher forest fire risk [fi][pr]  Risk of drinking water shortages [pr][t]</p>	<p><a href="http://www.comite21.org/docs/2022/giec-des-pays-de-la-loire---1er-rapport-(29-09-2022).pdf">http://www.comite21.org/docs/2022/giec-des-pays-de-la-loire---1er-rapport-(29-09-2022).pdf</a></p>
Provence-Alpes-Côte d'Azur	<p>More frequent and intense droughts [a][fa][pr]  Higher risk of water scarcity (lower water recharge) [a][fa]  More frequent extreme rainfall (longer term) [pr]</p>	<p>More frequent heatwaves  Heat islands, hot summer nights  Higher risk of water scarcity (lower water recharge) [a]  More frequent and intense extreme rainfall [pr]  Higher risk of river flooding, landslides [fi]</p>	<p>Higher risk of marine submersion [fi][pr]  Higher risk of sea level rise [fi]  Higher risk of beach erosion or destruction [nbe][t]  Risk of saltwater intrusion (uncertain) [a]  Threats on marine species due to warmer and acidified sea (fish, shellfish) [fa][nbe]  Jellyfish proliferation [fa]</p>	<p>Higher risk of water scarcity (lower water recharge) [a][fw][nbe]  Higher forest fire risk (frequency, intensity) [fi][fw][pr]  Degradation and migration of forest species [fw]  risk on fruit and vine linked to frost risk during flowering, earlier harvests [a]  risk on pasture lands [a]  Swelling and shrinking soils [a]  Impacts on agriculture depending on species [a]  Threats on biodiversity [nbe]</p>	<p>Extended periods for mosquitos (<i>variable effects on diseases</i>)  Risk of longer and more intense pollen allergies</p>	<p><a href="http://www.grec-sud.fr/wp-content/uploads/2017/09/GREC-PACA_Enjeux_CC_BD_062015.pdf">http://www.grec-sud.fr/wp-content/uploads/2017/09/GREC-PACA_Enjeux_CC_BD_062015.pdf</a>  <a href="http://www.grec-sud.fr/wp-content/uploads/2018/09/GREC_PACA_Cahier_Mer_Littoral_ref.pdf">http://www.grec-sud.fr/wp-content/uploads/2018/09/GREC_PACA_Cahier_Mer_Littoral_ref.pdf</a>  <a href="http://www.grec-sud.fr/wp-content/uploads/2023/01/Cahier_territorial_NCA_GREC_SUD_juin_2021_VF_MD.pdf">http://www.grec-sud.fr/wp-content/uploads/2023/01/Cahier_territorial_NCA_GREC_SUD_juin_2021_VF_MD.pdf</a></p>

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Réunion	More frequent droughts, impact on hydroelectricity [pr] Higher flooding risk, threat on electricity production and (shoemwhat) on waste treatment [pr]	Higher risk of sea level rise [fi] Higher flooding risk [fi][pr] Higher risk of marine submersion [fi][pr][t] Heat islands	More frequent and intense cyclones and rainfalls [pr] Higher risk of sea level rise [fi] Higher flooding risk [fi][pr] Higher risk of marine submersion [fi][pr][t] Risks on marine biodiversity [nbe]	Risk of massive agricultural productivity drop (sugar cane) [a] Higher impact of water scarcity on fodder [a] Risks on river system due to droughts, water scarcity [fi][nbe] Higher landslide risk [a][pr] Higher forest fire risk [fi][fw][pr] Higher risk of invasive species [nbe]	More frequent and intense cyclones and rainfalls [pr] Higher flooding risk [fi][pr] Higher risk of marine submersion [fi][pr][t] Higher landslide risk [a][pr] Higher forest fire risk [fi][fw][pr] Higher risk of development for tropical diseases	<a href="https://www.departement974.fr/sites/default/files/pcet-diagnostic-vulnerabilite.pdf">https://www.departement974.fr/sites/default/files/pcet-diagnostic-vulnerabilite.pdf</a> <a href="https://www.profil-environnemental.re/media/fiches/Fiche_risques_naturels.pdf">https://www.profil-environnemental.re/media/fiches/Fiche_risques_naturels.pdf</a> <a href="https://www.ecologie.gouv.fr/sites/default/files/ONERC_Rapport_2012_OutreMer_WEB.pdf">https://www.ecologie.gouv.fr/sites/default/files/ONERC_Rapport_2012_OutreMer_WEB.pdf</a>
Saint-Martin	Risk of salination of sweet water ecosystems [nbe] Higher vulnerability of drinking water availability [pr] More frequent heatwaves and higher energy needs	More frequent droughts, water quality and quantity concerns [a][fa][pr] More frequent and intense cyclones [pr] Higher risks on urban infrastructures [fi][pr] Risk of salination of sweet water ecosystems [nbe] Higher risk of marine submersion [fi][pr][t]	Some risk of sea level rise [fi] Higher risk of marine submersion [fi][pr][t] Somewhat higher risk of coastal erosion [t]	Higher impact of water scarcity on fodder [a]	More frequent and intense cyclones [pr] Higher risk of marine submersion [fi][pr][t] Higher vulnerability of drinking water availability [pr] Higher risks on urban infrastructures [fi][pr] Higher risk of development for tropical diseases	<a href="http://www.com-saint-martin.fr/ressources/Fascicule-6-Quelle-capacit%C3%A9-d-accueil-et-modalit%C3%A9s-de-d%C3%A9veloppement-demain.pdf">http://www.com-saint-martin.fr/ressources/Fascicule-6-Quelle-capacit%C3%A9-d-accueil-et-modalit%C3%A9s-de-d%C3%A9veloppement-demain.pdf</a> <a href="https://www.ecologie.gouv.fr/sites/default/files/ONERC_Rapport_2012_OutreMer_WEB.pdf">https://www.ecologie.gouv.fr/sites/default/files/ONERC_Rapport_2012_OutreMer_WEB.pdf</a>
<b>GERMANY</b>						
<b>National adaptation priorities/fields (climate-adapt): [e] Economy, [h] Health, [i] Infrastructure, [l] Land, [sc] Spatial Planning and Civil Protection, [w] Water</b>						
Baden-Württemberg	More frequent heatwaves [h] More frequent droughts, water quality and quantity concerns, floods [e][h][i][sc][w]	Higher flooding risk [e][i][sc] Higher risk of heatwaves [h] Higher risk of disease-carriers from warmer climate [h] Higher risk of tropical diseases such as chikungunya and dengue fever [h]	n/a	Higher risk of more frequent and longer periods of drought during the summer months [e][l][w] Higher risk of species of fauna and flora migration	Higher risk of sever hailstorms that can cause massive damage to buildings, vehicles and fields [e][i][sc] Higher risk of flooding for smaller rivers and streams [sc][w]	<a href="https://www.baden-wuerttemberg.de/fileadmin/redaktion/mum/intern/Dateien/documents/publication/Climate_Change.pdf">https://www.baden-wuerttemberg.de/fileadmin/redaktion/mum/intern/Dateien/documents/publication/Climate_Change.pdf</a> <a href="https://www.hochwasser.baden-wuerttemberg.de/">https://www.hochwasser.baden-wuerttemberg.de/</a> <a href="https://lokale-klimaanpassung.de/lokales-klimaportal/">https://lokale-klimaanpassung.de/lokales-klimaportal/</a> <a href="https://www.heidelberg.de/hd/HD/Leben/klimawandel-anpassung.html">https://www.heidelberg.de/hd/HD/Leben/klimawandel-anpassung.html</a>

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Bayern	Higher risk of damaging infrastructure for electricity supply [e][i][sc]	More frequent droughts, water quality and quantity concerns [e][h][w] Higher flooding risk [e][i][sc]	n/a	Higher risk of changes in crop yields and increased spread of invasive species [e][l] Higher risk of wild fires [e] Biodiversity displacement and change [h] Higher risk of pest and disease increase [h] Higher risk of torrents and avalanches [h]	Higher flooding risk [e][i][sc][w]	<a href="https://www.bestellen.bayern.de/application/eshop_app000003?SID=44167250&amp;ACTIONxSESSxSHOWPIC(BILDxKEY:%27stmuv_klima_012%27,BILDxCLASS:%27Artikel%27,BILDxTYPE:%27PDF%27)">https://www.bestellen.bayern.de/application/eshop_app000003?SID=44167250&amp;ACTIONxSESSxSHOWPIC(BILDxKEY:%27stmuv_klima_012%27,BILDxCLASS:%27Artikel%27,BILDxTYPE:%27PDF%27)</a> <a href="https://www.bestellen.bayern.de/application/eshop_app000007?SID=589832196&amp;ACTIONxSESSxSHOWPIC(BILDxKEY:%27stmuv_vs_056%27,BILDxCLASS:%27Artikel%27,BILDxTYPE:%27PDF%27)">https://www.bestellen.bayern.de/application/eshop_app000007?SID=589832196&amp;ACTIONxSESSxSHOWPIC(BILDxKEY:%27stmuv_vs_056%27,BILDxCLASS:%27Artikel%27,BILDxTYPE:%27PDF%27)</a>
Berlin	Risk of higher energy demand due changing weather patterns and rising temperatures [e] Higher risk of damage of power lines and other infrastructure [e][i][sc]	Higher risk of flooding [e][i][sc] Higher risk of heatwaves and air pollution [h] Higher risk to water resources [e][h][i][w]	n/a	Higher risk of changes in crop yields [e] Risk of spread of invasive species [h] Higher risk of wildfires [h]	Higher risk of disruptions of transport networks and energy systems [e][i][sc] Higher risk of damage of critical infrastructure [e][i][sc] Higher risk of heat-related illnesses and other health impacts [h][sc]	<a href="https://cdn.locomotive.works/sites/5ab410c8a2f42204838f797e/content_entry5ab410faa2f42204838f7990/5da8946484832e00a69c5586/files/bek2030_broschuere_en.pdf?1632314683">https://cdn.locomotive.works/sites/5ab410c8a2f42204838f797e/content_entry5ab410faa2f42204838f7990/5da8946484832e00a69c5586/files/bek2030_broschuere_en.pdf?1632314683</a>
Brandenburg	The changes in the water supply will have serious effects on the regional water balance in general, on water availability and on a wide variety of economically important sectors [e][i][w]	Higher risk of flooding [e][i][sc]	n/a	Higher risk of drought (frequency and length) [l][w] Higher risk of forest fires [h]	Higher risk of heat-related illnesses and other health impacts [h][sc]	<a href="https://www.ioew.de/fileadmin/user_upload/Zwischenbericht-Gutachten-KlimaplanBB.pdf">https://www.ioew.de/fileadmin/user_upload/Zwischenbericht-Gutachten-KlimaplanBB.pdf</a> <a href="https://www.umweltbundesamt.de/themen/klima-energie/klimafolgen-anpassung/folgen-des-klimawandels/klimafolgen-deutschland/regionale-klimafolgen-in-brandenburg#wichtige-studien-und-projekte">https://www.umweltbundesamt.de/themen/klima-energie/klimafolgen-anpassung/folgen-des-klimawandels/klimafolgen-deutschland/regionale-klimafolgen-in-brandenburg#wichtige-studien-und-projekte</a>

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Bremen	<p>Higher risk of outage of supply facilities and networks (energy, water, heat and telecommunications) [e][i][sc][w]</p> <p>Higher risk of demand on resources for the maintenance of bodies of water and for municipal cleaning [i][w]</p> <p>Reduced output by power plants arising from restricted access to cooling water due to drought [e][i][w]</p>	<p>More frequent heatwaves [h]</p> <p>Increased human-biomatic impact due to heat stress [h]</p> <p>Higher risk of wear and tear on green spaces and recreation grounds due to increased solar irradiation and intensive usage [i][sc]</p> <p>Higher risk of congestion of the sewage network as a result of heavy precipitation exceeding the established thresholds [e][h][i][sc]</p>	<p>Eutrophication of bodies of water due to the erosion of dry soils (esp. in areas on the urban fringe) [w]</p> <p>Restrictions on inland waterway transport due to high and low water levels</p>	<p>Shifting species diversity/spread of invasive thermophilic animal and plant species [l]</p> <p>Damage (e.g. protein coagulation) to heat-stressed vegetation [l]</p> <p>Impairment/loss of soil functions due to increased soil temperature [e][l]</p> <p>Higher risk of damage to and loss of soil functions due to erosion and the entry of pollutants [e][l]</p> <p>Higher risk of damage to vegetation/crops due to increased waterlogging [e][l][w]</p> <p>Risk of fire and falling branches due to drought</p> <p>Pest infestations and fungal diseases affecting trees due to increased humidity</p> <p>Negative impact on industrial/agricultural production due to water shortages [e][l][w]</p>	<p>Increase in the number of days of extreme precipitation [sc]</p> <p>Increase physical strain and risk of accidents due to heat stress and a reduced ability to concentrate [h][sc]</p> <p>Establishment of new and spread of existing pathogenic agents and disease carriers [h][sc]</p> <p>Higher risk of material stress and damage to transport routes due to heat and temperature fluctuations [e][i][sc]</p> <p>Higher risk of flooding and damage of private and public buildings and property [e][i][sc]</p> <p>Higher risk of damage to buildings and infrastructure due to changes in soil and groundwater levels in conjunction with rising sea levels [e][i][sc]</p>	<p><a href="https://www.klimaanpassung.bremen.de/sixcms/media.php/13/SUMMARY_Climate%2BAdaptation%2Bstrategy%2BBremen%2BBremerhaven%2BWEB.pdf">https://www.klimaanpassung.bremen.de/sixcms/media.php/13/SUMMARY_Climate%2BAdaptation%2Bstrategy%2BBremen%2BBremerhaven%2BWEB.pdf</a></p>
Hamburg	<p>Rising sea levels can threaten coastal power plants and distribution networks [e][i]</p>	<p>Higher risk of flooding [e][i][sc]</p>	<p>Higher risk of sea level rise that can lead to increased coastal erosion, flooding, and storm surges that can damage coastal infrastructure such as buildings, roads, and ports [e][i][sc]</p>		<p>Higher risk of sea level rise that can lead to increased coastal erosion, flooding, and storm surges that can damage coastal infrastructure such as buildings, roads, and ports [e][i][sc]</p>	<p><a href="https://climate-adapt.eea.europa.eu/en/metadata/case-studies/four-pillars-to-hamburg2019s-green-roof-strategy-financial-incentive-dialogue-regulation-and-science/hamburg_doc1_climate_plan.pdf/view">https://climate-adapt.eea.europa.eu/en/metadata/case-studies/four-pillars-to-hamburg2019s-green-roof-strategy-financial-incentive-dialogue-regulation-and-science/hamburg_doc1_climate_plan.pdf/view</a></p>
Hessen	<p>Negative consequences resulting from changing precipitation patterns and the associated changes in the discharge process of both fossil and regenerative generation plants as well as the</p>	<p>More frequent heatwaves [h]</p> <p>Higher risk of groundwater contamination [h][w]</p> <p>Higher risk of spread of invasive species</p> <p>Increase in the intensity of pollen allergies [h]</p>	n/a	<p>Higher risk of yield losses of crops [e][l]</p> <p>Higher risk of erosion and nutrient leaching as well as increased drying of the harvest [e][l]</p> <p>Higher risk that plants and animals can no longer adapt to the</p>	<p>Higher risk of disrupting private and public transport due to road flooding [e][i][sc][w]</p> <p>Higher risk of heavy rainfall events</p> <p>Higher risk of heat waves [h][sc]</p> <p>Higher risk of transport and</p>	<p><a href="https://umwelt.hessen.de/sites/umwelt.hessen.de/files/2021-06/integrierter_klimaschutzplan.pdf">https://umwelt.hessen.de/sites/umwelt.hessen.de/files/2021-06/integrierter_klimaschutzplan.pdf</a></p>

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	supply networks and their infrastructure [e][i]	Increase in the transmission of infection diseases (Chicunguña and Zika) [h]		changed weather conditions [h][l]	transportation infrastructure being affected [e][i][sc]	
Mecklenburg-Vorpommern	-	More frequent heatwaves [h]	-	Higher risk of erosion by wind [l] Higher risk of more frequent negative effects on plant growth, product quality and yields [l]	-	<a href="https://www.regierung-mv.de/Landesregierung/Im/Klima/Klimaschutz/">https://www.regierung-mv.de/Landesregierung/Im/Klima/Klimaschutz/</a> <a href="https://www.umweltbundesamt.de/theme/n/klima-energie/klimafolgen-anpassung/folgen-des-klimawandels/klimafolgen-deutschland/regionale-klimafolgen-in-mecklenburg-vorpommern#landerspezifische-klimaanderungen">https://www.umweltbundesamt.de/theme/n/klima-energie/klimafolgen-anpassung/folgen-des-klimawandels/klimafolgen-deutschland/regionale-klimafolgen-in-mecklenburg-vorpommern#landerspezifische-klimaanderungen</a> <a href="https://www.umweltbundesamt.de/sites/default/files/medien/5750/publikationen/2021-06-10_cc_21-2021_kwra2021_land_1.pdf">https://www.umweltbundesamt.de/sites/default/files/medien/5750/publikationen/2021-06-10_cc_21-2021_kwra2021_land_1.pdf</a>
Niedersachsen	Higher risk of periods of time in which the water supply will not be sufficient without human management [e][w] Increases in peak flood discharges of at least 20% at many gauges in Lower Saxony, especially in the summer months [w]	More frequent heatwaves [h] More frequent heavy precipitations that might lead to flooding [sc][w] Increasing heat stress in metropolitan areas and the associated burden on health [h]	Increased risk of coastal and inland flooding [e][i][sc] Stress on the aquatic ecology due to high water temperatures and high oxygen levels	Increasing drought stress in natural ecosystems and in agriculture and forestry [l][w] Increasing risk of forest fires [l][w] Increasing soil erosion due to heavy rain or extreme drought [l][w] Higher risk of invasive species and the preservation of biodiversity [l]	Declining snow reliability in winter sports areas [e]	<a href="https://www.umwelt.niedersachsen.de/startseite/themen/klima/klimaschutz/klimaschutz_in_niedersachsen/klimaschutz-in-niedersachsen-200413.html">https://www.umwelt.niedersachsen.de/startseite/themen/klima/klimaschutz/klimaschutz_in_niedersachsen/klimaschutz-in-niedersachsen-200413.html</a> <a href="https://www.arl-net.de/system/files/media-shop/pdf/ab/ab_011/ab_011_gesamt.pdf">https://www.arl-net.de/system/files/media-shop/pdf/ab/ab_011/ab_011_gesamt.pdf</a>
Nordrhein-Westfalen	Higher risk of water scarcity for the cooling of power plants during long periods of heat	-	-	Biodiversity displacement and change [l] Higher risk of climate-induced migration of species from southern areas [l] More frequent irrigation is expected in the agricultural sector [l][w] Increased risk for drought damages, plant diseases and pests in agriculture and forestry [l][w]	-	<a href="https://www.klimaschutz.nrw.de/fileadmin/Dateien/Download-Dokumente/Broschueren/klimaschutzbericht_nrw_151201.pdf">https://www.klimaschutz.nrw.de/fileadmin/Dateien/Download-Dokumente/Broschueren/klimaschutzbericht_nrw_151201.pdf</a> <a href="https://www.klimlandrp.de/en/background/#:~:text=In%20Rhineland%20Palatinate%20there%20are,of%20the%20vegetation%20growth%20period.">https://www.klimlandrp.de/en/background/#:~:text=In%20Rhineland%20Palatinate%20there%20are,of%20the%20vegetation%20growth%20period.</a>

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Rheinland-Pfalz	-	Higher risk of flooding [e][i][sc] More frequent heatwaves [h]	n/a	-	-	<a href="https://mkuem.rlp.de/fileadmin/mulewf/Themen/Klima-_und_Ressourcenschutz/Klimaschutz/Klimaschutzkonzept/Klimaschutzkonzept_Strategie_net_01_02_2021.pdf">https://mkuem.rlp.de/fileadmin/mulewf/Themen/Klima-_und_Ressourcenschutz/Klimaschutz/Klimaschutzkonzept/Klimaschutzkonzept_Strategie_net_01_02_2021.pdf</a> <a href="https://hochwassermanagement.rlp-umwelt.de/servlet/is/176954/Wasser_und_Klimawandel_in_RLP.pdf?command=downloadContent&amp;filename=Wasser_und_Klimawandel_in_RLP.pdf">https://hochwassermanagement.rlp-umwelt.de/servlet/is/176954/Wasser_und_Klimawandel_in_RLP.pdf?command=downloadContent&amp;filename=Wasser_und_Klimawandel_in_RLP.pdf</a>
Saarland	Higher risk of changes in precipitation patterns and water availability can impact the efficiency of hydropower plants [e][w] Higher risks to the energy sector due to extreme weather events such as heatwaves, droughts, and floods which can disrupt power generation and transmission [e][i][sc]	Higher flooding risk [e][i][sc]	n/a	Higher risk of soil erosion [l] Higher risk of soil degradation [l] Higher risk of forest fires Higher risk of eutrophication in the summer Higher risk of forest degradation Decline in yields of some agricultural products (cereals, potatoes, silo maize, etc) [e][l] High concentrations of ozone and air pollutants in dry seasons also affect plant growth [l]	Higher risk of flooding of low-lying settlement areas [e][i][sc] Higher risk of falling trees on roads and railway lines [i][sc]	<a href="https://www.izes.de/sites/default/files/publikationen/KlimaKomPass_IZES.pdf">https://www.izes.de/sites/default/files/publikationen/KlimaKomPass_IZES.pdf</a>
Sachsen	Higher risk of infrastructure damage due to heavy precipitation and floodings [i][w]	Higher flooding risk [sc][w] Higher risk of heatwaves [h]	n/a	Higher risk of droughts [l][w] Biodiversity displacement and change [l] Higher risk of pest and disease increase [h][l] Higher risk of soil erosion [l][w] Higher risk that plants and animals can no longer adapt to the changed weather conditions [h][l]	Higher risk of infrastructure damage due to heavy precipitation and floodings [i][w]	<a href="https://publikationen.sachsen.de/bdb/artikel/37830">https://publikationen.sachsen.de/bdb/artikel/37830</a>

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
Sachsen-Anhalt	-	Higher risk of heavy rains events combined with flooding, hailstorms and lightning strikes	n/a	-	-	<a href="https://mwu.sachsen-anhalt.de/fileadmin/Bibliothek/Politik_und_Verwaltung/MWU/Klimaschutz/00_Startseite_Klimaschutz/190205_Klima_und_Energiekonzept_Sachsen-Anhalt.pdf">https://mwu.sachsen-anhalt.de/fileadmin/Bibliothek/Politik_und_Verwaltung/MWU/Klimaschutz/00_Startseite_Klimaschutz/190205_Klima_und_Energiekonzept_Sachsen-Anhalt.pdf</a> <a href="https://www.umweltbundesamt.de/themen/klima-energie/klimafolgen-anpassung/folgen-des-klimawandels/klimafolgen-deutschland/regionale-klimafolgen-in-sachsen-anhalt">https://www.umweltbundesamt.de/themen/klima-energie/klimafolgen-anpassung/folgen-des-klimawandels/klimafolgen-deutschland/regionale-klimafolgen-in-sachsen-anhalt</a>
Schleswig-Holstein	-	More frequent heatwaves [h]	Higher risk of sea level rise that can lead to increased coastal erosion, flooding, and storm surges that can damage coastal infrastructure such as buildings, roads, and ports [e][i][sc]	-	-	<a href="https://www.umweltbundesamt.de/themen/klima-energie/klimafolgen-anpassung/folgen-des-klimawandels/klimafolgen-deutschland/regionale-klimafolgen-in-schleswig-holstein#bereits-aufgetretene-und-erwartete-klimaänderungen">https://www.umweltbundesamt.de/themen/klima-energie/klimafolgen-anpassung/folgen-des-klimawandels/klimafolgen-deutschland/regionale-klimafolgen-in-schleswig-holstein#bereits-aufgetretene-und-erwartete-klimaänderungen</a>
Thüringen	Risk of a slight decrease in wind speeds for the production of solar energy Higher risk of damage of critical energy infrastructure [e][i][sc]	More frequent heatwaves [h] Higher risk of skin cancer [h] Increase in vectors of disease transmission [h] Higher risk of food being spoiled by high temperatures [h] Higher risk from allergies and germs [h]	n/a	Biodiversity threats [h] Higher flooding risk [e][l] Higher risk of an increase of dry spells [l] Risk of larger range of plant pests and weeds [e][l] Risk of water scarcity for vegetation areas [l][w] Higher risk of water erosion [l][w] Increased risk of forest fires [h] Higher risk of disruptions in timber harvesting [e]	Higher risk from allergies and germs [h][sc] Higher risk of impairing road safety Higher risk of flooding causing damages to buildings [e][i][sc]	
<b>GREECE</b>						
National adaptation priorities/fields (ESPKA): [aa] Agriculture and animal husbandry, [ac] Action, [aq] Aquaculture, [be] Biodiversity and ecosystems, [ch] Cultural heritage, [co] Coastal zones, [fi] Fishing, [fo] Forestry, [he] Health, [is] Insurance sector, [it] Infrastructure and transport, [mi] Mining industry, [se] Structured environment, [to] Tourism, [wr] Water resources						
Ανατολική Μακεδονία και Θράκη (Eastern Macedonia and Thrace)	-	-	Higher risk of migration of species due to changes in water temperature [aq][co][fi]	Higher risk of forest fires [fo][is]	-	<a href="https://www.bankofgreece.gr/Publications/ClimateChange_FullReport_bm.pdf">https://www.bankofgreece.gr/Publications/ClimateChange_FullReport_bm.pdf</a>



Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
Αττική (Attica)	-	More frequent heatwaves [he][it] Higher flooding risk [co][he][is][it] Higher occurrence of extreme precipitation events [aa][co][fo][is][it]	Higher risk of migration of species due to changes in water temperature [aq][co][fi] Higher risk of coastal erosion [be][ch][co][is][it][to]	Higher risk of forest fires [fo][is]	-	<a href="https://www.bankofgreece.gr/Publications/ClimateChange_FullReport_bm.pdf">https://www.bankofgreece.gr/Publications/ClimateChange_FullReport_bm.pdf</a>
Βόρειο Αιγαίο (North Aegean)	Higher risk of water scarcity [aq][be][co][wr]	-	Higher risk of migration of species due to changes in water temperature [aq][co][fi] Higher risk of coastal erosion [be][ch][co][is][it][to]	Higher risk of forest fires [fo][is]	-	<a href="https://www.bankofgreece.gr/Publications/ClimateChange_FullReport_bm.pdf">https://www.bankofgreece.gr/Publications/ClimateChange_FullReport_bm.pdf</a>
Δυτική Ελλάδα (Western Greece)	-	-	Higher risk of migration of species due to changes in water temperature [aq][co][fi]	-	-	<a href="https://www.bankofgreece.gr/Publications/ClimateChange_FullReport_bm.pdf">https://www.bankofgreece.gr/Publications/ClimateChange_FullReport_bm.pdf</a>
Δυτική Μακεδονία (Western Macedonia)	-	More frequent heatwaves [he][it] Higher flooding risk [co][he][is][it]	-	-	Higher risk of landslides, floods [aa][co][he][is][it][mi]	<a href="https://www.bankofgreece.gr/Publications/ClimateChange_FullReport_bm.pdf">https://www.bankofgreece.gr/Publications/ClimateChange_FullReport_bm.pdf</a>
Έπειρος (Epirus)	-	Higher flooding risk [co][he][is][it]	Higher risk of migration of species due to changes in water temperature [aq][co][fi]	-	-	<a href="https://www.bankofgreece.gr/Publications/ClimateChange_FullReport_bm.pdf">https://www.bankofgreece.gr/Publications/ClimateChange_FullReport_bm.pdf</a>
Θεσσαλία (Thessaly)	Higher risk of water scarcity [aq][be][co][wr]	Higher flooding risk [co][he][is][it]	Higher risk of migration of species due to changes in water temperature [aq][co][fi] Higher risk of coastal erosion [be][ch][co][is][it][to]	Higher risk of forest fires [fo][is]	Higher risk of landslides, floods [aa][co][he][is][it][mi]	<a href="https://www.bankofgreece.gr/Publications/ClimateChange_FullReport_bm.pdf">https://www.bankofgreece.gr/Publications/ClimateChange_FullReport_bm.pdf</a>
Ιόνια νησιά (Ionian Islands)	-	Higher flooding risk [co][he][is][it]	Higher risk of migration of species due to changes in water temperature [aq][co][fi] Higher risk of coastal erosion [be][ch][co][is][it][to]	-	-	<a href="https://www.bankofgreece.gr/Publications/ClimateChange_FullReport_bm.pdf">https://www.bankofgreece.gr/Publications/ClimateChange_FullReport_bm.pdf</a>
Κεντρική Μακεδονία (Central Macedonia)	-	Higher flooding risk [co][he][is][it]	Higher risk of migration of species due to changes in water temperature [aq][co][fi]	Higher risk of forest fires [fo][is]	Higher risk of landslides, floods [aa][co][he][is][it][mi]	<a href="https://www.bankofgreece.gr/Publications/ClimateChange_FullReport_bm.pdf">https://www.bankofgreece.gr/Publications/ClimateChange_FullReport_bm.pdf</a>
Κρήτη (Crete)	-	More frequent heatwaves [he][it]	Higher risk of migration of species due to changes	Higher risk of forest fires [fo][is]	-	<a href="https://www.bankofgreece.gr/Publications/ClimateChange_FullReport_bm.pdf">https://www.bankofgreece.gr/Publications/ClimateChange_FullReport_bm.pdf</a>

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
			in water temperature [aq][co][fi]			
Νότιο Αιγαίο (South Aegean)	Higher risk of water scarcity [aq][be][co][wr]	Higher flooding risk [co][he][is][it] More frequent heatwaves [he][it]	Higher risk of migration of species due to changes in water temperature [aq][co][fi] Higher risk of coastal erosion [be][ch][co][is][it][to]	Higher risk of forest fires [fo][is]	-	
Πελοπόννησος (Peloponnese)	-	Higher flooding risk [co][he][is][it] More frequent heatwaves [he][it]	Higher risk of migration of species due to changes in water temperature [aq][co][fi]	Higher risk of forest fires [fo][is]	-	
Στερεά Ελλάδα (Central Greece)	Higher risk of water scarcity [aq][be][co][wr]	Higher flooding risk [co][he][is][it] More frequent heatwaves [he][it]	Higher risk of migration of species due to changes in water temperature [aq][co][fi]	-	-	

**ITALY**

**National adaptation priorities/fields (climate adapt):**[a] Agriculture, food, aquaculture, fishing, [ci] Critical infrastructures, [e] Energy, [h] Health, [i] Infrastructure, [l] Land (incl. ecosystems, forests, droughts), [t] Tourism, [u] Urban settlements, [w] Water

Abruzzo	Hydrogeological instability [ci][e][i][w]	Higher risk of heatwaves [h][u] Higher risk of heavy rainfall and thunderstorms [e][i][u][w] Higher risk of urban flooding [ci][i][u][w] Higher risk of droughts [a][l][u][w]	Hydrogeological instability [ci][e][i][w]	Soil consumption [a][l]	Hydrogeological instability [ci][e][i][w] Increased flooding risk [ci][e][i][u][w] Risk of more irregular and unforeseeable snowfalls, greater risk of avalanches [h][w]	No regional plan available, ABRUZZO rapporto sullo stato dell'ambiente 2018 <a href="https://www.artaabruzzo.it/download/publicazioni/relaz_stato_ambiente_abruzzo_2018.pdf">https://www.artaabruzzo.it/download/publicazioni/relaz_stato_ambiente_abruzzo_2018.pdf</a>
Basilicata	Hydrogeological instability posing risk to energy production [ci][e][i][w]	Higher risk of droughts [l][u][w]	-	Higher risk of droughts, desertification [a][l][w]	-	Legge 15 ottobre 2018, n.32 REGIONE BASILICATA Decarbonizzazione e politiche regionali sui cambiamenti climatici (Basilicata Carbon Free)
Calabria	Hydrogeological instability [ci][e][i][w]	More frequent heatwaves [h][u] Swelling and shrinking soils [i][u] More frequent droughts, water quality and quantity concerns [a][ci][h][i][l][u][w]	Higher risk of erosion [i][l][u]	Higher risk of droughts, desertification [a][l][w]	Higher risk of extreme weather events [ci][e][i][u]	<a href="https://www.irpi.cnr.it/wp-content/uploads/2016/05/focus-siccita%C3%A0-desertificazione-cambiamenti-climatici-calabria-2.pdf">https://www.irpi.cnr.it/wp-content/uploads/2016/05/focus-siccita%C3%A0-desertificazione-cambiamenti-climatici-calabria-2.pdf</a> , <a href="https://www.lacnews24.it/ambiente/il-cambiamento-climatico-fa-paura-ma-in-calabria-di-piu-secondo-legambiente-e-tralle-regioni-piu-colpite_162752/">https://www.lacnews24.it/ambiente/il-cambiamento-climatico-fa-paura-ma-in-calabria-di-piu-secondo-legambiente-e-tralle-regioni-piu-colpite_162752/</a>

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
Campania	Slow adoption of renewables [e][u] Suboptimal insulation of buildings [e][u]	Poor air quality [h][u] Ageing population [h][u]	-	Soil consumption [a][l]	Hydrogeological instability [ci][e][i][w] Higher risk of extreme events (floodings, droughts, heavy rains) [ci][e][i][l][u][w]	Legambiente – Il Clima è già cambiato: la Campania, una sfida per l'Europa - <a href="https://legambiente.campania.it/wp-content/uploads/2019/05/dossier-clima-campania.pdf">https://legambiente.campania.it/wp-content/uploads/2019/05/dossier-clima-campania.pdf</a>
Emilia-Romagna	Growth of energy demand [e][u] Less energy produced by hydro sources [e][w]	Water quality concerns (driven by large quantity of water being used for irrigation) [a][h][i][u][w] Desertification [a][l][u] Negative effects on health [h][u] Negative impact on economic activities [i][t][u] Damage on the built environment [i][t][u] Increased insurance costs [u] Loss of value of affected buildings [i][u] Higher health risk (incl. pathologies related to the effects of climate change) [h][u]	Coastal erosion [i][l][t][u] Saltwater intrusion [a] Biodiversity loss (incl. local fisheries) [a][h][l]	Higher risk of extreme events (floodings, droughts, heavy rains) [l][w] Higher risk of forest fires [l] Soil consumption [a][l] Desertification [a][l] Loss of agricultural production (in term of quantity and quality) [a][l] Decreased water quantity and quality [a][l][w] Loss of biodiversity [h][l]	Higher risk of extreme events (floodings, droughts, heavy rains) [ci][e][i][l][u][w] Higher risk of forest fires [ci][h][l] Hydrogeological instability [ci][e][i][w]	Documento di sintesi della Strategia di mitigazione e adattamento per i cambiamenti climatici <a href="https://ambiente.regione.emilia-romagna.it/it/cambiamenti-climatici/temi/la-regione-per-il-clima/strategia-regionale-per-i-cambiamenti-climatici/la-regione-per-il-clima-la-strategia-di-mitigazione-e-adattamento-per-i-cambiamenti-climatici">https://ambiente.regione.emilia-romagna.it/it/cambiamenti-climatici/temi/la-regione-per-il-clima/strategia-regionale-per-i-cambiamenti-climatici/la-regione-per-il-clima-la-strategia-di-mitigazione-e-adattamento-per-i-cambiamenti-climatici</a>
Friuli-Venezia Giulia	Expected decrease of energy consumption in the winter, later increase of energy consumption in the summer [e][u]	Higher risk of droughts and heatwaves [h][l][u][w] Negative effects on health [h][u]	Hydrogeological instability [ci][e][i][w] Increased sea level [e][i][l][u] Risk for the local marine biodiversity [a][h] Risk for aquaculture (esp. in lagoons) [a]	Fewer but more intense rainfalls [l][w] Higher risk of droughts and heatwaves [a][h][l] risk for biodiversity - some species (e.g. in the field of forestry) react negatively to warmer and dryer conditions (and others react positively) [h][l]	-	Sintesi dello Studio conoscitivo dei cambiamenti climatici e di alcuni loro impatti in Friuli Venezia Giulia - <a href="https://www.meteo.fvg.it/clima/clima_fvg/03_cambiamenti_climatici/02_SLIDES_cambiamenti_climatici_e_impatti_per_il_FVG/00_report_completo_in_slides/CambiaClimaFVG_sintesiStudio.pdf">https://www.meteo.fvg.it/clima/clima_fvg/03_cambiamenti_climatici/02_SLIDES_cambiamenti_climatici_e_impatti_per_il_FVG/00_report_completo_in_slides/CambiaClimaFVG_sintesiStudio.pdf</a>
Lazio	Increased energy demand in summer [e][u]	Increased frequency of heatwaves [h][u]	Hydrogeological instability [ci][e][i][w] Coastal erosion [i][l][u]	High risk of forest fires [l] Reduction of soil moisture [a][l]	Higher risk of landslides, floods [ci][e][i][u][w]	Lazio, Regione partecipata e sostenibile – Il contributo dell'adattamento ai cambiamenti climatici - <a href="https://progetti.regione.lazio.it/contrattidifiume/wp-content/uploads/sites/53/LAZIO-SOSTENIBILE-Contributo-adattamento-cambiamenti-climatici.pdf">https://progetti.regione.lazio.it/contrattidifiume/wp-content/uploads/sites/53/LAZIO-SOSTENIBILE-Contributo-adattamento-cambiamenti-climatici.pdf</a>

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
Liguria	<p>More blackouts [ci][e][i][u]</p> <p>Hydrogeological instability [ci][e][i][w]</p> <p>More frequent heatwaves [h][u]</p> <p>More frequent droughts, water quality and quantity concerns [a][ci][i][l][u][w]</p> <p>Suboptimal energy efficiency of the built environment [e][u]</p>	<p>Higher risk of heatwaves (esp. at higher altitude and in western Liguria) [h][u]</p> <p>Higher risk of flooding [ci][i][u][w]</p> <p>More frequent droughts, water quality and quantity concerns - incl. quantity of drinking water [ci][h][i][l][t][u][w]</p> <p>Harmful effects on urban infrastructure - transport and others [ci][i][t][u]</p>	<p>Hydrogeological instability - incl. storm surges [ci][e][i][w]</p> <p>Increasing water levels [ci][i][u]</p> <p>More frequent droughts, water quality and quantity concerns [ci][h][i][l][t][u][w]</p> <p>Fewer winter precipitation in the East, more in the West, fewer summer precipitations overall [w]</p> <p>Strong precipitations to become more common in the East, less common in the West [w]</p> <p>Risk for aquaculture and fishing activities, incl. the invasion of alien species from warmer zones [a]</p> <p>High risk of erosion [i][l]</p>	<p>More frequent droughts, esp. near the coast [a][l][w]</p> <p>Biodiversity threats (incl. invasions of fungi, insects, migrations of species) [a][h][l]</p> <p>Reduction of agricultural production [a]</p> <p>Increasing risk of forest fires [h][l]</p>	<p>Higher flooding, drought, and landslide risk [ci][e][i][l][u][w]</p> <p>Risk of more damaged buildings [i][u]</p>	<p>Strategia regionale di adattamento ai cambiamenti climatici - <a href="https://www.regione.liguria.it/homepage-ambiente/cosa-cerchi/sviluppo-sostenibile/strategia-adattamento-cambiamenti-climatici.html">https://www.regione.liguria.it/homepage-ambiente/cosa-cerchi/sviluppo-sostenibile/strategia-adattamento-cambiamenti-climatici.html</a></p>
Lombardia	-	<p>Populations exposed to worse air quality [h][u]</p>	<p>Changes in the hydro-geological cycle [w]</p> <p>Increased risk of algal blooms [a]</p>	<p>Negative effects on soil quality, water quantity [a][l]</p> <p>Increased risk of extreme events [a][e][l]</p> <p>Increased risk of diffusion of parasites and fungi [a][l]</p> <p>Reduced quantity and quality of waters [a][w]</p>	-	<p>DOCUMENTO DI AZIONE REGIONALE PER L'ADATTAMENTO AL CAMBIAMENTO CLIMATICO IN LOMBARDIA - <a href="https://www.regione.lombardia.it/wps/wcm/connect/946249ce-87c4-4c39-88f9-5eab3a264f14/Documento+Azione+Adattamento+RL_9dic.pdf?MOD=AJPERES&amp;CACHEID=946249ce-87c4-4c39-">https://www.regione.lombardia.it/wps/wcm/connect/946249ce-87c4-4c39-88f9-5eab3a264f14/Documento+Azione+Adattamento+RL_9dic.pdf?MOD=AJPERES&amp;CACHEID=946249ce-87c4-4c39-</a></p>
Marche	<p>Water scarcity influencing the production of hydro energy [h][t][u][w]</p> <p>Not self-sufficient at the level of regional energy production Increased energy demand in summer [e][u]</p> <p>More blackouts [ci][e][i][u]</p>	<p>Water scarcity [h][t][u][w]</p> <p>Higher risk of flooding [ci][i][u][w]</p> <p>Increased health risk (chronic diseases) [h][u]</p>	<p>Increased risk of algal blooms [a]</p> <p>Very high risk of coastal erosion (especially in coastal tourist areas) [i][l][t][u]</p> <p>Higher risk of coastal floods [ci][e][i][u][w]</p> <p>Biodiversity threats (due to higher temperatures and decreased levels of oxygen in the waters and introduction of non-local species) [b][hl][hr]</p>	<p>Water scarcity (Also due to intensive agriculture practices) [h][t][u][w]</p> <p>Soil erosion [a][b]</p> <p>Higher risk of loss of agri production [a][h][i][l][w]</p>	<p>Higher risk of floods [ci][e][i][u][w]</p> <p>Higher risk of avalanches [h][t]</p> <p>Biodiversity threats in coastal areas (due to anthropization) [b][hl][hr]</p>	<p>Piano di adattamento al cambiamento climatico Regione Marche 2023 - 2029 <a href="https://www.regione.marche.it/portals/0/Ambiente/VAS/VASR/VAS_0038/Piano_Rev0.pdf">https://www.regione.marche.it/portals/0/Ambiente/VAS/VASR/VAS_0038/Piano_Rev0.pdf</a></p>

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
Molise	-	-	-	-	-	
Piemonte	Unforeseeable peaks of energy demand [e][u] Water scarcity [h][t][u][w]	Increased health risk (chronic diseases) [h][u]	n/a	Thinner snow cover [i][t] Migration of flora and fauna, moving the line between Mediterranean and Alpine species [a][l] Increase of damage caused by parasites [a][l] Water scarcity [h][t][u][w] Variation in the sugar content of vines [a][l]	Higher risk of extreme events (stemming from the change of precipitation cycles) influencing the public safety[h][t]	Strategia Regionale sul Cambiamento Climatico - <a href="https://www.regione.piemonte.it/web/temi/ambiente-territorio/cambiamento-climatico/strategia-regionale-sul-cambiamento-climatico">https://www.regione.piemonte.it/web/temi/ambiente-territorio/cambiamento-climatico/strategia-regionale-sul-cambiamento-climatico</a> So far only the first part of the plan is available, focused mainly on biodiversity Annex 1 of SET DI STRATEGIE DI ADATTAMENTO AI CAMBIAMENTI CLIMATICI PER LA ZONA OMOGENEA PINEROLESE DELLA CITTÀ METROPOLITANA DI TORINO PER GLI STRUMENTI DI PIANIFICAZIONE DI LIVELLO LOCALE E DI AREA VASTA <a href="http://www.cittametropolitana.torino.it/cms/risorse/territorio/dwd/urbanistica/ProgEurop/WP4.2_Strategie%20di_adattamento_%20all_1.pdf">http://www.cittametropolitana.torino.it/cms/risorse/territorio/dwd/urbanistica/ProgEurop/WP4.2_Strategie%20di_adattamento_%20all_1.pdf</a>
Puglia	-	Water scarcity [h][t][u][w] More frequent droughts, water quality and quantity concerns [ci][h][l][t][u][w]	-	Water scarcity [a][h][u][w] More frequent droughts, water quality and quantity concerns [a][h][l][t][u][w]	Water scarcity [h][t][u][w]	PNACC <a href="https://www.mase.gov.it/sites/default/files/archivio/allegati/clima/PNACC_versione_dicembre2022.pdf">https://www.mase.gov.it/sites/default/files/archivio/allegati/clima/PNACC_versione_dicembre2022.pdf</a> A consultation phase is undergoing, a regional plan still does not exist (Feb 2023). Additional source: <a href="https://focusicilia.it/clima-impazzito-cittaa-rischio-175-eventi-estremi-in-sicilia-in-12-anni/">https://focusicilia.it/clima-impazzito-cittaa-rischio-175-eventi-estremi-in-sicilia-in-12-anni/</a>
Sardegna	Droughts influencing the production of energy [e][l][w]	Higher risk of heatwaves [h][u] Higher risk of flooding in urban areas [i][u][w] More frequent droughts, water quality and	Higher risk of coastal flooding [ci][i][l][t][u] Higher risk of coastal erosion [i][l][t][u]	More frequent droughts, water quality and quantity concerns - causing competition for water use between urban and agricultural	Higher risk of floods [ci][e][i][u][w] Hydrological risk for infrastructure (e.g. rails) [ci][e][i][u][w]	Allegato 1 alla SRACC: studio per l'elaborazione della Strategia - <a href="https://delibere.regione.sardegna.it/protected/45525/0/def/ref/DBR45368/">https://delibere.regione.sardegna.it/protected/45525/0/def/ref/DBR45368/</a>

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
		<p>quantity concerns - causing competition for water use between urban (esp. touristic areas) and agricultural</p> <p>[a][ci][h][l][t][u][w]</p> <p>Landslide risk in urban environments [i][u]</p> <p>Hydrological risk for productions and industries [ci][e][i][u][w]</p>		<p>[a][l][u][w]</p> <p>Higher risk of loss of agri production [a][h][i][l][w]</p> <p>Higher risk of loss of nutritional value of agri production [a][h]</p> <p>Higher risk of forest fires and fires in rural areas [l]</p> <p>Higher risk of floods in agricultural areas [a][l]</p>	Landslide risk for infrastructure (e.g. rails) [ci][e][i][u]	
Sicilia	-	-	Increasing water levels [ci][i][u]	<p>Higher risk of desertification [a][b][fo][hr][w]</p> <p>Higher risk of fires [f][h][ri]</p>	<p>Higher risk of extreme events [h][t]</p> <p>Higher risk of fires [f][h][ri]</p>	<p>A regional adaptation plan does not exist. For a couple of sectors (agriculture and energy), there are approved guidelines for the creation of similar strategies.</p> <p><a href="https://pti.regione.sicilia.it/portal/pls/portal/docs/152524670.PDF">https://pti.regione.sicilia.it/portal/pls/portal/docs/152524670.PDF</a></p> <p><a href="http://pti.regione.sicilia.it/portal/pls/portal/docs/151514774.PDF">http://pti.regione.sicilia.it/portal/pls/portal/docs/151514774.PDF</a></p> <p>So far, no official documents identifying climate risk in Sicily are available.</p>
Toscana	<p>Results of extreme events (snow storms, landslides, fallen trees) can cause disruption in the delivery of energy [ci][e][u]</p> <p>Increased energy demand in summer [e][u]</p> <p>Increased difficulty to cool down power plants (due to limited water resources and increasing temperature) [ci][e][w]</p> <p>The provision of drinking water can be interrupted in case of extreme events (incl. very low temperature) [ci][i][u][w]</p>	<p>Higher risk of heatwaves [h][u]</p> <p>Higher risk of flooding [ci][i][l][u][w]</p> <p>Increased health risk (cardiovascular and respiratory, diseases spreadable by vector insects) [h][u]</p>	Decreased water quality, loss of habitats [a][h][t][u][w]	<p>More prolonged periods of both droughts and heavy rains [a][l][w]</p> <p>Increased demand for water for irrigation [a][w]</p> <p>Reduced (in quantity and in quality) agri production [a][h][l]</p> <p>Increased diffusion of parasitic and invasive species [a][l]</p>	<p>Higher risk of flooding [ci][e][i][l][u][w]</p>	<p>ANALISI VRV E PIANO DI ADATTAMENTO Comune di Firenze - <a href="https://www.comune.fi.it/system/files/2022-04/FIRENZE_VRV_azioniadattamento%20%281%29.pdf">https://www.comune.fi.it/system/files/2022-04/FIRENZE_VRV_azioniadattamento%20%281%29.pdf</a></p> <p>The plan of the city of Florence also provides an overview of regional challenges.</p>

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
Trentino-Alto Adige / Südtirol	Suboptimal energy efficiency of the built environment [e][u] Hydrogeological instability [ci][e][i][w]	Higher risk of heatwaves [h][u]	n/a	Negative consequences on the permafrost [l] Fewer precipitation overall (fewer in altitude and in summer) [w]	Hydrogeological instability [ci][e][i][w] Higher risk of flooding [ci][e][i][u][w] Higher risk of avalanches [h][t]	I CAMBIAMENTI CLIMATICI IN TRENTINO. OSSERVAZIONI, SCENARI FUTURI E IMPATTI: <a href="http://www.climatrentino.it/binary/pat_climaticamente/notizie_clima/Report_clima_documento_di_posizionamento_finale2023.1672934412.pdf">http://www.climatrentino.it/binary/pat_climaticamente/notizie_clima/Report_clima_documento_di_posizionamento_finale2023.1672934412.pdf</a> , <a href="https://pericolinaturali.provincia.bz.it/it/cambiamento-climatico">https://pericolinaturali.provincia.bz.it/it/cambiamento-climatico</a>
Umbria	-	Higher risk of heatwaves [h][u] Increased health risk [h][u]	n/a	?	?	No official sources on existence - or preparation-- or regional adaptation plan or other official sources on climate risk.
Valle d'Aosta	Effects on hydroelectrical energy (the plants using seasonal pools would be less impacted, more at risk will be plants using running water or very small water pools) [ci][e][u][w] Less energy consumption for heating (and more for cooling in summer) [e][u]	Increased risk of heatwaves (esp. within vulnerable citizens- allergies, age, cardiovascular diseases) [h][u] Decrease of quantity and quality of drinking water [ci][h][i][t][u][w]	n/a	Increasingly melting snow cover [t][w] <i>Potentially longer and more productive agricultural season [a][l]</i> Higher risk of droughts, increased need for irrigation [a][l][w] Risk for biodiversity (rare plants being substituted by a more common and more adaptable ones) [h][l] <i>Potential changes for forests (increased timber production, but more vulnerable to the extreme weather events) [l]</i>	Higher risk of extreme events (in particular for the cryosphere - glaciers, permafrost, snow - incl. avalanches) [h][t] Increased risk for mountain infrastructure [i][t]	Strategia di adattamento ai cambiamenti climatici - Valle d'Aosta - <a href="https://www.arpa.vda.it/it/effetti-sul-territorio-dei-cambiamenti-climatici/3716-strategia-di-adattamento-ai-cambiamenti-climatici-valle-d-aosta">https://www.arpa.vda.it/it/effetti-sul-territorio-dei-cambiamenti-climatici/3716-strategia-di-adattamento-ai-cambiamenti-climatici-valle-d-aosta</a>
Veneto	-	Higher risk of flooding [ci][e][i][l][u][w] Increased health risk (esp. for the newborns and the elderly, and for cardiovascular or respiratory pathologies) [h][u]	-	Higher risk of flooding [a][ci][e][i][l][w] Higher risk of droughts [a][l][w] Higher risk of forest fires [h][l]	Higher risk of flooding [a][ci][e][i][u][w] Higher risk of landslides [ci][e][i][l][u] Higher risk of forest fires [h][l]	Presentazione L'ALLINEAMENTO NELLA PIANIFICAZIONE LOCALE DELLE POLITICHE PER IL CLIMA Luca Marchesi Direttore Area Tutela e Sicurezza del Territorio - <a href="https://www.venetoadapt.it/wp-content/uploads/2021/12/10.-Marchesi.pdf">https://www.venetoadapt.it/wp-content/uploads/2021/12/10.-Marchesi.pdf</a> A regional adaptation strategy does not exist but is currently under elaboration.

LITHUANIA

National adaptation priorities/fields (climate adapt): [a] Agriculture/aquaculture, [e] Emergency management, [f] Forestry, ecosystems, biodiversity and landscape, [h] Public health, [io] Intersectoral objective, [is] Infrastructure, [t] Transport, [u] Urbanized areas, [w] Water resources

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
(Lietuva)	<p>Higher risk of extreme events [is][e] Impact of hotter waters on energy production [is][e] Higher risk of droughts, reduction of river runoff and extreme water level fluctuations [w][is] Higher risk of flooding (sea level rise) [is][e] Higher risk of water pollution and landfill fires [w][is][e] Vulnerability of landfills to flooding [is][e]</p>	<p>More frequent heatwaves [h][e][u] Higher risk of droughts [w][u] Higher risk of flooding (rainfall and storms, sea level rise) - coastal regions [f][t][is][e][u]</p>	<p>Higher risk of flooding (rainfall and storms, sea level rise) [f][t][is][e][u] Risk of salinity changes [w][f][a][h] Risk of water quality deterioration [w][a][h][e][u]</p>	<p>Higher volatility of vegetation period and snow cover [f][a] Higher risk of droughts [f][a] Higher flooding risk [f][a][e] Higher forest fire risk [f][e] Higher risk of other extreme events (frost, storms) [f][a][e] Risk of disease and pest increase [f][a][h] Risk of soil degradation and changes in soil, water and air quality [f][a][h]</p>	<p>Higher risk of flooding (rainfall and storms, sea level rise) - coastal regions [f][t][is][e][u] Higher risk of extreme events [f][t][is][a][e][u]</p>	<p>www.meteo.lt <a href="https://am.lrv.lt/uploads/am/documents/files/KLIMATO%20KAITA/Studijos%2C%20metodin%C4%97%20med%C5%BEiaga/Klimato%20kaita_galutine%20ataskaita_2015_08_31.pdf">https://am.lrv.lt/uploads/am/documents/files/KLIMATO%20KAITA/Studijos%2C%20metodin%C4%97%20med%C5%BEiaga/Klimato%20kaita_galutine%20ataskaita_2015_08_31.pdf</a></p>

**NETHERLANDS**

**National adaptation priorities/fields (climate adapt): [a] Agriculture, horticulture, [ce] Cascading effects, [ci] Critical infrastructures, [h] Health (incl. allergies, infections), [n] Nature (incl. ecosystems), [w] Water**

Noord-Nederland	<p>Longer heatwaves, higher energy consumption Risk of more frequent and intense extreme events (wind, storms, rainfall) affecting electricity provision and infrastructure accessibility [ce][ci][w]</p>	<p>More frequent droughts [n][w] Higher flooding risk [ci] Risk of exposure to water-borne pathogens from flooded streets [ce][h] Higher risk of pollen allergy linked to CO2 increase, or longer allergy periods [h] Higher risk of heatwaves [h]</p>	<p>Higher risk of land subsidence [a][n] Higher risk of peat oxidation [n] Higher risk of salinization, drinking water shortage [a][h][n][w] Higher flooding risk [ci]</p>	<p>Higher risk of land subsidence [a][n] Higher risk of peat oxidation [n] Higher risk of salinization [a][n][w] Risk of droughts affecting soils and groundwater levels [a][n][w] Risk of longer wet periods and extreme events affecting harvests [a] Risk of lower crop yields [a] Longer wet periods and modified climate patterns increasing diseases, mosquitoes and pests [a][h][n]</p>	<p>Higher risk of drinking water shortage [ci][h][w] Higher flooding risk [a][ci]</p>	<p>NBRACER project proposal (currently in GAP phase) <a href="https://klimaatadaptatienederland-nl.translate.goog/kennisdossiers/">https://klimaatadaptatienederland-nl.translate.goog/kennisdossiers/</a></p>
Oost-Nederland	<p>Longer heatwaves, higher energy consumption Risk of more frequent and intense extreme events (wind, storms, rainfall) affecting electricity provision and</p>	<p>More frequent droughts [n][w] Higher flooding risk [ci] Risk of exposure to water-borne pathogens from flooded streets [ce][h] Higher risk of pollen</p>	<p>Risk of coastal erosion shrinking natural areas [n] Higher risk of salinization, drinking water shortage [a][ci][h][n][w] Possible deterioration of bathing water quality [h]</p>	<p>Risk of droughts affecting soils and groundwater levels [a][n][w] Risk of longer wet periods and extreme events affecting harvests [a] Risk of lower crop yields [a]</p>	<p>Higher risk of drinking water shortage [ci][h][w] Higher flooding and hailstorm risk [a][ci] Higher risk of pathogens in water &amp; disseminated by flooding [a][ce][h][n][w] Higher risk of allergens,</p>	<p><a href="https://klimaatadaptatienederland-nl.translate.goog/kennisdossiers/">https://klimaatadaptatienederland-nl.translate.goog/kennisdossiers/</a></p>



Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
	infrastructure accessibility [ce][ci][w]	allergy linked to CO2 increase, or longer allergy periods [h] Higher risk of heatwaves[h]	Higher flooding risk [ci] <i>Migration of fish species from hotter waters [n]</i>	Longer wet periods and modified climate patterns increasing diseases, mosquitoes and pests [a][h][n]	infectious bacteria and mosquitoes [a][h][n]	
West-Nederland	Longer heatwaves, higher energy consumption Risk of more frequent and intense extreme events (wind, storms, rainfall) affecting electricity provision and infrastructure accessibility [ce][ci][w] Higher risk of salinization of drinking water [ci][w]	More frequent droughts [n][w] Higher flooding risk [ci] Risk of exposure to water-borne pathogens from flooded streets [ce][h] Higher risk of pollen allergy linked to CO2 increase, or longer allergy periods [h] Higher risk of heatwaves [h]	Decrease of freshwater availability [ci][n] Risk of coastal erosion shrinking natural areas [n] Higher risk of salinization, drinking water shortage [a][ci][h][n][w] Possible deterioration of bathing water quality [h] Higher flooding risk [ci] <i>Migration of fish species from hotter waters [n]</i>	Risk of droughts affecting soils and groundwater levels [a][n][w] Risk of longer wet periods and extreme events affecting harvests [a] Risk of lower crop yields [a] Longer wet periods and modified climate patterns increasing diseases, mosquitoes and pests [a][h][n]	Higher risk of drinking water shortage [ci][w] Higher flooding and hailstorm risk [a][ci] Higher risk of pathogens in water & disseminated by flooding [a][ce][h][n][w] Higher risk of allergens, infectious bacteria and mosquitoes [a][h][n]	<a href="https://klimaatadaptatienederland-nl.translate.goog/kennisdossiers/">https://klimaatadaptatienederland-nl.translate.goog/kennisdossiers/</a>
Zuid-Nederland	Longer heatwaves, higher energy consumption Risk of more frequent and intense extreme events (wind, storms, rainfall) affecting electricity provision and infrastructure accessibility [ce][ci][w]	More frequent droughts [n][w] Higher flooding risk [ci] Risk of exposure to water-borne pathogens from flooded streets [ce][h] Higher risk of pollen allergy linked to CO2 increase, or longer allergy periods [h] Higher risk of heatwaves [h]	n/a	Risk of droughts affecting soils and groundwater levels [a][n][w] Risk of longer wet periods and extreme events affecting harvests [a] Risk of lower crop yields [a] Longer wet periods and modified climate patterns increasing diseases, mosquitoes and pests [a][h][n]	Higher risk of drinking water shortage [ci][w] Higher flooding and hailstorm risk [a][ci] Higher risk of pathogens in water & disseminated by flooding [a][ce][h][n][w] Higher risk of allergens, infectious bacteria and mosquitoes [a][h][n]	<a href="https://klimaatadaptatienederland-nl.translate.goog/kennisdossiers/">https://klimaatadaptatienederland-nl.translate.goog/kennisdossiers/</a>
<b>POLAND:</b>						
<b>National adaptation priorities/fields (climate adapt): [af] Agriculture and fishing, [bf] Biodiversity and forest management, [cz] Coastal zones, [e] Energy security, [h] Health, [sc] Spatial management and construction,[t] Transport, [w] Water management</b>						
Dolnośląskie	Higher risk of heatwaves [e][h][sc] Higher risk of frost [e][t] Higher risk of heavy rainfall and thunderstorms [e][sc][t][w] Higher risk of urban flooding [cz][e][sc][t][w] Higher risk of gales [e]	Higher risk of heatwaves [e][h][sc] Higher risk of frost [e][t] Higher risk of heavy rainfall and thunderstorms [e][sc][t][w] Higher risk of urban flooding [cz][e][sc][t][w] Higher risk of gales [e]	n/a	<i>Regulations to reduce emissions [af][bf][e][h][sc][t]</i> <i>Extended vegetation cycles [af][bf]</i> <i>Migration of alien species [af][bf]</i> Higher risk of extreme events [af][bf][cz][e][sc][t][w] Aggravation of water scarcity, risk on pastures and fodder [af][w]	Higher risk of heatwaves [e][h][sc] Higher risk of frost [e][t] Higher risk of heavy rainfall and thunderstorms [e][sc][t][w] Higher risk of urban flooding [cz][e][sc][t][w] Higher risk of gales [e]	<a href="https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf">https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf</a> <a href="https://publikacje.pan.pl/Content/119782/PDF/14_Prandeki_Wraszcz.pdf">https://publikacje.pan.pl/Content/119782/PDF/14_Prandeki_Wraszcz.pdf</a>

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
				<p>Inadequacy of precipitation cycles to seasonal agricultural needs [af][w]</p> <p>Heavy rainfall, faster surface run-off, less soil hydration, erosion [af][cz][w]</p> <p>Impact of higher temperature on animal health and production [af]</p>		
Kujawsko-pomorskie	<p>Higher risk of heatwaves [e][h][sc]</p> <p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of urban flooding [cz][e][sc][t][w]</p> <p>Higher risk of droughts [af][bf][e][h][w]</p>	<p>Higher risk of heatwaves [e][h][sc]</p> <p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of urban flooding [cz][e][sc][t][w]</p> <p>Higher risk of droughts [af][bf][e][h][w]</p>	n/a	<p><i>Regulations to reduce emissions</i> [af][bf][e][h][sc][t]</p> <p><i>Extended vegetation cycles</i> [af][bf]</p> <p><i>Migration of alien species</i> [af][bf]</p> <p>Higher risk of extreme events [af][bf][cz][e][sc][t][w]</p> <p>Aggravation of water scarcity, risk on pastures and fodder [af][w]</p> <p>Inadequacy of precipitation cycles to seasonal agricultural needs [af][w]</p> <p>Heavy rainfall, faster surface run-off, less soil hydration, erosion [af][cz][w]</p> <p>Impact of higher temperature on animal health and production [af]</p>	<p>Higher risk of heatwaves [e][h][sc]</p> <p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of urban flooding [cz][e][sc][t][w]</p> <p>Higher risk of droughts [af][bf][e][h][w]</p>	<p><a href="https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf">https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf</a></p> <p><a href="https://publikacje.pan.pl/Content/119782/PDF/14_Pradecki_Wraszcz.pdf">https://publikacje.pan.pl/Content/119782/PDF/14_Pradecki_Wraszcz.pdf</a></p>
Łódzkie	<p>Higher risk of heatwaves [e][h][sc]</p> <p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of urban flooding [cz][e][sc][t][w]</p>	<p>Higher risk of heatwaves [e][h][sc]</p> <p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of urban flooding [cz][e][sc][t][w]</p>	n/a	<p><i>Regulations to reduce emissions</i> [af][bf][e][h][sc][t]</p> <p><i>Extended vegetation cycles</i> [af][bf]</p> <p><i>Migration of alien species</i> [af][bf]</p> <p>Higher risk of extreme events [af][bf][cz][e][sc][t][w]</p> <p>Aggravation of water</p>	<p>Higher risk of heatwaves [e][h][sc]</p> <p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of urban flooding [cz][e][sc][t][w]</p>	<p><a href="https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf">https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf</a></p> <p><a href="https://publikacje.pan.pl/Content/119782/PDF/14_Pradecki_Wraszcz.pdf">https://publikacje.pan.pl/Content/119782/PDF/14_Pradecki_Wraszcz.pdf</a></p>

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
				scarcity, risk on pastures and fodder [af][w] Inadequacy of precipitation cycles to seasonal agricultural needs [af][w] Heavy rainfall, faster surface run-off, less soil hydration, erosion [af][cz][w] Impact of higher temperature on animal health and production [af]		
Lubelskie	Higher risk of heatwaves [e][h][sc] Higher risk of frost [e][t] Higher risk of heavy rainfall and thunderstorms [e][sc][t][w] Higher risk of urban flooding [cz][e][sc][t][w] Higher risk of floods (rivers) [cz][e][sc][w] Higher risk of droughts [af][bf][e][h][w] Higher risk of gales [e]	Higher risk of heatwaves [e][h][sc] Higher risk of frost [e][t] Higher risk of heavy rainfall and thunderstorms [e][sc][t][w] Higher risk of urban flooding [cz][e][sc][t][w] Higher risk of floods (rivers) [cz][e][sc][w] Higher risk of droughts [af][bf][e][h][w] Higher risk of gales [e]	n/a	<i>Regulations to reduce emissions [af][bf][e][h][sc][t]</i> <i>Extended vegetation cycles [af][bf]</i> <i>Migration of alien species [af][bf]</i> Higher risk of extreme events [af][bf][cz][e][sc][t][w] Aggravation of water scarcity, risk on pastures and fodder [af][w] Inadequacy of precipitation cycles to seasonal agricultural needs [af][w] Heavy rainfall, faster surface run-off, less soil hydration, erosion [af][cz][w] Impact of higher temperature on animal health and production [af]	Higher risk of heatwaves [e][h][sc] Higher risk of frost [e][t] Higher risk of heavy rainfall and thunderstorms [e][sc][t][w] Higher risk of urban flooding [cz][e][sc][t][w] Higher risk of floods (rivers) [cz][e][sc][w] Higher risk of gales [e]	<a href="https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf">https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf</a> <a href="https://publikacje.pan.pl/Content/119782/PDF/14_Prandecki_Wrzaszcz.pdf">https://publikacje.pan.pl/Content/119782/PDF/14_Prandecki_Wrzaszcz.pdf</a>

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
Lubuskie	<p>Higher risk of heatwaves [e][h][sc]</p> <p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of urban flooding [cz][e][sc][t][w]</p> <p>Higher risk of gales [e]</p>	<p>Higher risk of heatwaves [e][h][sc]</p> <p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of urban flooding [cz][e][sc][t][w]</p> <p>Higher risk of gales [e]</p>	n/a	<p><i>Regulations to reduce emissions [af][bf][e][h][sc][t]</i></p> <p><i>Extended vegetation cycles [af][bf]</i></p> <p><i>Migration of alien species [af][bf]</i></p> <p>Higher risk of extreme events [af][bf][cz][e][sc][t][w]</p> <p>Aggravation of water scarcity, risk on pastures and fodder [af][w]</p> <p>Inadequacy of precipitation cycles to seasonal agricultural needs [af][w]</p> <p>Heavy rainfall, faster surface run-off, less soil hydration, erosion [af][cz][w]</p> <p>Impact of higher temperature on animal health and production [af]</p>	<p>Higher risk of heatwaves [e][h][sc]</p> <p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of urban flooding [cz][e][sc][t][w]</p> <p>Higher risk of gales [e]</p>	<p><a href="https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf">https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf</a></p> <p><a href="https://publikacje.pan.pl/Content/119782/PDF/14_Prandecki_Wrzaszcz.pdf">https://publikacje.pan.pl/Content/119782/PDF/14_Prandecki_Wrzaszcz.pdf</a></p>
Małopolskie	<p>Higher risk of heatwaves [e][h][sc]</p> <p>Higher risk of frost [e][t]</p> <p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of urban flooding [cz][e][sc][t][w]</p> <p>Higher risk of floods (rivers) [cz][e][sc][w]</p> <p>Higher risk of droughts [af][bf][e][h][w]</p>	<p>Higher risk of heatwaves [e][h][sc]</p> <p>Higher risk of frost [e][t]</p> <p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of urban flooding [cz][e][sc][t][w]</p> <p>Higher risk of floods (rivers) [cz][e][sc][w]</p> <p>Higher risk of droughts [af][bf][e][h][w]</p>	n/a	<p><i>Regulations to reduce emissions [af][bf][e][h][sc][t]</i></p> <p><i>Extended vegetation cycles [af][bf]</i></p> <p><i>Migration of alien species [af][bf]</i></p> <p>Higher risk of extreme events [af][bf][cz][e][sc][t][w]</p> <p>Aggravation of water scarcity, risk on pastures and fodder [af][w]</p> <p>Inadequacy of precipitation cycles to seasonal agricultural needs [af][w]</p> <p>Heavy rainfall, faster surface run-off, less soil hydration, erosion [af][cz][w]</p> <p>Impact of higher temperature on animal</p>	<p>Higher risk of heatwaves [e][h][sc]</p> <p>Higher risk of frost [e][t]</p> <p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of urban flooding [cz][e][sc][t][w]</p> <p>Higher risk of floods (rivers) [cz][e][sc][w]</p>	<p><a href="https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf">https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf</a></p> <p><a href="https://publikacje.pan.pl/Content/119782/PDF/14_Prandecki_Wrzaszcz.pdf">https://publikacje.pan.pl/Content/119782/PDF/14_Prandecki_Wrzaszcz.pdf</a></p>

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
				health and production [af]		
Mazowieckie	<p>Higher risk of heatwaves [e][h][sc]</p> <p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of urban flooding [cz][e][sc][t][w]</p> <p>Higher risk of floods (rivers) [cz][e][sc][w]</p> <p>Higher risk of droughts [af][bf][e][h][w]</p>	<p>Higher risk of heatwaves [e][h][sc]</p> <p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of urban flooding [cz][e][sc][t][w]</p> <p>Higher risk of floods (rivers) [cz][e][sc][w]</p> <p>Higher risk of droughts [af][bf][e][h][w]</p> <p>Higher risk of landslides [cz][e][sc][t]</p>	n/a	<p><i>Regulations to reduce emissions</i> [af][bf][e][h][sc][t]</p> <p><i>Extended vegetation cycles</i> [af][bf]</p> <p><i>Migration of alien species</i> [af][bf]</p> <p>Higher risk of extreme events [af][bf][cz][e][sc][t][w]</p> <p>Aggravation of water scarcity, risk on pastures and fodder [af][w]</p> <p>Inadequacy of precipitation cycles to seasonal agricultural needs [af][w]</p> <p>Heavy rainfall, faster surface run-off, less soil hydration, erosion [af][cz][w]</p> <p>Impact of higher temperature on animal health and production [af]</p>	<p>Higher risk of heatwaves [e][h][sc]</p> <p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of urban flooding [cz][e][sc][t][w]</p> <p>Higher risk of floods (rivers) [cz][e][sc][w]</p> <p>Higher risk of landslides [cz][e][sc][t]</p>	<p><a href="https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf">https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf</a></p> <p><a href="https://publikacje.pan.pl/Content/119782/PDF/14_Pradecki_Wrzaszcz.pdf">https://publikacje.pan.pl/Content/119782/PDF/14_Pradecki_Wrzaszcz.pdf</a></p>
Opolskie	<p>Higher risk of heatwaves [e][h][sc]</p> <p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of gales [e]</p>	<p>Higher risk of heatwaves [e][h][sc]</p> <p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of gales [e]</p>	n/a	<p><i>Regulations to reduce emissions</i> [af][bf][e][h][sc][t]</p> <p><i>Extended vegetation cycles</i> [af][bf]</p> <p><i>Migration of alien species</i> [af][bf]</p> <p>Higher risk of extreme events [af][bf][cz][e][sc][t][w]</p> <p>Aggravation of water scarcity, risk on pastures and fodder [af][w]</p> <p>Inadequacy of precipitation cycles to seasonal agricultural needs [af][w]</p> <p>Heavy rainfall, faster surface run-off, less soil hydration, erosion</p>	<p>Higher risk of heatwaves [e][h][sc]</p> <p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of gales [e]</p>	<p><a href="https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf">https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf</a></p> <p><a href="https://publikacje.pan.pl/Content/119782/PDF/14_Pradecki_Wrzaszcz.pdf">https://publikacje.pan.pl/Content/119782/PDF/14_Pradecki_Wrzaszcz.pdf</a></p>

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
				[af][cz][w] Impact of higher temperature on animal health and production [af]		
Podkarpackie	Higher risk of heatwaves [e][h][sc] Higher risk of heavy rainfall and thunderstorms [e][sc][t][w] Higher risk of urban flooding [cz][e][sc][t][w] Higher risk of droughts [af][bf][e][h][w] Higher risk of gales [e]	Higher risk of heatwaves [e][h][sc] Higher risk of heavy rainfall and thunderstorms [e][sc][t][w] Higher risk of urban flooding [cz][e][sc][t][w] Higher risk of droughts [af][bf][e][h][w] Higher risk of gales [e]	n/a	<i>Regulations to reduce emissions [af][bf][e][h][sc][t]</i> <i>Extended vegetation cycles [af][bf]</i> <i>Migration of alien species [af][bf]</i> Higher risk of extreme events [af][bf][cz][e][sc][t][w] Aggravation of water scarcity, risk on pastures and fodder [af][w] Inadequacy of precipitation cycles to seasonal agricultural needs [af][w] Heavy rainfall, faster surface run-off, less soil hydration, erosion [af][cz][w] Impact of higher temperature on animal health and production [af]	Higher risk of heatwaves [e][h][sc] Higher risk of heavy rainfall and thunderstorms [e][sc][t][w] Higher risk of urban flooding [cz][e][sc][t][w] Higher risk of gales [e]	<a href="https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf">https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf</a> <a href="https://publikacje.pan.pl/Content/119782/PDF/14_Prandecki_Wraszcz.pdf">https://publikacje.pan.pl/Content/119782/PDF/14_Prandecki_Wraszcz.pdf</a>
Podlaskie	Higher risk of heatwaves [e][h][sc] Higher risk of frost [e][t] Higher risk of heavy rainfall and thunderstorms [e][sc][t][w] Higher risk of urban flooding [cz][e][sc][t][w] Higher risk of droughts [af][bf][e][h][w] Higher risk of gales [e]	Higher risk of heatwaves [e][h][sc] Higher risk of frost [e][t] Higher risk of heavy rainfall and thunderstorms [e][sc][t][w] Higher risk of urban flooding [cz][e][sc][t][w] Higher risk of droughts [af][bf][e][h][w] Higher risk of gales [e]	n/a	<i>Regulations to reduce emissions [af][bf][e][h][sc][t]</i> <i>Extended vegetation cycles [af][bf]</i> <i>Migration of alien species [af][bf]</i> Higher risk of extreme events [af][bf][cz][e][sc][t][w] Aggravation of water scarcity, risk on pastures and fodder [af][w] Inadequacy of precipitation cycles to seasonal agricultural	Higher risk of heatwaves [e][h][sc] Higher risk of frost [e][t] Higher risk of heavy rainfall and thunderstorms [e][sc][t][w] Higher risk of urban flooding [cz][e][sc][t][w] Higher risk of gales [e]	<a href="https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf">https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf</a> <a href="https://publikacje.pan.pl/Content/119782/PDF/14_Prandecki_Wraszcz.pdf">https://publikacje.pan.pl/Content/119782/PDF/14_Prandecki_Wraszcz.pdf</a>

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
				<p>needs [af][w]  Heavy rainfall, faster surface run-off, less soil hydration, erosion [af][cz][w]  Impact of higher temperature on animal health and production [af]</p>		
Pomorskie	<p>Higher risk of heatwaves [e][h][sc]  Higher risk of frost [e][t]  Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]  Higher risk of urban flooding [cz][e][sc][t][w]  Higher risk of floods (rivers) [cz][e][sc][w]  Higher risk of flooding (sea) [cz][e][sc][t][w]  Higher risk of droughts [af][bf][e][h][w]  Higher risk of gales [e]  Higher risk of landslides [cz][e][sc][t]  Higher risk associated with sea level rise [af][cz][e][sc][t][w]</p>	<p>Higher risk of heatwaves [e][h][sc]  Higher risk of frost [e][t]  Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]  Higher risk of urban flooding [cz][e][sc][t][w]  Higher risk of floods (rivers) [cz][e][sc][w]  Higher risk of flooding (sea) [cz][e][sc][t][w]  Higher risk of droughts [af][bf][e][h][w]  Higher risk of gales [e]  Higher risk of landslides [cz][e][sc][t]  Higher risk associated with sea level rise [af][cz][e][sc][t][w]</p>	<p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]  Higher risk of urban flooding [cz][e][sc][t][w]  Higher risk of flooding (sea) [cz][e][sc][t][w]  Higher risk of landslides [cz][e][sc][t]  Higher risk associated with sea level rise [af][cz][e][sc][t][w]</p>	<p><i>Regulations to reduce emissions [af][bf][e][h][sc][t]</i>  <i>Extended vegetation cycles [af][bf]</i>  <i>Migration of alien species [af][bf]</i>  Higher risk of extreme events [af][bf][cz][e][sc][t][w]  Aggravation of water scarcity, risk on pastures and fodder [af][w]  Inadequacy of precipitation cycles to seasonal agricultural needs [af][w]  Heavy rainfall, faster surface run-off, less soil hydration, erosion [af][cz][w]  Impact of higher temperature on animal health and production [af]</p>	<p>Higher risk of heatwaves [e][h][sc]  Higher risk of frost [e][t]  Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]  Higher risk of urban flooding [cz][e][sc][t][w]  Higher risk of floods (rivers) [cz][e][sc][w]  Higher risk of flooding (sea) [cz][e][sc][t][w]  Higher risk of gales [e]  Higher risk of landslides [cz][e][sc][t]  Higher risk associated with sea level rise [af][cz][e][sc][t][w]</p>	<p><a href="https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf">https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf</a>  <a href="https://publikacje.pan.pl/Content/119782/PDF/14_Prandeki_Wrzaszcz.pdf">https://publikacje.pan.pl/Content/119782/PDF/14_Prandeki_Wrzaszcz.pdf</a></p>

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
Śląskie	<p>Higher risk of heatwaves [e][h][sc]  Higher risk of frost [e][t]  Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]  Higher risk of urban flooding [cz][e][sc][t][w]  Higher risk of floods (rivers) [cz][e][sc][w]  Higher risk of droughts [af][bf][e][h][w]  Higher risk of gales [e]</p>	<p>Higher risk of heatwaves [e][h][sc]  Higher risk of frost [e][t]  Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]  Higher risk of urban flooding [cz][e][sc][t][w]  Higher risk of floods (rivers) [cz][e][sc][w]  Higher risk of droughts [af][bf][e][h][w]  Higher risk of gales [e]</p>	n/a	<p><i>Regulations to reduce emissions [af][bf][e][h][sc][t]</i>  <i>Extended vegetation cycles [af][bf]</i>  <i>Migration of alien species [af][bf]</i>  Higher risk of extreme events [af][bf][cz][e][sc][t][w]  Aggravation of water scarcity, risk on pastures and fodder [af][w]  Inadequacy of precipitation cycles to seasonal agricultural needs [af][w]  Heavy rainfall, faster surface run-off, less soil hydration, erosion [af][cz][w]  Impact of higher temperature on animal health and production [af]</p>	<p>Higher risk of heatwaves [e][h][sc]  Higher risk of frost [e][t]  Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]  Higher risk of urban flooding [cz][e][sc][t][w]  Higher risk of floods (rivers) [cz][e][sc][w]  Higher risk of gales [e]</p>	<p><a href="https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf">https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf</a>  <a href="https://publikacje.pan.pl/Content/119782/PDF/14_Prandecki_Wrzaszcz.pdf">https://publikacje.pan.pl/Content/119782/PDF/14_Prandecki_Wrzaszcz.pdf</a></p>
Świętokrzyskie	<p>Higher risk of heatwaves [e][h][sc]  Higher risk of frost [e][t]  Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]  Higher risk of urban flooding [cz][e][sc][t][w]  Higher risk of floods (rivers) [cz][e][sc][w]  Higher risk of droughts [af][bf][e][h][w]  Higher risk of gales [e]</p>	<p>Higher risk of heatwaves [e][h][sc]  Higher risk of frost [e][t]  Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]  Higher risk of urban flooding [cz][e][sc][t][w]  Higher risk of floods (rivers) [cz][e][sc][w]  Higher risk of droughts [af][bf][e][h][w]  Higher risk of gales [e]</p>	n/a	<p><i>Regulations to reduce emissions [af][bf][e][h][sc][t]</i>  <i>Extended vegetation cycles [af][bf]</i>  <i>Migration of alien species [af][bf]</i>  Higher risk of extreme events [af][bf][cz][e][sc][t][w]  Aggravation of water scarcity, risk on pastures and fodder [af][w]  Inadequacy of precipitation cycles to seasonal agricultural needs [af][w]  Heavy rainfall, faster surface run-off, less soil hydration, erosion [af][cz][w]  Impact of higher temperature on animal</p>	<p>Higher risk of heatwaves [e][h][sc]  Higher risk of frost [e][t]  Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]  Higher risk of urban flooding [cz][e][sc][t][w]  Higher risk of floods (rivers) [cz][e][sc][w]  Higher risk of gales [e]</p>	<p><a href="https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf">https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf</a>  <a href="https://publikacje.pan.pl/Content/119782/PDF/14_Prandecki_Wrzaszcz.pdf">https://publikacje.pan.pl/Content/119782/PDF/14_Prandecki_Wrzaszcz.pdf</a></p>



Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
				health and production [af]		
Warmińsko-Mazurskie	<p>Higher risk of heatwaves [e][h][sc]</p> <p>Higher risk of frost [e][t]</p> <p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of urban flooding [cz][e][sc][t][w]</p> <p>Higher risk of floods (rivers) [cz][e][sc][w]</p> <p>Higher risk of flooding (sea) [cz][e][sc][t][w]</p> <p>Higher risk of droughts [af][bf][e][h][w]</p> <p>Higher risk of gales [e]</p>	<p>Higher risk of heatwaves [e][h][sc]</p> <p>Higher risk of frost [e][t]</p> <p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of urban flooding [cz][e][sc][t][w]</p> <p>Higher risk of droughts [af][bf][e][h][w]</p> <p>Higher risk of gales [e]</p>	<p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of urban flooding [cz][e][sc][t][w]</p> <p>Higher risk of flooding (sea) [cz][e][sc][t][w]</p> <p>Higher risk of gales [e]</p> <p>Higher risk of landslides [cz][e][sc][t]</p> <p>Higher risk associated with sea level rise [af][cz][e][sc][t][w]</p>	<p>Regulations to reduce emissions [af][bf][e][h][sc][t]</p> <p>Extended vegetation cycles [af][bf]</p> <p>Migration of alien species [af][bf]</p> <p>Higher risk of extreme events [af][bf][cz][e][sc][t][w]</p> <p>Aggravation of water scarcity, risk on pastures and fodder [af][w]</p> <p>Inadequacy of precipitation cycles to seasonal agricultural needs [af][w]</p> <p>Heavy rainfall, faster surface run-off, less soil hydration, erosion [af][cz][w]</p> <p>Impact of higher temperature on animal health and production [af]</p>	<p>Higher risk of heatwaves [e][h][sc]</p> <p>Higher risk of frost [e][t]</p> <p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of urban flooding [cz][e][sc][t][w]</p> <p>Higher risk of floods (rivers) [cz][e][sc][w]</p> <p>Higher risk of flooding (sea) [cz][e][sc][t][w]</p> <p>Higher risk of gales [e]</p> <p>Higher risk of landslides [cz][e][sc][t]</p> <p>Higher risk associated with sea level rise [af][cz][e][sc][t][w]</p>	<p><a href="https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf">https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf</a></p> <p><a href="https://publikacje.pan.pl/Content/119782/PDF/14_Prancodeki_Wraszcz.pdf">https://publikacje.pan.pl/Content/119782/PDF/14_Prancodeki_Wraszcz.pdf</a></p>
Wielkopolskie	<p>Higher risk of heatwaves [e][h][sc]</p> <p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of urban flooding [cz][e][sc][t][w]</p> <p>Higher risk of gales [e]</p>	<p>Higher risk of heatwaves [e][h][sc]</p> <p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of urban flooding [cz][e][sc][t][w]</p> <p>Higher risk of gales [e]</p>	n/a	<p>Regulations to reduce emissions [af][bf][e][h][sc][t]</p> <p>Extended vegetation cycles [af][bf]</p> <p>Migration of alien species [af][bf]</p> <p>Higher risk of extreme events [af][bf][cz][e][sc][t][w]</p> <p>Aggravation of water scarcity, risk on pastures and fodder [af][w]</p> <p>Inadequacy of precipitation cycles to seasonal agricultural needs [af][w]</p> <p>Heavy rainfall, faster surface run-off, less soil hydration, erosion</p>	<p>Higher risk of heatwaves [e][h][sc]</p> <p>Higher risk of heavy rainfall and thunderstorms [e][sc][t][w]</p> <p>Higher risk of urban flooding [cz][e][sc][t][w]</p> <p>Higher risk of gales [e]</p>	<p><a href="https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf">https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf</a></p> <p><a href="https://publikacje.pan.pl/Content/119782/PDF/14_Prancodeki_Wraszcz.pdf">https://publikacje.pan.pl/Content/119782/PDF/14_Prancodeki_Wraszcz.pdf</a></p>

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
				[af][cz][w] Impact of higher temperature on animal health and production [af]		
Zachodniopomorskie	Higher risk of heatwaves [e][h][sc] Higher risk of heavy rainfall and thunderstorms [e][sc][t][w] Higher risk of urban flooding [cz][e][sc][t][w] Higher risk of flooding (sea) [cz][e][sc][t][w] Higher risk of gales [e]	Higher risk of heatwaves [e][h][sc] Higher risk of heavy rainfall and thunderstorms [e][sc][t][w] Higher risk of urban flooding [cz][e][sc][t][w] Higher risk of flooding (sea) [cz][e][sc][t][w] Higher risk of gales [e]	Higher risk of heavy rainfall and thunderstorms [e][sc][t][w] Higher risk of urban flooding [cz][e][sc][t][w] Higher risk of flooding (sea) [cz][e][sc][t][w] Higher risk of gales [e]	<i>Regulations to reduce emissions [af][bf][e][h][sc][t]</i> <i>Extended vegetation cycles [af][bf]</i> <i>Migration of alien species [af][bf]</i> Higher risk of extreme events [af][bf][cz][e][sc][t][w] Aggravation of water scarcity, risk on pastures and fodder [af][w] Inadequacy of precipitation cycles to seasonal agricultural needs [af][w] Heavy rainfall, faster surface run-off, less soil hydration, erosion [af][cz][w] Impact of higher temperature on animal health and production [af]	Higher risk of heatwaves [e][h][sc] Higher risk of heavy rainfall and thunderstorms [e][sc][t][w] Higher risk of urban flooding [cz][e][sc][t][w] Higher risk of flooding (sea) [cz][e][sc][t][w] Higher risk of gales [e]	<a href="https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf">https://www.imgw.pl/sites/default/files/2020-08/imgw_wspolczesne-problemy-klimatu-polski.pdf</a> <a href="https://publikacje.pan.pl/Content/119782/PDF/14_Prandeki_Wraszcz.pdf">https://publikacje.pan.pl/Content/119782/PDF/14_Prandeki_Wraszcz.pdf</a>

**SLOVAKIA**

**National adaptation priorities/fields (climate adapt): [a] Agriculture, [b] Biodiversity and natural environment, [ei] Energy, industry, [f] Forestry [g] Geology, [h] Health, [re] Residential environment, [ri] Risk management, emergency management, [sc] Spatial management and construction, [to] Tourism, [tr] Transportation, [w] Water management**

Bratislavský kraj	Higher demand for energy in summer season [ei] Increased risk of storm-related electricity disruptions (e.g. caused by floods) [ei][w]	Overheating of buildings [ei][h][re] Higher demands on water consumption [w] Deterioration of traffic safety and flow [ei][h][re][ri][sc][tr] Disruption in supplies of energy, damage of equipment [ei][tr][w] Deterioration of general health (asthma, allergies, respiratory diseases) [h]	n/a	Fewer precipitations [a][b][w] Soil erosion [a][b] Decrease of soil moisture in Slovak lowlands - desiccation and salinization of soil [a][b][w]	Increased risk of extreme events - higher incidence of relatively longer droughts and relatively shorter heavy rain episodes [a][b][ei][re][ri][tr][w] More winter floods due to the unstable snow conditions [b][ri][to][tr] Increased risk of landslides [ei][g][re][ri][tr] Higher risk of forest fires [f][h][ri]	<a href="https://www.iea.org/articles/slovak-republic-climate-resilience-policy-indicator">https://www.iea.org/articles/slovak-republic-climate-resilience-policy-indicator</a> <a href="https://climate-adapt.eea.europa.eu/repository/11273729.pdf">https://climate-adapt.eea.europa.eu/repository/11273729.pdf</a>
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Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
		Increased risk of infectious diseases caused by polluted water and food [a][ei][h][w]				
Stredné Slovensko	Higher demand for energy in summer season [ei] Increased risk of storm-related electricity disruptions (e.g. caused by floods) [ei][w]	Overheating of buildings [ei][h][re] Higher demands on water consumption [w] Deterioration of traffic safety and flow [ei][h][re][ri][sc][tr] Disruption in supplies of energy, damage of equipment [ei][tr][w] Deterioration of general health (asthma, allergies, respiratory diseases) [h] Increased risk of infectious diseases caused by polluted water and food [a][ei][h][w]	n/a	Northern Slovak Republic will likely experience the highest increase in annual precipitation [a][b][w] Soil erosion [a][b]	Increased risk of extreme events - higher incidence of relatively longer droughts and relatively shorter heavy rain episodes [a][b][ei][re][ri][tr][w] More winter floods due to the unstable snow conditions [b][ri][to][tr] Increased risk of landslides [ei][g][re][ri][tr] Higher risk of forest fires [f][h][ri]	<a href="https://www.iea.org/articles/slovak-republic-climate-resilience-policy-indicator">https://www.iea.org/articles/slovak-republic-climate-resilience-policy-indicator</a> <a href="https://climate-adapt.eea.europa.eu/repository/11273729.pdf">https://climate-adapt.eea.europa.eu/repository/11273729.pdf</a>
Východné Slovensko	Higher demand for energy in summer season [ei] Increased risk of storm-related electricity disruptions (e.g. caused by floods) [ei][w]	Overheating of buildings [ei][h][re] Higher demands on water consumption [w] Deterioration of traffic safety and flow [ei][h][re][ri][sc][tr] Disruption in supplies of energy, damage of equipment [ei][tr][w] Deterioration of general health (asthma, allergies, respiratory diseases) [h] Increased risk of infectious diseases caused by polluted water and food [a][ei][h][w]	n/a	<i>Extension of the growing period (43 more days) [a]</i> Northern Slovak Republic will likely experience the highest increase in annual precipitation [a][b][w] Decrease of soil moisture in Slovak lowlands - desiccation and salinization of soil [a][b][w] Soil erosion [a][b]	Increased risk of extreme events - higher incidence of relatively longer droughts and relatively shorter heavy rain episodes [a][b][ei][re][ri][tr][w] More winter floods due to the unstable snow conditions [b][ri][to][tr] Increased risk of landslides [ei][g][re][ri][tr] Higher risk of forest fires [f][h][ri]	<a href="https://www.iea.org/articles/slovak-republic-climate-resilience-policy-indicator">https://www.iea.org/articles/slovak-republic-climate-resilience-policy-indicator</a> <a href="https://climate-adapt.eea.europa.eu/repository/11273729.pdf">https://climate-adapt.eea.europa.eu/repository/11273729.pdf</a>

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
Západné Slovensko	Higher demand for energy in summer season [ei] Increased risk of storm-related electricity disruption's (e.g. caused by floods) [ei][w]	Overheating of buildings [ei][h][re] Higher demands on water consumption [w] Deterioration of traffic safety and flow [ei][h][re][ri][sc][tr] Disruption in supplies of energy, damage of equipment [ei][tr][w] Deterioration of general health (asthma, allergies, respiratory diseases) [h] Increased risk of infectious diseases caused by polluted water and food [a][ei][h][w]	n/a	Fewer precipitations [a][b][w] Soil erosion [a][b] Decrease in water resources [a][b][w]	Increased risk of extreme events - higher incidence of relatively longer droughts and relatively shorter heavy rain episodes [a][b][ei][re][ri][tr][w] More winter floods due to the unstable snow conditions [b][ri][to][tr] Increased risk of landslides [ei][g][re][ri][tr] Higher risk of forest fires [f][h][ri]	<a href="https://www.iea.org/articles/slovak-republic-climate-resilience-policy-indicator">https://www.iea.org/articles/slovak-republic-climate-resilience-policy-indicator</a> <a href="https://climate-adapt.eea.europa.eu/repository/11273729.pdf">https://climate-adapt.eea.europa.eu/repository/11273729.pdf</a>
<b>SPAIN</b>						
<b>National adaptation priorities/fields (climate adapt): [a] Agriculture, livestock, fisheries, aquaculture, food, [b] Biodiversity and protected areas, [cm] Coasts and the marine environment, [cu] City, urban planning and building, [e] Energy, [fi] Finance and insurance, [fo] Forestry, desertification, hunting and inland fishing, [hl] Health, [hr] Heritage (cultural and natural), [i] Industry and services, [mt] Mobility and transport, [to] Tourism, [w] Water resources</b>						
Andalucía	More frequent heatwaves [cu][e][hl] More frequent droughts [a][b][cu][e][fi][fo][hl][hr][to][w]	Risk of water scarcity [a][cu][hl][to][w] More frequent heatwaves [cu][e][hl]	Risk of sea water intrusions [a][b][cm][w] Risk of sea level rise [a][b][cm][cu][fi][hr][i][mt][to]	Higher risk of droughts [a][b][cu][e][fi][fo][hl][hr][to][w] Higher evaporation and decrease of productivity [a][fo][w] Erosion and soil degradation [a][cm] Risk of sea water intrusions [a][b][cm][w] Risk of sea level rise [a][b][cm][cu][fi][hr][i][mt][to]	Higher risk of heatwaves [cu][e][hl] Higher risk from allergies and germs [a][hl]	<a href="http://www.conama9.conama.org/conama9/download/files/CTs/2644_JM%E9ndez.pdf">http://www.conama9.conama.org/conama9/download/files/CTs/2644_JM%E9ndez.pdf</a>
Aragón	More frequent heatwaves [cu][e][hl] More frequent droughts, water quality and quantity concerns [a][cu][e][fi][fo][hl][to][w]	More frequent droughts, water quality and quantity concerns [a][cu][e][fi][fo][hl][to][w]	n/a	Biodiversity threats [b][hl][hr] More frequent droughts, water quality and quantity concerns [a][cu][e][fi][fo][hl][to][w] Risk from extreme events [a][b][cm][fi][fo][hr] Risk of pest and disease increase [a][fo][hl]	Higher risk of heatwaves [cu][e][hl] Higher risk from infectious diseases [a][hl]	<a href="https://www.aragoncambioclimatico.es/wp-content/uploads/Estrategia-Aragonesa-Cambio-Climatico-2-19.pdf">https://www.aragoncambioclimatico.es/wp-content/uploads/Estrategia-Aragonesa-Cambio-Climatico-2-19.pdf</a>

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
Canarias	<p>More frequent heatwaves [cu][e][hl]</p> <p>More frequent droughts [a][b][cu][e][fi][fo][hl][hr][to][w]</p> <p>Higher flooding risk [a][cm][cu][e][fi][hl][i][mt][w]</p> <p>Higher risk of tropical storms and heavy rainfall</p>	<p>More frequent droughts, water quality and quantity concerns [a][cu][e][fi][fo][hl][to][w]</p> <p>Higher heat island effect [cu][hl][hr][to]</p> <p>Higher flooding risk (sea level rise) [a][cm][cu][e][fi][hl][i][mt][w]</p>	<p>Risk of saltwater intrusions [a][b][cm][w]</p> <p>Risk of sea acidification and oxygen loss [a][b][cm]</p> <p>Higher flooding risk [a][cm][cu][e][fi][hl][i][mt][w]</p>	<p>Biodiversity threats [b][hl][hr]</p> <p>More frequent heatwaves [cu][e][hl]</p> <p>More frequent droughts [a][b][cu][e][fi][fo][hl][hr][to][w]</p> <p>Higher forest fire risk [b][fo][hl][hr][to]</p> <p>Higher flooding risk [a][cm][cu][e][fi][hl][i][mt][w]</p> <p>Risk of pest and disease increase [a][fo][hl]</p> <p><i>Tropicalisation [a][fo]</i></p>	<p>Higher risk of heatwaves [cu][e][hl]</p> <p>Higher flooding risk [a][cm][cu][e][fi][hl][i][mt][w]</p> <p>Higher risk from allergies and germs [a][hl]</p> <p>Higher forest fire risk [b][fo][hl][hr][to]</p>	<p><a href="https://www.gobiernodecanarias.org/medioambiente/descargas/Cambio_climatico/Informacion-Publica/20220207_BORRADOR_ECAC.pdf">https://www.gobiernodecanarias.org/medioambiente/descargas/Cambio_climatico/Informacion-Publica/20220207_BORRADOR_ECAC.pdf</a></p>
Cantabria	<p>More frequent heatwaves [cu][e][hl]</p> <p>More frequent droughts, water quality and quantity concerns [a][cu][e][fi][fo][hl][to][w]</p>	<p>Higher risk of marine submersion (most of the population lives near the coast) [cm][cu][e][fi][hr][i][mt][to]</p> <p>Higher flooding risk from ocean storms [a][cm][cu][e][fi][i][mt][w]</p>	<p>Higher risk of marine submersion (most of the population lives near the coast)</p> <p>Higher flooding risk from ocean storms [a][cm][cu][e][fi][hl][i][mt][w]</p>		<p>Higher risk of heatwaves [cu][e][hl]</p> <p>Higher forest fire risk [b][fo][hl][hr][to]</p>	<p>(FIHAC - Horizon Europe proposal under evaluation)</p>
Castilla y León	-	-	n/a	<p>Loss of agricultural production [a][fi]</p> <p>Higher forest fire risk [b][fo][hl][hr][to]</p> <p>Higher risk of soil erosion [a][cm][hr]</p>	<p>Higher forest fire risk [b][fo][hl][hr][to]</p>	
Castilla-La Mancha	<p>More frequent heatwaves [cu][e][hl]</p> <p>More frequent droughts, water quality and quantity concerns [a][cu][e][fi][fo][hl][to][w]</p>	<p>More frequent heatwaves [cu][e][hl]</p> <p>More frequent droughts, water quality and quantity concerns [a][cu][e][fi][fo][hl][to][w]</p>	n/a	<p>Higher forest fire risk [b][fo][hl][hr][to]</p> <p>Increased thermal stress (semi-arid areas) [a][b][fo][hr][w]</p> <p>Higher risk of droughts [a][b][cu][e][fi][fo][hl][hr][to][w]</p>	<p>Higher risk of heatwaves [cu][e][hl]</p> <p>Higher forest fire risk [b][fo][hl][hr][to]</p> <p>Higher risk from infectious diseases [a][hl]</p> <p>Higher risk from allergies and germs [a][hl]</p> <p>Higher forest fire risk [b][fo][hl][hr][to]</p>	<p><a href="https://www.castillalamancha.es/gobierno/desarrollosostenible/estructura/dgecocir/actuaciones/impactos-del-cambio-clim%C3%A1tico-en-castilla-la-mancha">https://www.castillalamancha.es/gobierno/desarrollosostenible/estructura/dgecocir/actuaciones/impactos-del-cambio-clim%C3%A1tico-en-castilla-la-mancha</a></p>
Cataluña	-	<p>More frequent heatwaves, pollution increase [cu][e][hl]</p> <p>More frequent droughts, water quality and</p>	<p>Higher flooding risk [a][cm][cu][e][fi][hl][i][mt][w]</p> <p>Higher risk of coastal erosion</p>	<p>Biodiversity threats [b][hl][hr]</p> <p>More frequent heatwaves [cu][e][hl]</p> <p>More frequent droughts [a][b][cu][e][fi][fo][hl][hr]</p>	<p>Higher risk of heatwaves [cu][e][hl]</p> <p>Higher risk from infectious diseases [a][hl]</p> <p>Higher forest fire risk [b][fo][hl][hr][to]</p>	<p><a href="https://cads.gencat.cat/web/.content/Documents/Publicacions/tercer-informe-sobre-canvi-climatic-catalunya/Sintesis/CC_Sintesis-CASTELLA_web.pdf">https://cads.gencat.cat/web/.content/Documents/Publicacions/tercer-informe-sobre-canvi-climatic-catalunya/Sintesis/CC_Sintesis-CASTELLA_web.pdf</a></p>

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
		quantity concerns [a][cu][e][fi][fo][hl][to][w]	[b][cm][cu][fi][hr][to] Higher risk of toxic algae	[to][w] Higher forest fire risk [b][fo][hl][hr][to]		
Comunidad de Madrid	More frequent heatwaves [cu][e][hl] More frequent droughts, water quality and quantity concerns [a][cu][e][fi][fo][hl][to][w]	More frequent heatwaves [cu][e][hl] Higher heat island effect [cu][hl][hr][to] Higher risk of droughts [a][b][cu][e][fi][fo][hl][hr] [to][w] Higher flooding risk [a][cm][cu][e][fi][hl][i][mt] [w]	n/a	Biodiversity threats [b][hl][hr] Higher forest fire risk [b][fo][hl][hr][to]	Higher risk of heatwaves [cu][e][hl] Higher flooding risk [a][cm][cu][e][fi][hl][i][mt][w] Higher forest fire risk [b][fo][hl][hr][to]	<a href="https://www.madrid.es/UnidadesDescentralizadas/Sostenibilidad/EspIn/Ennergia/CC/04CambioClimatico/4bVulnera/Ficheros/InfVulneraCC2015VerWeb.pdf">https://www.madrid.es/UnidadesDescentralizadas/Sostenibilidad/EspIn/Ennergia/CC/04CambioClimatico/4bVulnera/Ficheros/InfVulneraCC2015VerWeb.pdf</a>
Comunidad Foral de Navarra	-	More frequent heatwaves [cu][e][hl] Higher heat island effect [cu][hl][hr][to] Higher risk of droughts [a][b][cu][e][fi][fo][hl][hr] [to][w] Increased air pollution [a][cu][hl][hr][mt][to]	n/a	Higher transpiration and water stress [a][b][fo][hl][hr][w] Risk from heatwaves on livestock [a] Risk of pest and disease increase [a][fo][hl]	Higher risk of heatwaves [cu][e][hl] Higher risk from infectious diseases [a][hl] Higher risk from allergies [a][hl]	<a href="http://www.navarra.es/NR/rdonlyres/AE5EB2EC-64A8-4B0E-8584-D683B3E5CE2D/409037/hojarutamar19.PDF">http://www.navarra.es/NR/rdonlyres/AE5EB2EC-64A8-4B0E-8584-D683B3E5CE2D/409037/hojarutamar19.PDF</a>
Comunitat Valenciana	-	More frequent heatwaves [cu][e][hl] Higher heat island effect [cu][hl][hr][to] Higher risk of droughts [a][b][cu][e][fi][fo][hl][hr] [to][w] Increased air pollution [a][cu][hl][hr][mt][to]	Higher risk of coastal erosion [b][cm][cu][fi][hr][to]	Higher risk of soil erosion [a][cm][hr] Biodiversity threats [b][hl][hr] Higher forest fire risk [b][fo][hl][hr][to] Risk of pest and disease increase [a][fo][hl]	Higher risk of heatwaves [cu][e][hl] Higher flooding risk [a][cm][cu][e][fi][hl][i][mt][w] Higher forest fire risk [b][fo][hl][hr][to] Higher risk from infectious diseases [a][hl] Higher risk from allergies [hl]	<a href="https://agroambient.gva.es/va/web/cambio-climatico/2020-2030">https://agroambient.gva.es/va/web/cambio-climatico/2020-2030</a>
Extremadura	-	More frequent heatwaves [cu][e][hl] Higher risk of droughts [a][b][cu][e][fi][fo][hl][hr] [to][w]	n/a	Higher risk of droughts [a][b][cu][e][fi][fo][hl][hr] [to][w] Higher evaporation and decrease of productivity [a][fi][fo] More frequent heatwaves [cu][e][hl] Higher forest fire risk [b][fo][hl][hr][to] Risk of pest and disease increase [a][fo][hl]	Higher risk of heatwaves [cu][e][hl] Higher risk from infectious diseases [a][hl] Higher forest fire risk [b][fo][hl][hr][to] Higher flooding risk [a][cm][cu][e][fi][hl][i][mt][w] Higher risk of landslides [cu][e][fi][i][mt]	<a href="http://extremambiente.juntaex.es/files/biblioteca_digital/Mapa%20de%20Impactos%20del%20Cambio%20Climatico%20en%20Extremadura%20web.pdf">http://extremambiente.juntaex.es/files/biblioteca_digital/Mapa%20de%20Impactos%20del%20Cambio%20Climatico%20en%20Extremadura%20web.pdf</a>

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
Galicia	<p>More frequent heatwaves (loss of heat dissipation) [cu][e][hl]</p> <p>More frequent droughts, impacts on hydroelectricity [cu][e][w]</p>	<p>Higher risk of water stress for local communities [a][cu][hl][yo][w]</p> <p>Higher flooding risk [a][cm][cu][e][fi][hl][i][mt][w]</p> <p>Higher risk of severe droughts [a][cu][e][w]</p> <p>Higher risk of changing water quality [a][cu][hl][w]</p> <p>Higher risk from infectious diseases [a][hl]</p>	<p>Higher risk of sea water acidification [a][b][cm]</p> <p>Higher risk of disruptions in the composition of fisheries (new species and migration of others) [a][cm]</p> <p>Higher risk of affecting endorheic ecosystems such as lakes, ponds, rivers and streams of high mountains [a][b]</p>	<p>Higher risk of droughts [a][b][cu][e][fi][fo][hl][hr][to][w]</p> <p>Higher risk of desertification and erosion [a][b][fo][hr][w]</p> <p>Higher demand for irrigation [a][w]</p> <p>Appearance of new pests and diseases in plants and animals [a][fo][hl]</p> <p>Shorter crop maturation due to higher average temperatures and lower production [a]</p> <p>Biodiversity threats [b][hl][hr]</p>	<p>Rising temperatures and prolonged periods of heat waves will increase the problems of railway buckling [mt]</p> <p>Higher flooding risk [a][cm][cu][e][fi][hl][i][mt][w]</p> <p>Higher risk of damage to roads [cu][mt]</p> <p>Higher risk of strong winds affecting branches and trees on roads [mt]</p>	<p><a href="https://cambioclimatico.xunta.gal/c/document_library/get_file?folderId=86590&amp;name=DLFE-54555.pdf">https://cambioclimatico.xunta.gal/c/document_library/get_file?folderId=86590&amp;name=DLFE-54555.pdf</a></p>
Illes Balears	<p>Risk of overloading existing sanitation and drinking water supply facilities [cu][fi][hl][i][to][w]</p> <p>Higher risk of overloads and flow overflow in waste water treatment plants [cu][fi][hl][i][to][w]</p> <p>Damage to desalination plants [a][cm][cu][w]</p> <p>Less water availability in aquifers and surface water bodies due to a decrease in spillage and consequent increase in the need for use and production of desalination plants [a][b][cu][e][hl][i][to][w]</p>	<p>More frequent droughts, water quality and quantity concerns [a][cu][e][fi][fo][hl][to][w]</p> <p>Reduction in the availability of drinking water [cu][hl][to][w]</p>	<p>Risk of sea level rise [a][b][cm][cu][fi][hr][i][mt][to]</p> <p>Risk of saltwater intrusions [a][b][cm][w]</p>	<p>Increased risk of hydrological and agricultural drought for irrigated crops [a][w]</p> <p>Decrease in the levels of some aquifers and problems in meeting demands [a][cu][to][w]</p>	<p>Material damage to water catchment infrastructures and desalination plants [a][cm][cu][w]</p>	<p><a href="https://www.caib.es/sites/canviclimatic2/es/estudios_de_vulnerabilidad/">https://www.caib.es/sites/canviclimatic2/es/estudios_de_vulnerabilidad/</a></p>
La Rioja	-	<p>More frequent heatwaves [cu][e][hl]</p> <p>Degradation of roads and railways [fi][t]</p> <p>Higher flooding risk [a][cm][cu][e][fi][hl][i][mt][w]</p>	n/a	<p>Higher risk of soil erosion [a][cm][hr]</p> <p>Higher risk of droughts, desertification [a][i][w]</p> <p>Higher risk of crop displacement due to changes in temperature</p> <p>Appearance of new pests and diseases in plants and animals [a][fo][hl]</p>	-	<p><a href="https://theconversation.com/el-territorio-del-rioja-ante-el-desafio-del-cambio-climatico-117195">https://theconversation.com/el-territorio-del-rioja-ante-el-desafio-del-cambio-climatico-117195</a></p>

Region (S3)	Energy and Utilities	Sustainable urban communities	Marine and coastal environment	Agriculture, Forestry and other Land use	Civil security and protection	References
				More irrigation systems would be required for agricultural activities		
País Vasco		More frequent heatwaves [cu][e][hl] Higher flooding risk [a][cm][cu][e][fi][hl][i][mt][w]	Higher flooding risk [a][cm][cu][e][fi][hl][i][mt][w] Higher risk of coastal erosion [b][cm][cu][fi][hr][to]	Biodiversity threats [b][hl][hr]	Higher risk of heatwaves [cu][e][hl]	<a href="https://bideoak2.euskadi.eus/debates/debate_1310/Estrategia_cambio_climatico_clima_2050_es.pdf">https://bideoak2.euskadi.eus/debates/debate_1310/Estrategia_cambio_climatico_clima_2050_es.pdf</a>
Principado de Asturias	Reduction in the availability of water for commercial and public use [a][cu][hl][to][w]	Higher risk of droughts [a][b][cu][e][fi][fo][hl][hr][to][w]	Higher flooding risk [a][cm][cu][e][fi][hl][i][mt][w] Higher risk of damaging ecosystemic services [b][fo][i] Risk of sea level rise [a][b][cm][cu][fi][hr][i][mt][to] Higher risk of coastal erosion [b][cm][cu][fi][hr][to] Reduction in the number of sandy beaches [b][cm][hr][to] Higher risk of depletion of water resources due to higher content of nitrates on the water streams [a][cm][cu][hl][to][w]	Risk of soil erosion [a][b][cm][hr] Higher forest fire risk [b][fo][hl][hr][to] Higher vulnerability of mountain ecosystems [b][hl][hr] Biodiversity threats [b][hl][hr] Risk of pest and disease increase [a][fo][hl]	Higher risk of heatwaves [cu][e][hl] Higher forest fire risk [b][fo][hl][hr][to]	<a href="https://medioambiente.asturias.es/documentos/646140/0/DiagnosticoPrevioCambioClimaAsturias_para+portal.pdf/95b9334d-76c1-c8ca-2b8c-91022e998fba">https://medioambiente.asturias.es/documentos/646140/0/DiagnosticoPrevioCambioClimaAsturias_para+portal.pdf/95b9334d-76c1-c8ca-2b8c-91022e998fba</a>
Región de Murcia		Higher heat island effect [cu][hl][hr][to] More frequent heatwaves [cu][e][hl] Increase in the transmission of infection diseases (Chicunguña and Zika) [a][hl] Increase in allergic reactions to pollen [hl] More frequent droughts, water quality and quantity concerns [a][cu][e][fi][fo][hl][to][w]	Risk of sea water intrusions [a][b][cm][w] Decreased access to fishing areas due to their displacement to the north [a][cm] Decrease in the capacity of carbon storage by the sea due to changes in marine ecosystems [cm]	Higher evaporation and decrease of productivity [a][fi][fo] Higher transpiration and water stress [a][b][fo][hl][hr][w] <i>Tropicalisation</i> [a][fo] <i>Biodiversity displacement and change</i> [b][hl][hr] Loss of agricultural production [a][fi]	Higher risk of heatwaves [cu][e][hl] Higher flooding risk [a][cm][cu][e][fi][hl][i][mt][w] Higher risk from infectious diseases [a][hl] Higher risk from allergies [hl]	<a href="https://transparencia.carm.es/wres/transparencia/doc/Organos-colegiados/Consejo_Asesor_Regional_Medio_Ambiente/2020_02_24/Estrategia_cambio_climatico.pdf">https://transparencia.carm.es/wres/transparencia/doc/Organos-colegiados/Consejo_Asesor_Regional_Medio_Ambiente/2020_02_24/Estrategia_cambio_climatico.pdf</a>