The (avoided) cost of adaptation: Why Europe can't afford inaction

*The **European Climate Change Adaptation Conference** (ECCA) is the leading European forum for sharing the latest science, policy, and practice on climate adaptation. The following press brief is designed to provide journalists and media with themes, research, data, and tools to tell impactful stories connecting science, policy, and society.*

Europe is facing escalating costs from climate change, with record-breaking heatwaves, floods, droughts, and wildfires already impacting lives, livelihoods, and economies. The evidence is clear: **the financial, social, and human costs of failing to adapt – or implementing the wrong adaptation policies – are rising sharply**. As the continent's climate warms at twice the global average, adaptation is not just a policy option: it is an economic and social necessity.

As a leading research center on climate science and impacts, CMCC plays a key role in advancing the integration of high-resolution climate modelling with the analysis of socio-economic consequences of climate change, allowing for knowledge-based support to better preparedness and adaptation strategies.

From the application of novel machine learning and artificial intelligence techniques to improve the detection, causation, attribution, and prediction of extreme events, to developing and running high resolution climate models and pioneering new approaches to improve local forecasts for heatwaves, floods, and extreme rainfall, CMCC's efforts offer concrete examples of how science and innovation can guide adaptation planning across Europe and beyond.

Data and Trends

Impact Area	Cost/Trend Without Adaptation	Adaptation Benefit
Economic losses	€738 billion (1980–2023); rising sharply	Up to 90% reduction in damages for some risks
Coastal flooding	€776 billion/year by 2100	90% reduction possible with adaptation

River flooding	€70+ billion/year by 2100	Significant reduction with adaptation
Heat-related deaths	Up to 90,000/year by 2100	Lower fatalities with urban and health adaptation
Agriculture	Heavy yield losses in southern Europe	Improved resilience, reduced losses
Households	Rising health, food, and energy costs; declining income	Targeted adaptation reduces inequality and poverty risk

Source: European Climate Risk Assessment (EUCRA) by the European Environment Agency and CMCC's G20 Climate Risk Atlas, CMCC analysis

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The cost of inaction

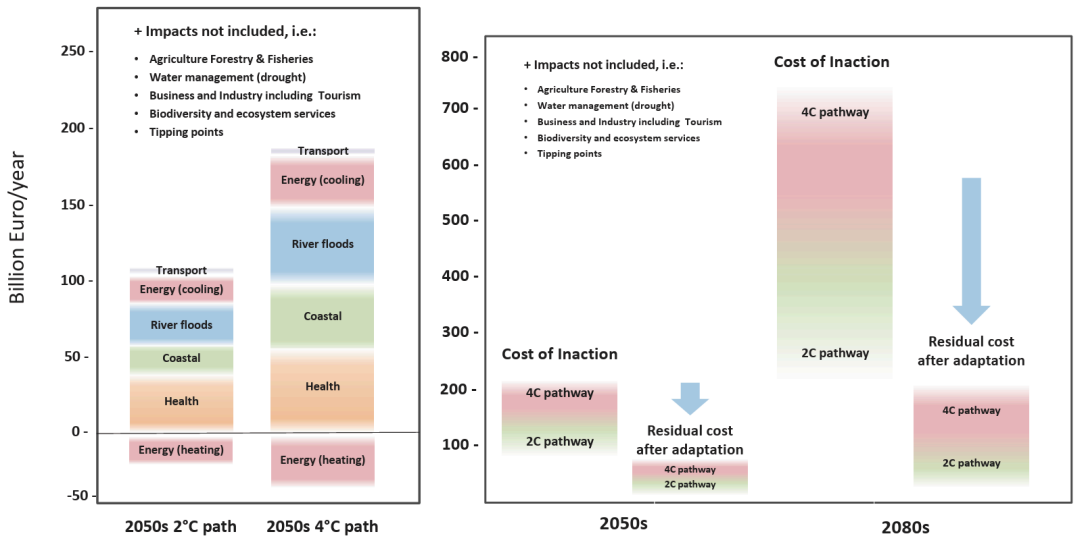
Story ideas

- **The rising toll of climate extremes in Europe: Are national economies prepared?**
- **How climate disasters are increasing the cost of living**
- **Learning from catastrophe: What Europe's floods tell us about readiness for climate risks**

Key messages

The first European Climate Risk Assessment (EUCRA) by the European Environment Agency (EEA) highlights the growing economic toll of climate extremes in Europe. Over the past three years, direct damages from climate-related events have exceeded €50 billion annually. Floods were the costliest disasters, with Slovenia's August 2023 floods alone causing €10 billion in damage – equivalent to 16% of the country's GDP. These impacts can strain national economies and challenge the stability of insurers and financial institutions.

- **Economic losses from weather and climate-related extremes in the EU** reached an estimated €738 billion between 1980 and 2023, with over €162 billion (22%) lost in just the last three years.
- **Less than 20% of these losses are insured**, exposing EU households, businesses, and governments to significant financial risk. At the same time, insurance expenditure is projected to increase due to severe climate change impacts (+10.4 % on average), driven by very large increases in Lithuania and Greece.
- **Climate change will also lead to an increase in average household costs**: Food expenditure in most EU countries will increase between 0.81% and 0.74% across climate change scenarios.
- **Without adaptation**, annual damages from coastal flooding alone could reach up to €776 billion by 2100, whereas river flooding costs could surpass €70 billion under high emissions scenarios.
- **Unequal impacts**: Vulnerable groups – especially low-income households in southern EU countries – face the greatest risks, with rising expenses for health, food, and energy, and declining incomes expected by 2050.



Indicative estimates of sectoral cost of inaction in Europe in 2050 (left) and indicative estimates of the cost of inaction and the benefits of mitigation and adaptation in Europe (right). Source: COACCH – The economic cost of climate change in Europe report.

The cost and benefits of adaptation

Story ideas

- **Every degree counts: Europe faces a growing bill as global temperatures climb**
- **Investing in adaptation today saves billions in future climate damages**

Key messages

According to the European Environment Agency, annual adaptation investments in Europe vary significantly depending on global warming scenarios. At the same time UNEP's Adaptation Gap Report 2023 highlights how investing in adaptation and mitigation today will significantly reduce future climate-related costs across a variety of sectors. The numbers outlined below draw from these two sources, as well as results obtained from the COACCH project, funded by the European Union's Horizon 2020 research and innovation programme and coordinated by CMCC with a focus on assessing the risks and costs of climate change in Europe.

- **Warming leads to more expenses:** For a 1.5°C warming scenario, estimated adaptation needs are around EUR 40 billion per year (EU-27 + UK). At 2°C, the figure rises to EUR 80–120 billion. If temperatures increase by 3–4°C, investment needs could reach EUR 175–200 billion annually (JRC, 2020; COACCH, 2022).
- **The annual investment needed for adaptation** across the EU is estimated at €35–56 billion for current needs, rising to €175–200 billion per year under 3–4°C warming scenarios.
- **Every euro invested in adaptation yields multiple euros in avoided damages and economic losses**: Every USD 1 billion invested in protecting against coastal flooding can lead to USD 14 billion in avoided economic damages.
- **Adaptation measures can reduce expected annual damages** by up to 90% at a cost of roughly 2% of the avoided damage, especially for coastal protection.
- **Adaptation for agriculture:** In the agricultural sector, an annual investment of USD 16 billion could prevent around 78 million people from suffering from hunger due to climate impacts.

The high price of inaction and the value of adapting to climate change

Climate change isn't just an environmental issue – it's an economic one. From flooded cities to disrupted agriculture, the cost of extreme weather and shifting climate patterns is already being felt across Europe. The results and figures shared below were collected by the ACCREU project, coordinated by CMCC.

Coastal flooding
Rising sea levels and stronger storm surges pose a major threat to Europe's coastal zones. While current damages are relatively low (€1–2 billion per year), they are projected to rise rapidly, to an estimated **€135–145 billion per year by the 2050s**, and up to **€650 billion by the 2080s**. Adaptation – such as ecosystem-based or engineered strategies to protect and restore coastal areas – can drastically reduce these losses, to around **€28–30 billion per year** by mid-century, for a cost of just **€14–17 billion annually**.

River flooding
Flooding from rivers is already causing about **€7.6 billion in damage annually** in the EU and UK, and extreme events such as the 2021 floods in Germany and Belgium showed how fast that number can rise, with **€40 billion in losses** in a single year. Without action, future climate change could push annual costs to **€44 billion by 2100**. Smart investment in adaptation – including flood defenses or natural retention areas – could cut these losses by up to **83%**.

Agriculture and food security
Climate change is already affecting crop productivity, prices, and food systems. By 2050, farmers could face **€1.7 billion in losses**, with southern Europe (especially Italy and Spain) hit hardest – experiencing **GDP drops of 2.5 to 5%**. However, adaptation strategies such as climate-smart agriculture and better water management can help manage these impacts and stabilize food production.

Forests, fisheries, and fires
Forests and fisheries are long-term investments with significant vulnerabilities. Climate change is driving pests, droughts, wildfires, and shifting fish populations. In southern Europe alone, wildfires are currently causing up to **€21**

billion in annual damage. Marine fisheries could see **€1.3 billion in producer losses** by mid-century. Here too, proactive measures like fire prevention, forest management, and diversified livelihoods can significantly reduce risks.

Infrastructure and energy
Europe's critical infrastructure – roads, rail, power lines – isn't built for the climate extremes we are currently facing. Damages could grow from **€3.4 billion per year today** to **€37 billion annually by the 2080s**. Energy systems are also at risk, especially from higher cooling demands in summer and reduced heating needs in winter. For example, electricity use could jump **20–30% by 2050** in southern Europe alone.

Water and droughts
Droughts are becoming more intense, with current annual losses around **€9.4 billion**. With 3°C of global warming, drought-related damages could rise to a staggering **€45 billion per year by 2100**, particularly affecting agriculture and energy in southern Europe. Adaptation options like improved water storage, pricing, and efficiency are critical to keeping these losses in check.

Industry, labour, and health
Climate change will affect every sector – through supply chain disruptions, productivity drops, and health impacts. Heat-related productivity losses could reduce GDP by **1.5–2% in southern and central-eastern Europe**, while heatwaves are projected to cause up to **89,000 deaths annually** by the end of the century if warming reaches 3°C. Climate change is having a major impact on tourism, with rising temperatures and heatwaves reducing Mediterranean tourism, while less snow and changing weather patterns affect winter destinations.

CMCC case studies

The cost of climate change on households in the European Union: CMCC's study, carried out for the European Economic and Social Committee (EESC), estimates the cost of climate change for households in the EU which highlights a North-South gradient with a rise of expenses for health, food, and electricity due to climate change becoming particularly pronounced in southern countries.

Among these expenses, healthcare costs are expected to see the largest increase, particularly in Cyprus and Greece, followed by Spain, Croatia, Italy, and Portugal.

Extreme heat: Protecting the global workforce: Heat stress affects the health of workers through physiological and behavioral responses, in turn, affecting the number of hours they can work (*labour supply*), their output during these working hours (*labour productivity*), and physiological ability to undertake work safely (*labour capacity*). “Our paper is the first comprehensive review to explore explicitly the extent to which heat stress affects different components of the labour force – labour supply, labour productivity, and labour capacity, and the corresponding occupational health and economic impacts,” says CMCC’s researcher Shouro Dasgupta, lead author of the paper.

Sea level rises could cost EU and UK economies billions of Euros by 2100: Damage caused by sea level rise could cost the EU and UK economies up to 872 billion Euros by the end of the century, according to a modelling study published in *Scientific Reports* by a team of international scientists including from CMCC.

CMCC experts are available to share their insights with interested parties, including journalists.

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