# Insurance and risk management tools for agriculture in the EU – Findings of the fi-compass study

**Ana Gonzalez Pelaez**, Head of Adaptation and Loss & Damage, Climate Risk & Resilience, Howden Group

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In **2025**, **EUR 60 billion loss*** is a realistic extreme disaster year for EU agriculture
(crops & livestock)

**2025**

**Annual Average Loss EUR >28 billion**

Only 20-30% is insured

70-80%
falls on farmers and governments

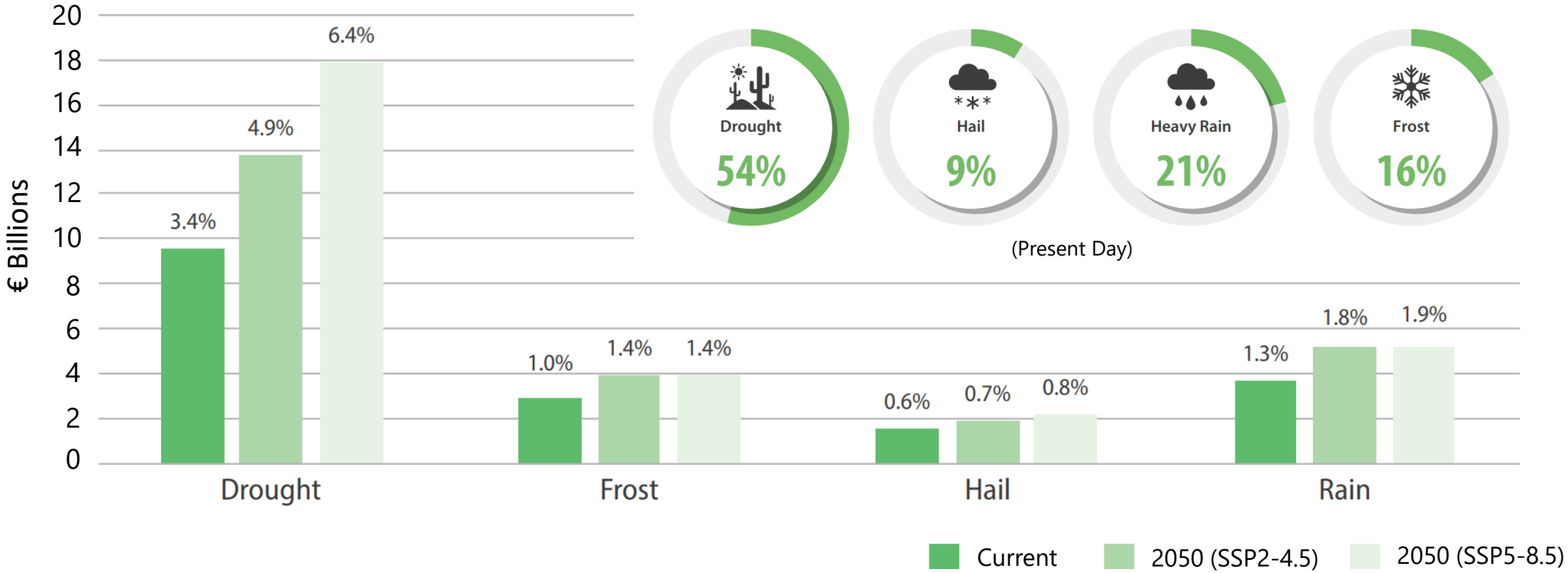
By **2050** the overall EU extreme losses are forecast to grow by 50%
**EUR >90 billion**

**2050**

**Annual Average Loss EUR >40 billion**

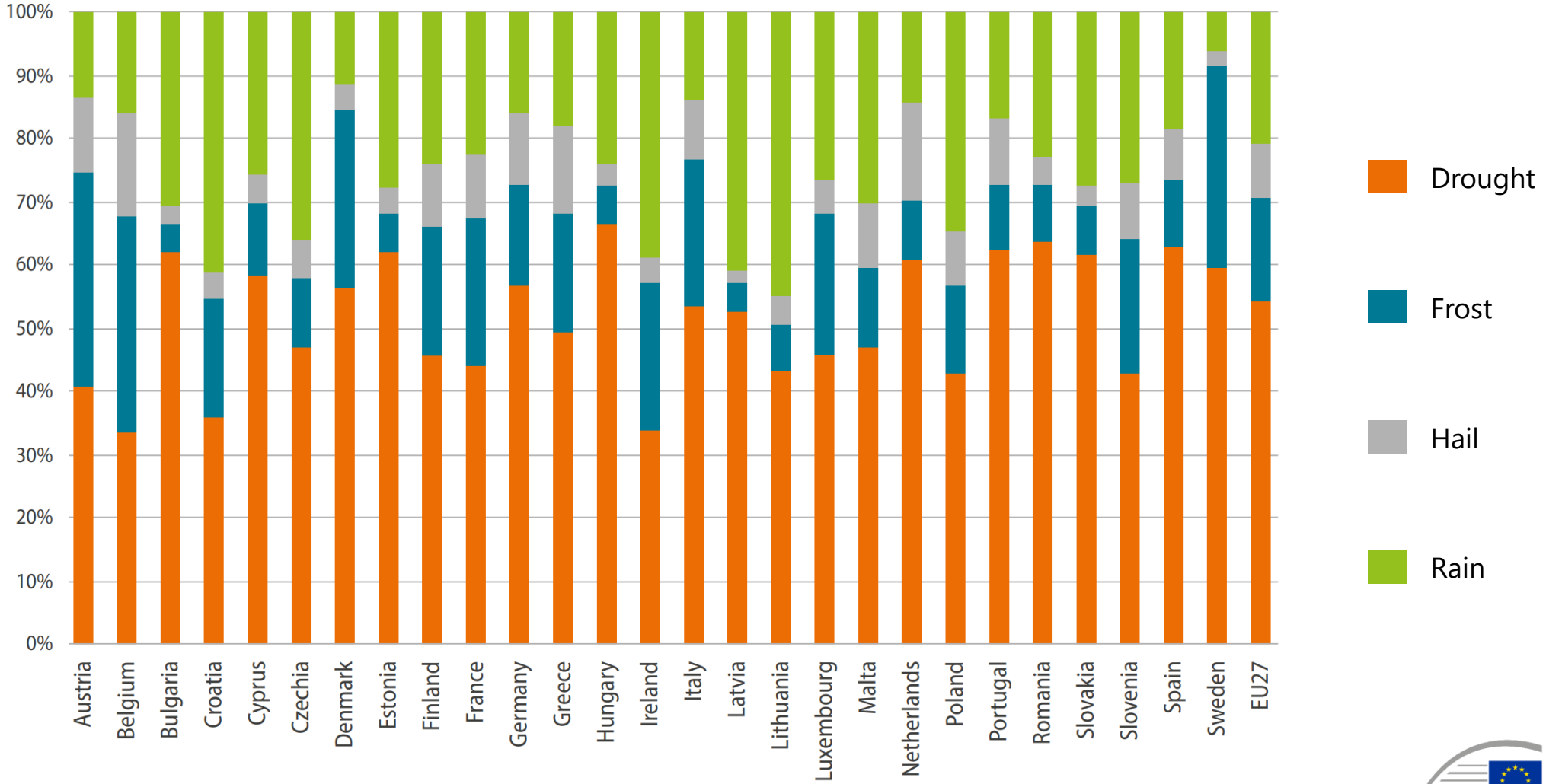
*PML - EU-27 Probable Maximum Loss from extremes with a 2% annual probability of occurring

# EU Level Crop Annual Average Losses (AALs) from Primary Perils

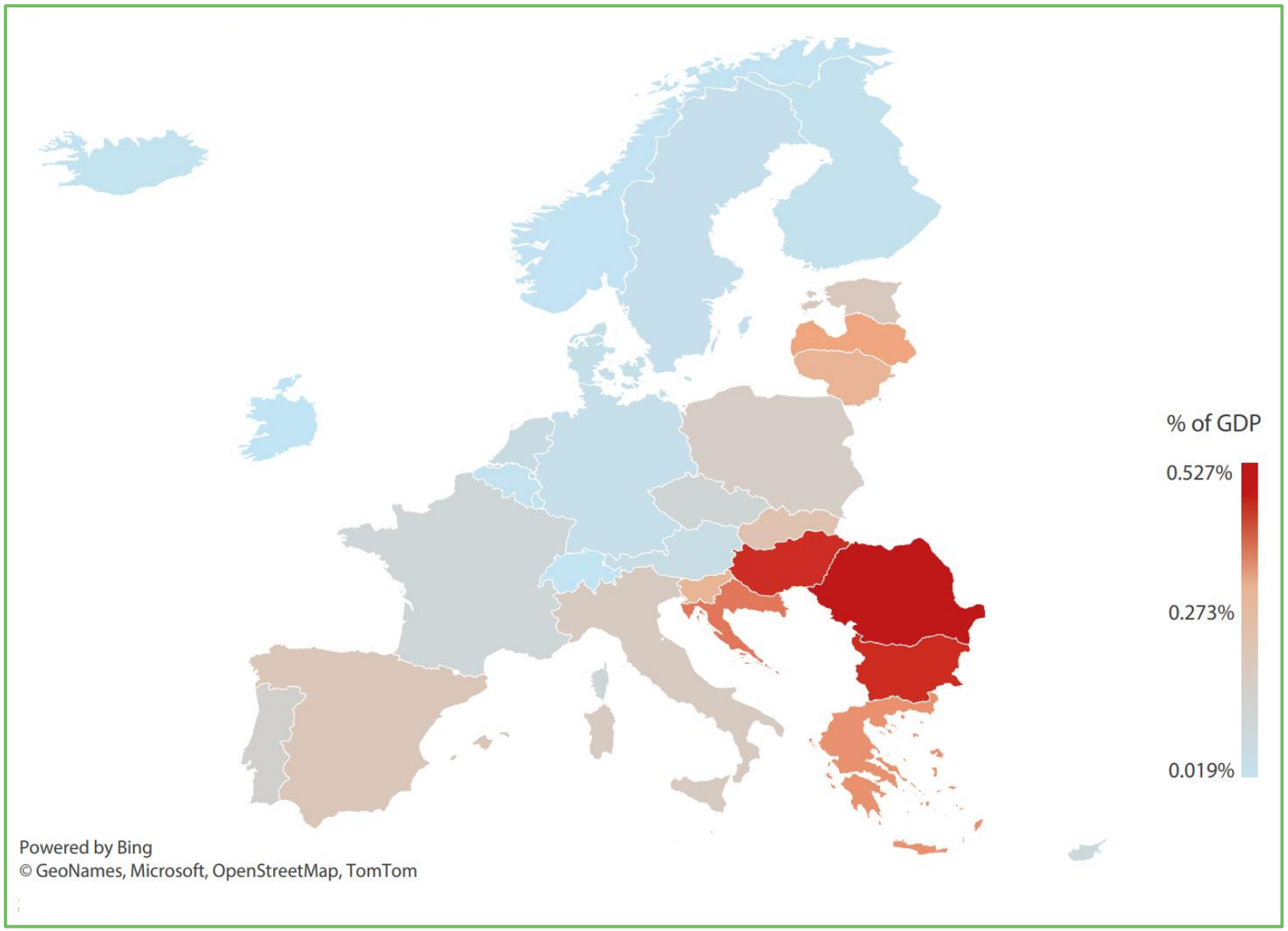


# We are in this ***together:*** Drought is a problem for ***everyone***

## Percentage of current annual average losses by peril in each Member State



# Current crop production annual average losses from Primary Perils (as a % of GDP)




By 2050*....

64% increase

52% increase

59% increase

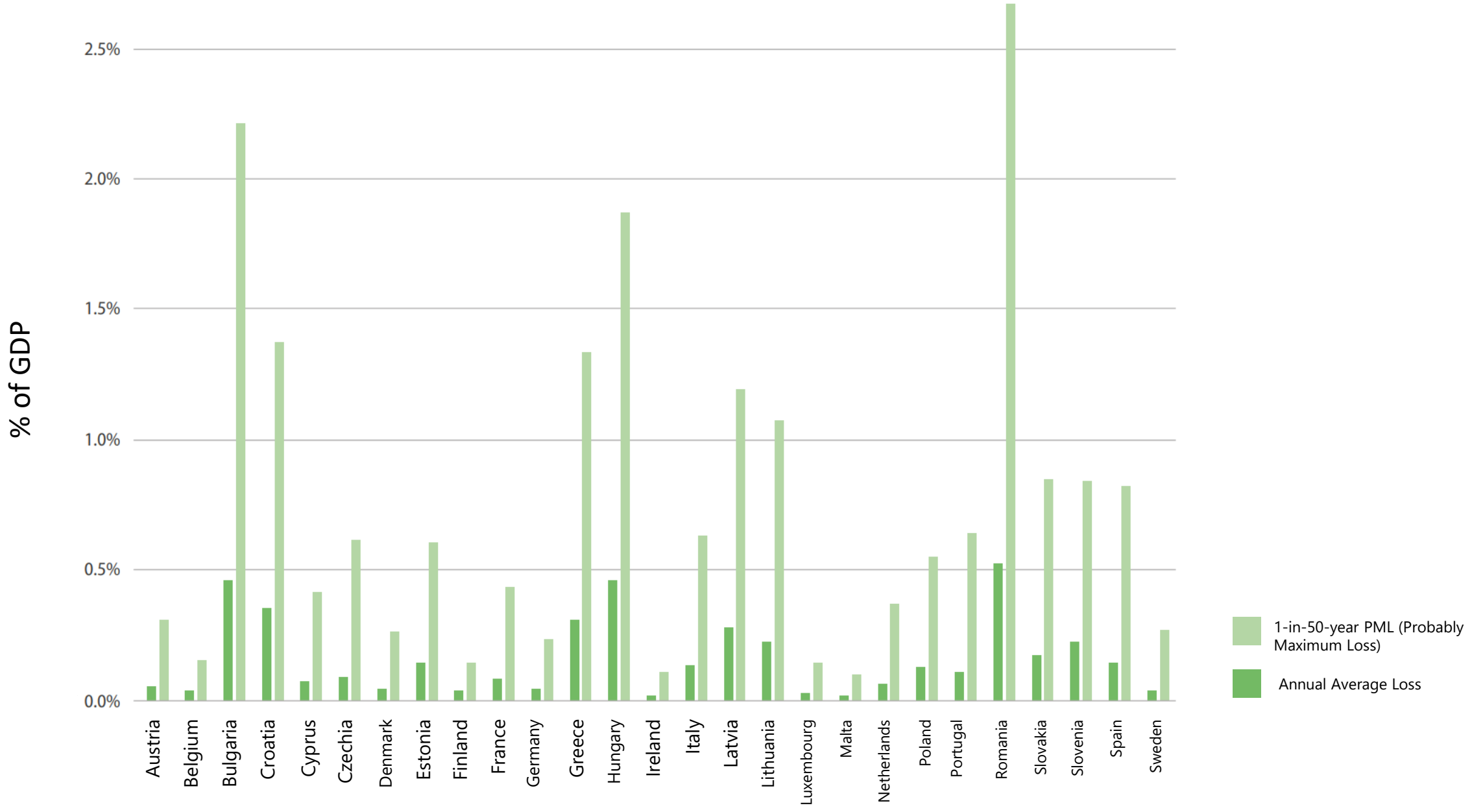
47% increase

40% increase

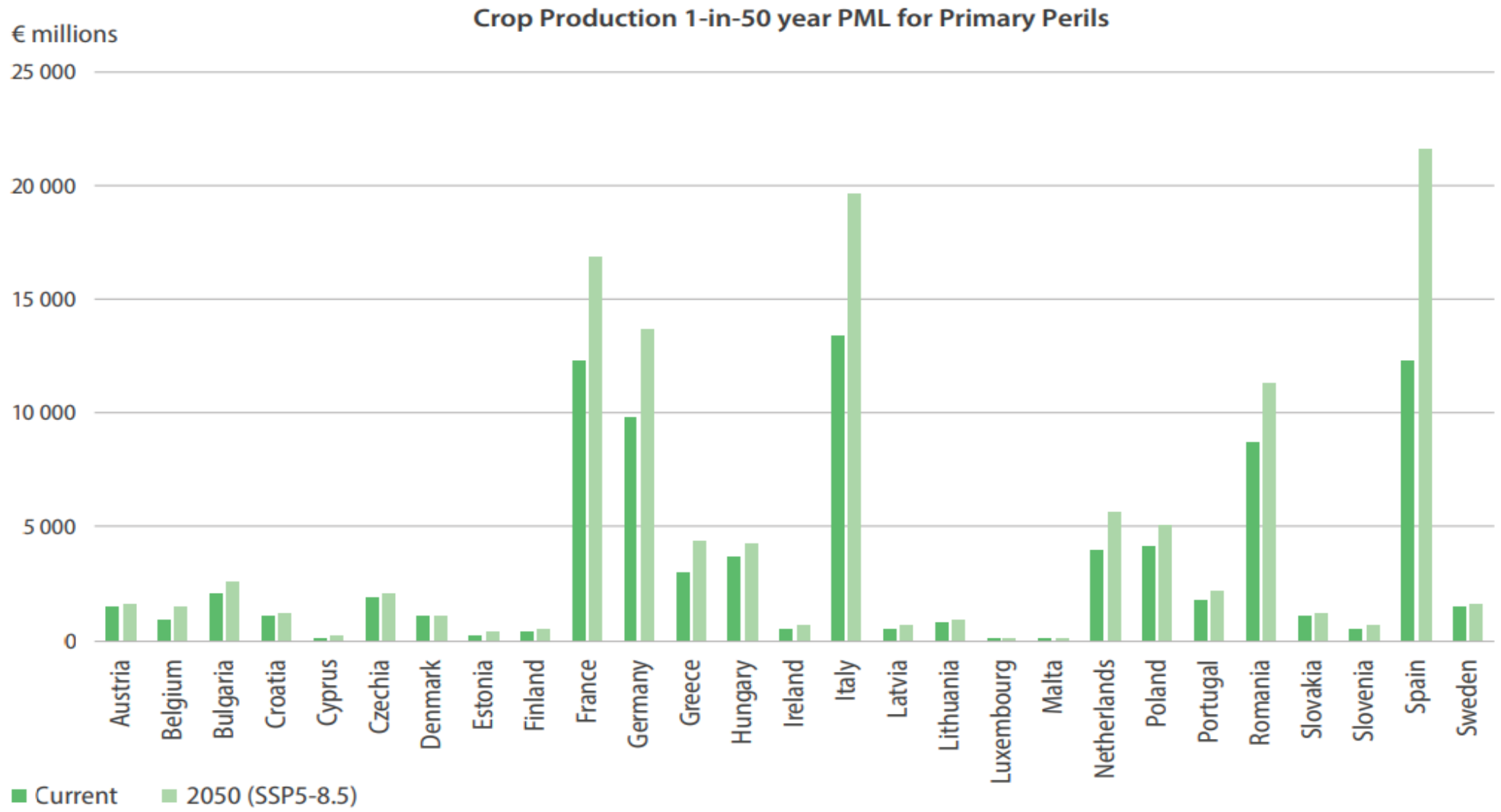
*absolute change as a % of present day GDP

*Image source: Google.*

# Present extreme year losses in comparison to annual average losses: 4 to 5 times more



# Catastrophic losses to crops from primary perils, current and future



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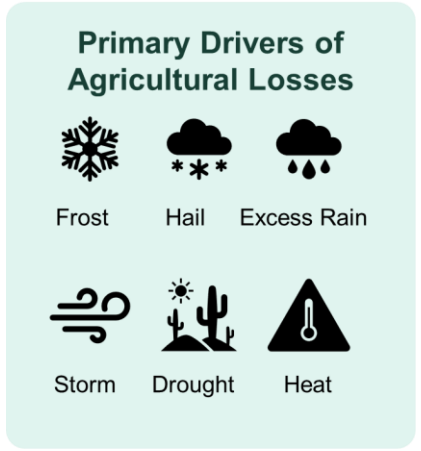
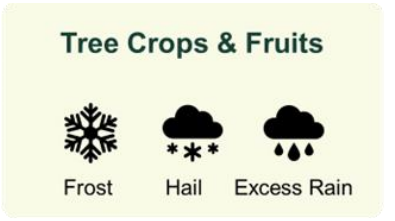
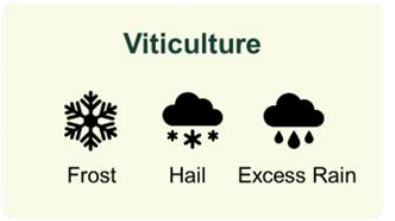
# Modelling EU Agriculture and Climate Extremes

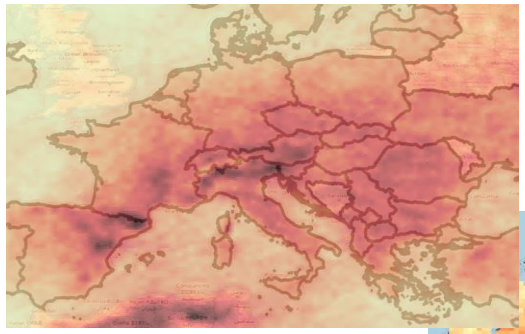
- A **catastrophe risk modelling framework** was applied to **EU agriculture**, encompassing the hazard (climate perils), exposure (crops) and vulnerability (damageability) components.
- An **extensive data collection** process was undertaken to characterise the exposed crops and empirical damage and loss data for insured and uninsured agriculture.
- **Drought, excess rain, hail and frost models** were built in conjunction with yield-based loss analytics and empirical damage and insurance data from the past 40 years to inform the vulnerability functions of the risk models.
- **Thousands of years were simulated to create a database of extreme events at current and future levels of risk** in order to calculate the range of yearly damages possible for Europe – producing AAL and PMLs for now and 2050.

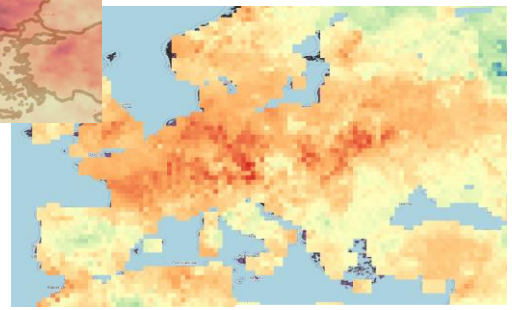


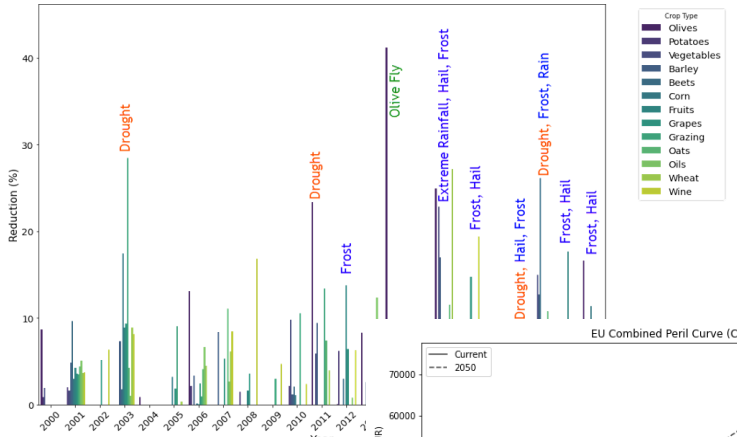


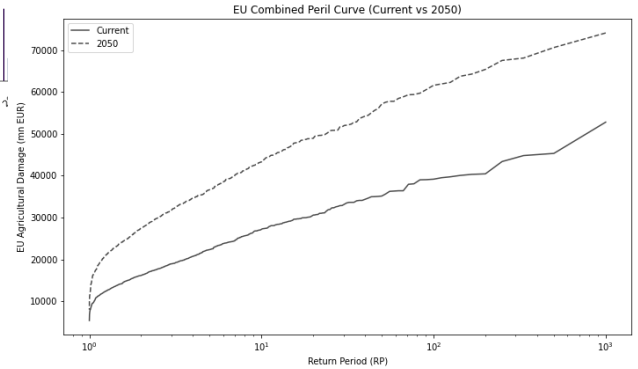


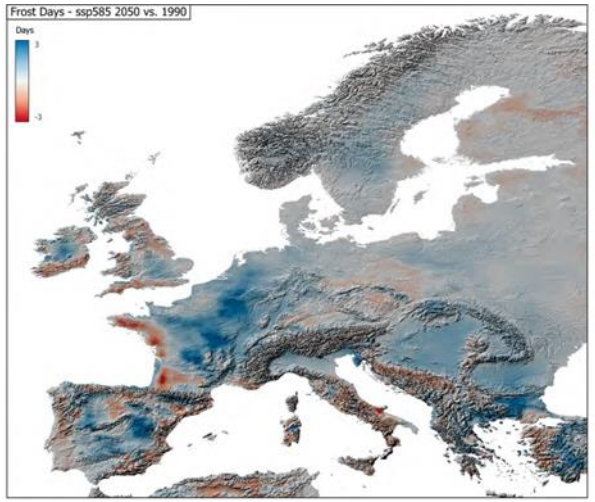


# The breakthroughs as part of the modelling process

- Homogenisation of **Agricultural Statistics and Yields**
- Extraction and collection of **Agricultural Damage and Insurance Data across Europe**.
- Yield Loss statistics **last 20-40 years** for each crop type.
- **Emprical-Hybrid PML curves** using: different climate models, crop metrics, matching stochastic event sets with historical damages and yield reductions for each country.
- Climate modelling was undertaken out to **2050** using CMIP6 runs for the 27 countries.
- **Cross-country modelling** was done looking at the EU level damages vs. single countries.
- A **financial module** checking protection gaps and other aspects was made.



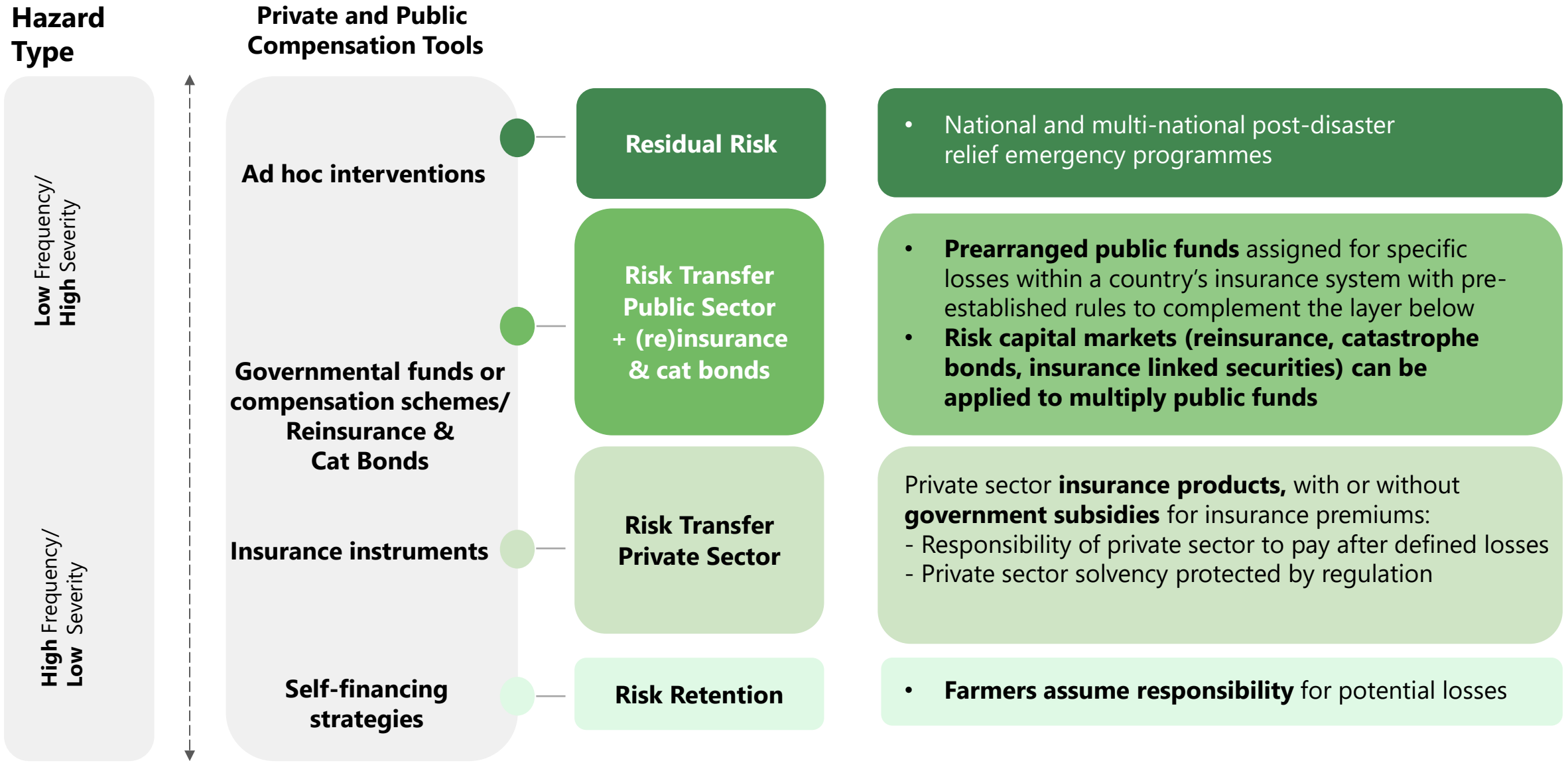



# We created a matrix of all the EU countries classified by their types of agriculture insurance systems

| | Market Characteristics | | | | | Insurance System Classification | | | | | Source of Funding | Subsidy | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Public Private Partnership | | | | | |
| | Total Insurance Premium | Insurance Penetration | Number of companies | Product Availability | Conditionality | Private | Public | Premium Subsidy | Government Participation in Cat Risk | Public Reinsurance | Use of EU funds | Subsidy Amount | Subsidy Amount |
| Austria | 234 | H | 1 | N M P | V | | | x | | | N | | < 55% |
| Belgium - Flanders | 14 | L | 4 | N M | V | | | x | | | N | 83.94 | < 65% |
| Belgium – Wallonia | | | | N | V | x | | Planned | | | N/A | | 0 |
| Bulgaria | 10 | M | 13 | N | V | | | x | | | Y | 22.20 | < 70% |
| Croatia | 30 | M | 5 | N | V | | | x | | | Y | | < 70% |
| Cyprus | 8 | VH | 1 | N | C | | x | | | | N | 273.9 | |
| Czechia | 50 | H | 6 | N | V | | | x | | | N | | < 65% |
| Denmark | 0 | VL | 0 | | V | x | | | | | N/A | 422.2 | 0 |
| Estonia | 0.5 | VL | 1 | N | V | | | x | | | Y | | < 70% |
| Finland | 0.5 | M | 1 | N | V | x | | | | | N | 126.4 | |
| France | 860 | M | 9 | N M R P | V | | | x | x | | Y | 172.7 | < 70% |
| Germany | 255 | H | 6 | N M P | V | Federal | | Some States | | | Some States | 1.60 | 0 |
| Greece | 155 | VH | 3 | N M | C | | x | | | | N | | |
| Hungary | 71 | M | 11 | N M | C | | | x | | | Y | 4128.1 | < 65% |
| Ireland | 0 | VL | 0 | | V | x | | | | | N/A | 23.8 | 0 |
| Italy | 700 | L | 25 | N M P | V | | | x | x | x | Y | 5.72 | < 70% |
| Latvia | 13 | M | 2 | N | V | | | x | | | Y | 147.1 | 50% |
| Lithuania | 5 | M | 1 | N | V | | | x | | | Y | 99.6 | < 70% |
| Luxembourg | 7 | | 1 | N | V | | | x | | | N | | < 65% |
| Malta | 0 | VL | 0 | N | V | x | | | | | N/A | 164.2 | 0 |
| Netherlands | 33 | L | 3 | N M | V | | | x | | | Y | 115.6 | 53% |
| Poland | 130 | M | 7 | N M | C | | | x | | | Y | 180.3 | < 65% |
| Portugal | 33 | L | 5-7 | N M | V | | | x | | x | Y | | < 70% |
| Romania | 60 | M | 12 | N M | V | | | x | | | Y | 7.50 | < 70% |
| Slovakia | 14 | M | 4 | N | V | | | x | | | Y | 83.9 | < 70% |
| Slovenia | 5 | L | 4 | N | V | | | x | | | N | | < 60% |
| Spain | 1011 | M | 16 | N M P | V | | | x | x | x | N | 2812.5 | 42% |
| Sweden | 50 | H | 2 | N | V | x | | | | | N/A | 65.1 | 0 |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |

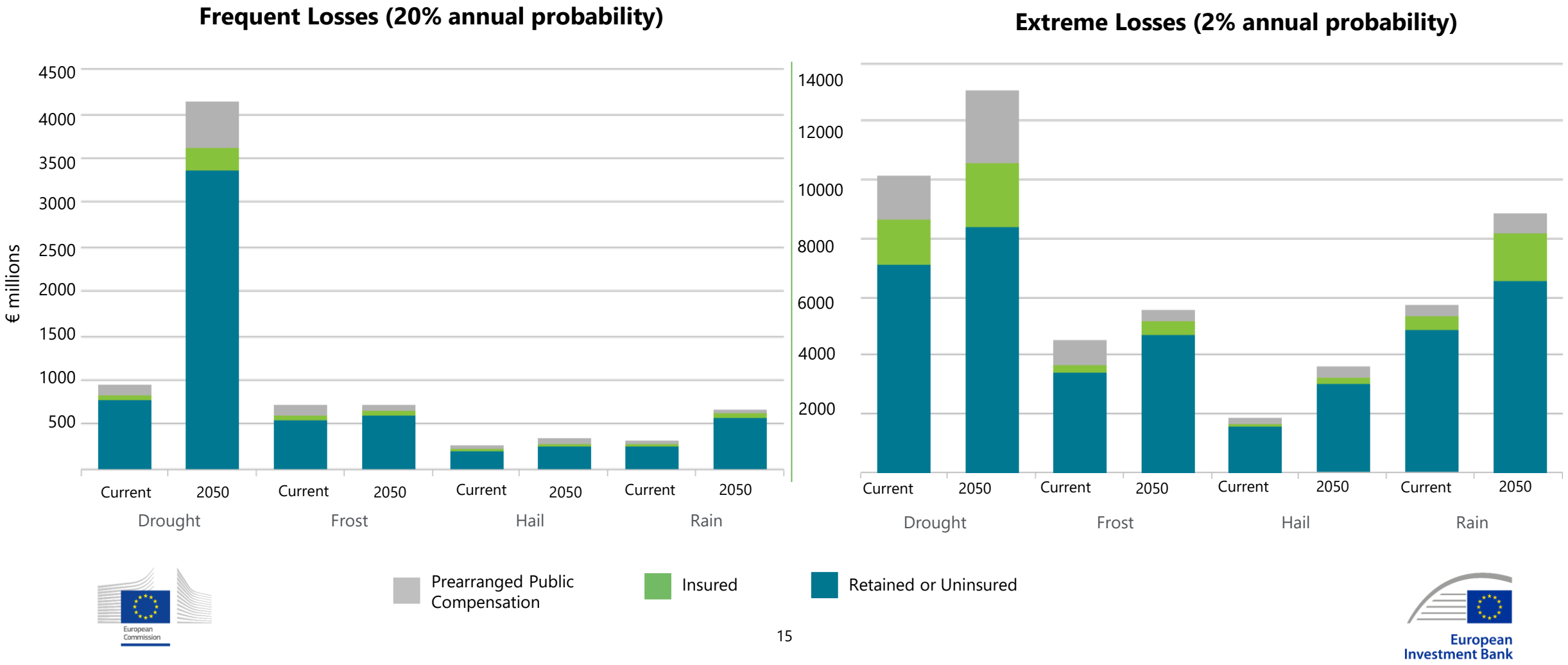
(1) GWP, EUR millions, crop insurance only where available
(2) VH(>70%) H (>50%) M (20%-50%) L (<20%) VL (<1%)
(3) Most recent publicly available estimate of insurers with >1% market share
(4) Named (N) Multi Peril (M) Revenue (R) Parametric (P)
(5) Voluntary (V) Compulsory (C)
(11) Yes (Y) National Funds only (N) No Funding (N/A)
(12) Sum of EU, public and additional national financing for risk management tools under 2023-2029 CAP, EUR
(13) % Premium

# 'Risk Layering' across the EU 27



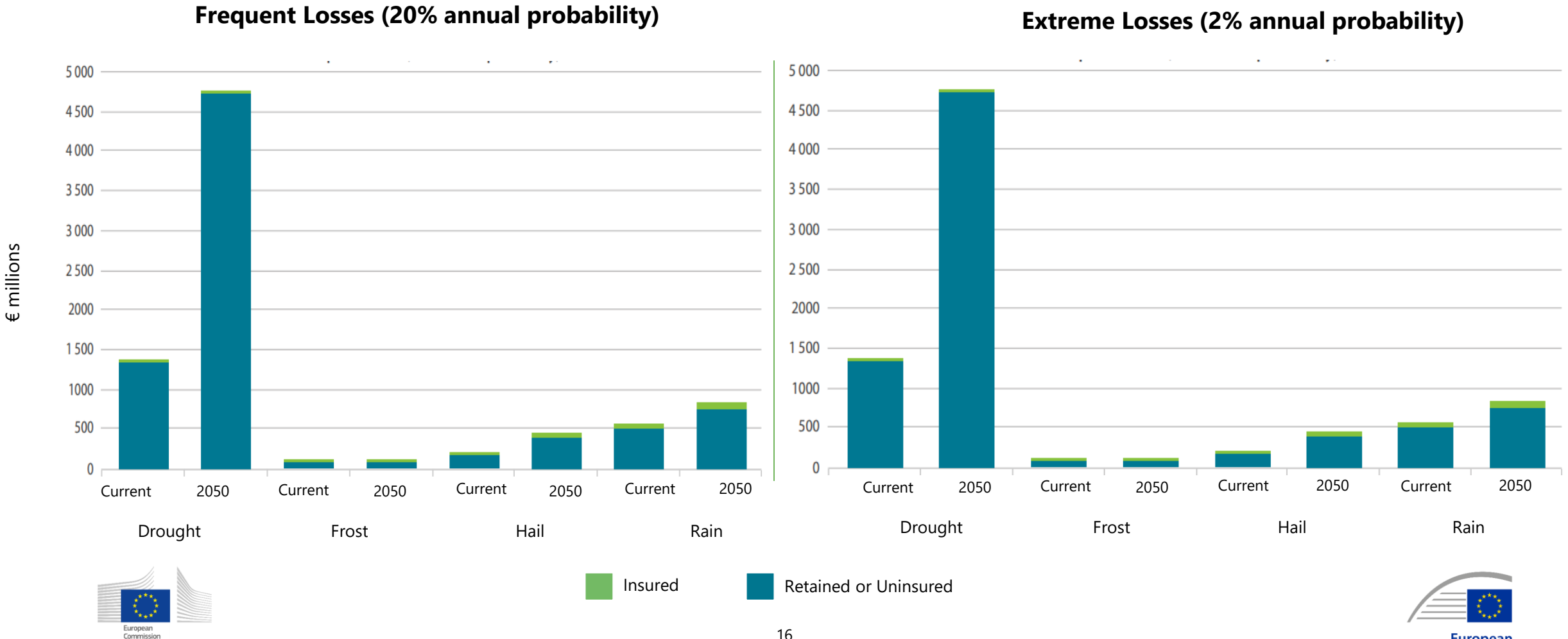
# Risk Layering in France: who pays?

## Retained vs Insured losses for different loss severities (Billion EUR)



# Risk Layering in Romania: who pays?

## Retained vs Insured losses for different loss severities (Billion EUR)



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# Managing EU Agriculture and Climate Extremes – the challenge

- By 2050 **catastrophic** losses approaching 20% EU agriculture revenues from around 12% today.
- Some Member States face losing **over EUR 20 billion** in future agriculture catastrophes, others more than 2.5% of GDP.
- Member States lose **4-5 times** the average when catastrophe years occur.
- At EU level, scale and diversification means a catastrophic year loss is around **TWO** times the average.
- **This difference between EU and Member State climate shocks variability is why catastrophe risk should be shared across the EU.**

# Recommendations – 3 Pillars

**Building insurance knowledge and better risk modelling**

**Managing and financing EU catastrophic agricultural climate risks**

**Enhancing Agriculture Adaptation and Resilience**

# Pillar I: Building knowledge & better risk modelling

EU Agriculture Insurance Technical Assistance Platform (AITAP)

**Recommendation 1:**

**A platform for shared access to resources, technical assistance and collective expertise**

**Recommendation 2:**

**Develop consistent standards and protocols for the collection and assimilation of EU crop yield data and related statistics**

**Recommendation 3:**

**Open access information for insurance aligned agriculture climate risk modelling and metrics**

# Pillar 2: Managing and financing catastrophic climate risks

**Aligns with wider ECB and EIOPA proposals, as a first step in EU Disaster Risk Financing modernisation**

## Recommendation 4:

**Use Risk Capital Markets to increase the capacity of central EU emergency funds for catastrophic events across the EU:**

- (Re)insurance
- Catastrophe (cat) bonds
- A combination of the above through complimentary programmes

## Recommendation 5:

**Supporting Member States to arrange additional parametric catastrophe protection to complement their existing national systems**

## Recommendation 6:

**Longer Term: Towards an EU Multi-Sovereign Agriculture Risk Pool**

# Pillar 3: Enhancing Agriculture Adaptation and Resilience

# Maintaining Insurability and Long-term Access to Credit

**Recommendation 7:**

**Promote a more holistic approach to Agricultural Climate Adaptation across EU instruments and policies**

**Recommendation 8:**

**Support stable access to finance for farmers and rural areas**

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