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Advancing Technology, Innovation, R&D, Digitalization, and AI

A Climate Adaptation Policy Blueprint: Systems Approach to Ukraine's European Union Integration

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Purpose

This project identifies technology-based climate adaptation actions that align with Ukraine's EU integration goals by applying systems thinking to assess feasibility, interdependencies, and implementation risks across agricultural and digital sectors.

Overview

- Key Risk Assessment Questions and Considerations
- Relevant CAP Mechanisms
- Key Barriers and Risk if Unaddressed
- Proposed Solutions to Key Barriers
- Funding
- Recommended Policy Action Plan (Risk Reduction)

Key Risk Assessment Questions and Considerations

- *How urgent is it to start replacing Ukraine's irrigation infrastructure and aging farming equipment?*
  - Assess impact on water efficiency and crop resilience
  - Delays risk escalating yield losses, non-alignment with EU standards

Key Risk Assessment Questions and Considerations

- *How urgent is it to start rolling out access plans for digital tools that help farmers meet EU standards for climate-aware farming?*
  - Assesses time sensitivity of deployment and compliance
  - Delay reduces momentum, increases long-term costs

Key Risk Assessment Questions and Considerations

- *How equipped is Ukraine's workforce in terms of digital skills, STEM education, and AI literacy to meet EU digital economy demands and prevent brain drain?*
  - Assesses if labor force can sustain and scale tech-driven adaptation
  - Talent outflow risks, weak implementation, long-term external dependency

Key Risk Assessment Questions and Considerations

- *How would you rate the agricultural sector's overall readiness to integrate with EU digital policies?*
  - Assesses current alignment of ag-tech ecosystem
  - Weak readiness becomes bottleneck for funding and participation

Key Risk Assessment Questions and Considerations

- *Can technical support be available for farmers at all stages of the process, from introduction to evaluation in the next three years?*
  - Tests feasibility of sustained support ecosystem
  - Absent adoption is fragmented, especially among smallholders

Key Risk Assessment Questions and Considerations

- *Over the next decade, how will Ukraine's ag-tech supply chain be responsive to market demand?*
  - Assesses adaptability of of supply systems
  - Rigidity could undermine adoption and reduce competitiveness

Relevant CAP Mechanisms: Policy (Support Alignment & Governance)

CAP Mechanism	Implementation Support	Risk Reduction
R.1: Enhancing performance through knowledge and innovation	Facilitates collaboration across EU-funded projects (e.g. EIP) and tech diffusion	Reduces fragmentation and siloed innovation; accelerates convergence with EU norms
R.2: Link Advice and Knowledge Systems	Integrates advisory, education, and research systems	Prevents misalignment between policy, practice, and innovation delivery
R.4: Linking income support to standards and good practices	Encourages compliance with climate-smart and sustainability standards	Reduces misuse of funds; ensures practices align with EU CAP rules
R.28: Environmental or climate-related performance through knowledge and innovation	Channels funding toward environmental/climate-related innovation	Reduces climate vulnerability and transition delays
R.40: Smart transition of the rural economy	Supports systemic digital and sustainable rural transformation	Prevents structural policy gaps in rural innovation strategies

Relevant CAP Mechanisms: Financial (Lower Cost, Expand Access)

CAP Mechanism	Implementation Support	Risk Reduction
R.3: Digitalising agriculture	Funds digital tools and precision ag systems	Reduces upfront costs of tech adoption for small/medium farms
R.5: Risk management	Introduces insurance and early warning systems	Mitigates economic losses from climate events or market shocks
R.6: Redistribution to smaller farms	Ensures support reaches vulnerable producers	Prevents sectoral inequality and insolvency in rural areas
R.9: Farm modernisation	Supports upgrades to machinery, energy, irrigation	Reduces exposure to inefficiency, input volatility, and outdated infrastructure
R.39: Developing the rural economy	Invests in rural innovation ecosystems	Prevents innovation deserts and over-reliance on imports or donor-driven tech

Relevant CAP Mechanisms: Institutional (Build Capacity & Participation)

CAP Mechanism	Implementation Support	Risk Reduction
R.10: Better supply chain organisation	Builds cooperatives, strengthens short supply chains	Reduces market fragmentation and post-harvest losses
R.36: Generational renewal	Attracts and supports young farmers and tech talent	Prevents brain drain and aging agricultural workforce
R.38: LEADER coverage	Engages local communities in rural development planning	Reduces institutional exclusion and project failure due to lack of buy-in
R.40: Smart transition of the rural economy	Connects rural areas digitally and economically	Reduces digital divide and peripheral economic stagnation

Key Barriers and Risk if Unaddressed

- *Policy*
- *Financial*
- *Institutional*

Key Barriers and Risk if Unaddressed: Policy

Data and tech policy landscape not aligned with EU or desirable in market

Risk: Limits support from public eligibility (CAP) and from private investment (tech companies see risk) with ambiguous or unclear policies

Key Barriers and Risk if Unaddressed: Financial

Needs more specific and equitable funding mechanisms for technology

Risk: Technology does not receive dedicated funding to support innovation; and/or technology funding only goes to certain farms, furthering inequities

Key Barriers and Risk if Unaddressed: Institutional

Contrasting perceptions of Ukraine as both a war-affected nation in need of support for sustainable tech transitions and a powerful agricultural economy with a robust IT sector

Risk: Focusing too much on Ukraine or creating the perception of such, that R&D is feeding into a new member at the expense of others

Proposed Solutions to Key Barriers

- Regularly reassess stakeholder needs and drive private investment through targeted engagement
- Allocate funding from both CAP pillars for inclusive ag-tech R&D and deployment
- Align with EU mechanisms by learning from transitions in states like Poland

Leveraging Data for Climate-Smart Agriculture & EU Integration

The common European agricultural data space

Farmers

Benefit:
Improve performance with enhanced decision-support systems
Data accessible for one entry point. Avoid vendor lock-in

Private sector

Benefit:
Exploitation of data will enhance EU industry
Boost AI industry for agriculture and create B2B marketplace

Public sector

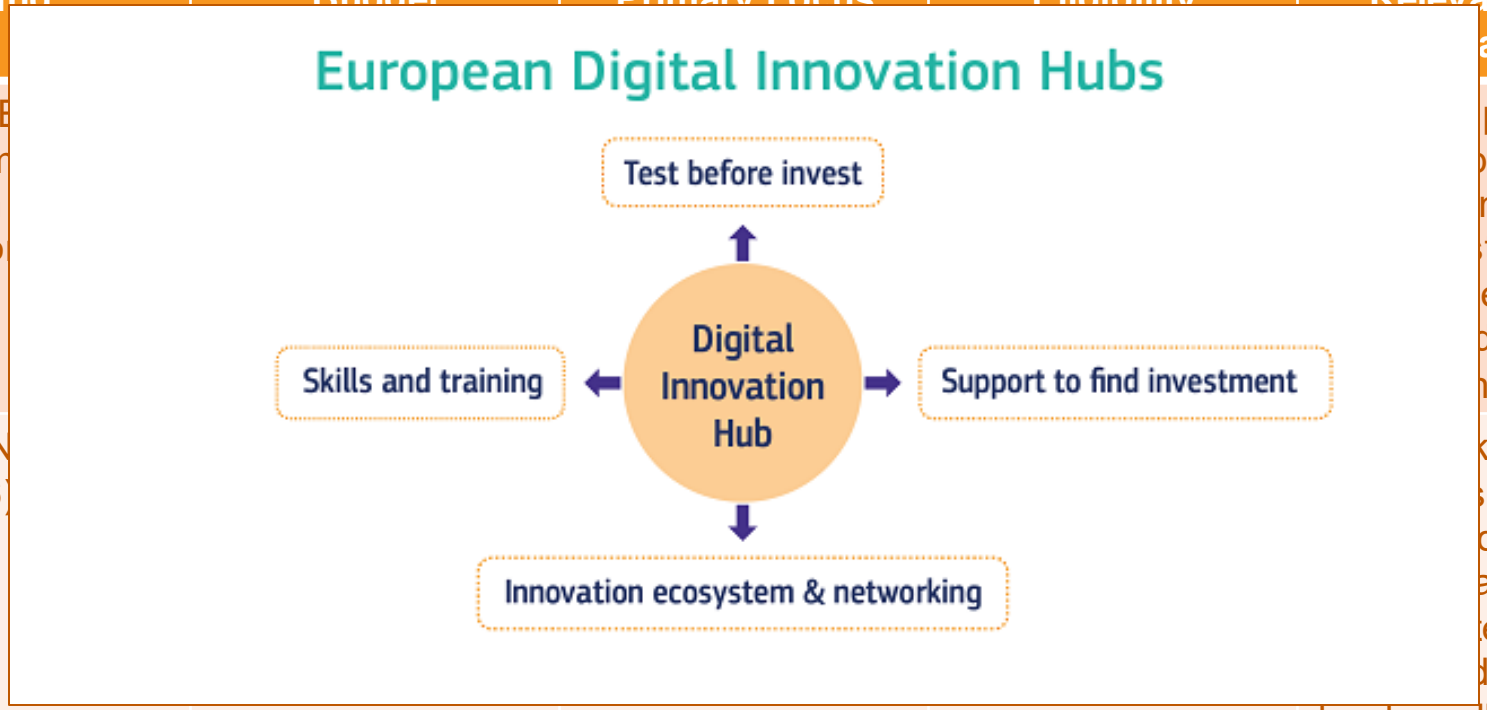
Benefit:
Sector analysis
Data across different fields can be used for policy monitoring

Potential EU Funding Sources for Tech-Driven Climate Adaptation

Fund	Budget	Primary Focus	Eligibility	Relevance to Ukraine
European Agricultural Guarantee Fund (EAGF)	€40.95B (2022)	Direct income support to EU farmers	Must be an *active farmer* in an EU member state, meeting land-use and income criteria	**Limited (pre-accession) –** sets the compliance target; useful for alignment but no direct funding access yet
European Agricultural Fund for Rural Development (EAFRD)	€95.51B (2021–2027)	Rural development programs (RDPs): competitiveness, sustainability, territorial balance	Participation in approved RDPs; eligibility linked to CAP frameworks	**Medium** – potential entry via technical assistance or pilot alignment programs with EU partners

Innovation-Focused EU Funds

Fund	Budget	Primary Focus	Eligibility	Relevance to Ukraine
DIGITAL E Programm European Innovartio (EDIHs)				pports pacity- nd tech trong fit e' IT d n hubs
HORIZON (Cluster 6)				kraine is s an d country; applied ech d cross- border collaboration



Recommended Policy Action Plan Objective and Timeline

Accelerate tech-driven climate adaptation while minimizing risks of inequitable access, misalignment, and underutilization

Recommended Policy Action Plan
Risk Reduction Strategies

- Stakeholder engagement
- Policy & regulatory alignment with EU
- Internal capacity review (skills, tools)
- Evidence-based planning via case studies

Recommended Policy Action Plan
Priority Actions (First 3 Steps)

- Map funding mechanisms (EU, public-private)
- Identify legal/policy barriers
- Build cross-sector partnerships (government, agri-tech, academia)

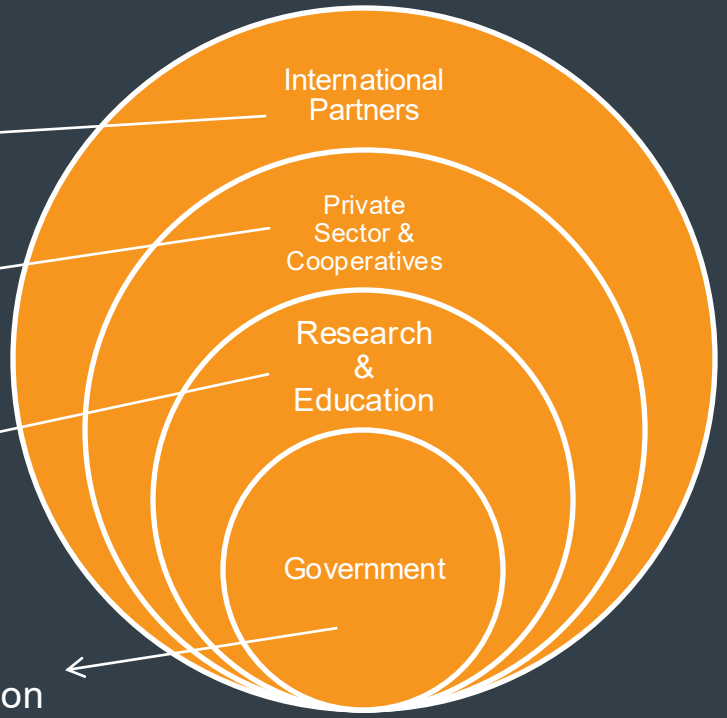
Recommended Policy Action Plan Ownership and Support

EU Commission (DG AGRI, HORIZON Europe)
World Bank
FAO
European Investment Bank (EIB)

Agri-tech firms
Farming cooperatives
Agribusiness platforms

Universities
Ukrainian Academy of Agrarian Sciences
R&D Centers

Ministry of Agriculture
Ministry of Digital Transformation



Thank you

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