Climate change adaptation in the agriculture sector in Europe
key findings from a new EEA report

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Why is agriculture important in Europe?

- **22 million people employed** in the agriculture sector (44 indirectly in food production);
- total output of the agriculture sector in the EU is **EUR 430 billion per year and the export is around 150 billion EUR** (and increasing);
- **large regional differences** in farming (large farms in western and northern Europe, small (family) farms in eastern and southern Europe;
- EU farming is regulated by various policies, at EU level **CAP is the most important policy** (38 % of total EU budget ~ EUR 400 billion in 2014-2020);
- **agriculture accounts for around 10 %** of all greenhouse gas emissions in the EU. 19 % decline since 1990, but stable in the last 10 years;
- agriculture has a **large potential in mitigating** the climate change;
- the sector is **vulnerable to climate change**.
Main climate change impacts on agriculture in Europe

**Mediterranean region**
- Increase in demand for irrigation
- Decrease in crop yield
- Heat waves influence livestock production
- Agriculture affected by spillover effects from outside Europe

**Atlantic region**
- Droughts
- Coastal floods
- Heat waves influence livestock production
- Windstorms

**Boreal regions**
- Heavy precipitation
- Windstorms
- Forest fires
- Warmer temperature affecting reindeer husbandry

**Continental region**
- Heatwaves and droughts
- River and flash floods
- Forest fires

**Mountains**
- Upward shift of plant species
- Landslides
- Hail storms
- Frost
Extreme weather affects yields

- Weather and climate extreme events can influence total yield significantly
Extreme weather affects commodity prices

Cereal prices in Europe between 2017 and 2019 with the peak in summer 2018

Source: DG AGRI (EU Crops Market observatory) and DG JRC (Mars Bulletin, 2018)

Regions affected by heat waves, droughts and heavy rain in 2018

- Hot and dry
- Drought
- Rain surplus
- Heat waves
Climate change impacts influence yields

Projected percentage change in yields 2021-2050 compared to 1981-2010

Maize

Sugar beet

Wheat

Source: DG JRC (PESETA III project)
Climate change will affect the economy of farmers

Projected change in farmland value by 2100

- Agricultural income in Europe is projected to decrease
- Farmland values projected to decrease the most in southern Europe (figure)
- Some farmland might be abandoned due to climate change if no adaptation is introduced

Source: van Passel et al., 2017
Warmer temperatures in winter lead to more pests and diseases

Development of pest infestation for olive trees in Italy based on high-end scenario

- 75% of global olive oil production is in Europe – an important agriculture commodity for exports
- By end of century 60-80% of olive trees might be affected by pests due to the warmer conditions mostly because of warmer winters (currently around 10%)
- Adaptation options include early warning, spraying and planting resilient trees

Based on Copernicus Climate Change Service data (AgriCLASS project)
Adaptation solutions at farm level are complex

Adaptation at farm level needs to:
• Reduce impact of climate threats

but also:
• Sustain resilient production
• Conserve soil and water resources
• Reduce waste
• Reduce emissions
• Increase sink of CO2
• Be economically viable
• Increase the quality of rural life
Information about adaptation action in EU MSs

- Almost all national adaptation strategies include **agriculture as a priority sector** *(Leftmost columns)*

- Many member states prepared **climate change impacts and vulnerability assessments** for the agriculture sector *(Central columns)*

- About **half of the member states introduced adaptation measures** in the agriculture sector *(Rightmost columns)*

<table>
<thead>
<tr>
<th>Country</th>
<th>Agriculture addressed in NAS/NAP as a priority sector</th>
<th>Specific CCIV assessment for agriculture prepared</th>
<th>Specific adaptation measures for agriculture defined</th>
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Key messages

Impacts

• Future climate change might have some positive effects in short term (by 2050). However, **the increased number of weather and climate extremes will negatively affect agriculture in Europe.**

• A cascade of impacts from **climate change outside Europe** affects the price, quantity and quality of products, and consequently trade patterns, which in turn affects **the agricultural income** in Europe.

Adaptation

• The EU strategy on adaptation and the CAP have somehow enabled adaptation actions in the agriculture sector, but the **objectives need to be clearer** in the proposed **common agricultural policy for and in new EU adaptation strategy.**

• **National adaptation strategies mention the agriculture sector as a priority, but implementing measures is still slow.** The most common measures at national or regional levels include awareness raising, approaches on how to decrease the impacts and risks of extreme weather events, risk-sharing strategies, and improving agricultural infrastructure.

• Farmers have been implementing a wide variety of measures in order to adapt to climate impacts. However in many cases **adaptation does not take place because of a lack of, among other things, resources for investment, political initiatives to adapt, institutional capacity and access to adaptation knowledge.**
More information on [eea.europa.eu](http://eea.europa.eu)


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