

SHORT SUMMARY

Climate Resilience of the Food Chain's Critical Middle in Europe

Key Findings and Policy Recommendations

29 October 2026 | Brussels

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Introduction

This summary presents key findings from an ongoing IEEP project analysing climate-related risks and policy needs affecting the critical middle of the agri-food value chain. The research draws on a combination of desk-based analysis, expert advisory group consultations and two participatory workshops conducted over a six-month period**.** The full report will be available at the end of November 2026.

What is the "critical middle"?

The critical middle encompasses the businesses, activities and infrastructure situated between primary agricultural production and retail within the food value chain. Key actors include aggregators and collectors, processors, millers and packagers, traders and wholesalers, logistics firms and transporters, and warehouse and storage operators. These actors collect, process, store, transport, package, and distribute food. Many are small and medium-sized enterprises (SMEs) operating alongside larger manufacturers and retailers. This segment's resilience is essential to the functioning of the wider food system. Disruptions to critical infrastructure, including cold storage facilities, transport networks, ports and energy supplies, can lead to food losses, supply chain interruptions and reduced food availability, even where agricultural production remains unaffected. The middle accounts for around 30–40% of the value added in food chains (Reardon, 2015[1]). Despite its economic significance and critical role in maintaining food security, this segment receives comparatively limited attention in climate risk assessments and food security strategies, which tend to focus primarily on agricultural production or the food system as a whole.

Key Environmental Risks to the Critical Middle

In a participatory, co-creative process (adapted from Durrant et al. (2026)[2], eleven international experts identified and prioritised environmental risks affecting the critical middle. They examined how these risks interact, cascade and compound across the food value chain, and assessed their potential implications for the resilience of midstream activities.

The following key findings emerged from these discussions:

- **Climate change** was identified as one of the most significant risks, acting both as a direct source of disruption and as a driver and amplifier of other environmental and non-environmental risks.
- **Extreme weather, flooding, water stress,** the spread of diseases and changes in species distribution were also identified as priority environmental risks.
- **Pollution** poses risks to the critical middle through the contamination of food products and the degradation of essential inputs and resources.
- **Biodiversity loss and the degradation of ecosystem services** can undermine agricultural production, with cascading consequences for the availability of raw materials and the activities of processors, transporters and packaging companies.
- **Risks affecting the critical middle cannot be considered in isolation** from upstream agricultural production or downstream retail and consumption, given the interdependencies between different stages of the food value chain.

Potential Implications to the Critical Middle

The project distilled six key implications to the critical middle from environmental risks:

[1] Reardon, T. (2015). "The hidden middle: the quiet revolution in the midstream of agrifood value chains in developing countries," Oxford Review of Economic Policy, Oxford University Press and Oxford Review of Economic Policy Limited, vol. 31(1), pages 45-63.
[2] Durrant, L.J., Bognar, J., Tremblay, L.L, Best, A., and Iwaszuk, E., (2026). 'Systemic and Complex Risk Governance for Europe's preparedness and sustainability'. Institute for European Environmental Policy & Ecologic Institute

- **Disruption to physical and digital infrastructure.** Environmental risks can damage critical infrastructure such as ports, roads and power grids, disrupting cold chains and delaying food distribution. They can also affect digital and communications infrastructure, further constraining the ability of businesses to maintain operations.
- **Supply chain disruptions**. Drought and extreme heat can reduce agricultural yields and disrupt the availability of raw materials, undermining the ability of processors and wholesalers to plan production and maintain operational capacity.
- **Energy and water scarcity**. Food processing is highly dependent on reliable energy and water supplies. Resource shortages and associated price volatilities can increase operating costs and constrain production capacity.
- **Exposure of physical assets**. Processing facilities, cold storage infrastructure and logistics hubs represent long-term capital investments that may be exposed to recurrent climate-related hazards, resulting in physical damage, increased maintenance and repair costs, and rising insurance premiums
- **Risks to workers**. Rising temperatures and extreme heat can undermine occupational health and safety, reduce labour productivity and, in severe cases, interrupt operations.
- **Financial and insurance risks**. Increasing exposure to extreme weather events can result in higher insurance premiums, restrictions on coverage or the withdrawal of insurance provision, creating additional financial vulnerabilities for midstream businesses.

Potential Policy Recommendations and Levers

Strengthen governance and coordination – Expand the participation of critical middle stakeholders in existing EU innovation and knowledge-sharing networks, including CAP networks and EIP-AGRI. Support the development of collaborative innovation hubs and cross-government coordination mechanisms for food systems, while strengthening the integration of food value chain resilience into relevant EU policy frameworks, including the EU Preparedness Union Strategy and the EU Climate Resilience Framework.

Investment in climate-resilient infrastructure and support for mid-stream businesses – Facilitate investment in climate-resilient infrastructure and strengthen financial support for midstream businesses through a combination of blended finance, concessional loans, tax incentives and grants. Increase access to EU research and innovation funding and reduce the financial and administrative barriers faced by SMEs in obtaining relevant ISO certifications. The Critical Entities Resilience Directive already recognises food production, processing and distribution as an essential sector, providing an important policy basis for strengthening resilience.

Digital tools and data – Promote the co-development and uptake of digital solutions tailored to midstream businesses' needs, alongside incentives for greater data sharing and interoperability. Explore opportunities to establish a dedicated EU data space covering the critical middle, complementing existing initiatives focused on agricultural production. Support digital skills development and ensure that technological solutions are accessible to businesses of different sizes and capacities.

Climate-risk-informed decision-making and a circular bioeconomy – Integrate the specific vulnerabilities and resilience needs of the critical middle into national food-system climate risk assessments, drawing on the EU Climate Resilience Framework. Leverage the 2025 Bioeconomy Strategy to identify investment needs and opportunities for improving resource efficiency and circularity across midstream activities. Ensure that the 2028-2034 EU Multiannual Financial Framework (MFF) provides dedicated objectives and funding opportunities to strengthen the resilience of this segment of the food value chain.

Climate-resilient food innovation - Review whether the Novel Food Regulation adequately supports climate resilience objectives and whether revisions may be warranted to facilitate climate-resilient food innovation. Strengthen the participation of midstream businesses in relevant Horizon Europe research and innovation programmes, particularly Cluster 6, and explore opportunities to facilitate market entry for innovative food products through the European Biotech Act and a more integrated, whole-value-chain approach to novel food policy.

This work has been produced with the financial support of the LIFE Programme of the European Union. The paper reflects only the views of its authors and not the donors.

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