

DISTENDER

Equilibrium for Climate Change

POLICY BRIEF

From Research to Local Action: How DISTENDER's Decision Support System Helps Cities Build Climate Resilience

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Introduction

This policy brief shows how the **DISTENDER project** applied its **decision support system (DSS)** across five **core case studies**, **Austria (BMK)**, **The Netherlands (HUAS)**, **Spain/Portugal (Dehesas/Montados)(EURAF)**, **Italy (Turin)(CMTo)**, and **Portugal (Guimarães)**, to **co-develop** and **evaluate** integrated adaptation and mitigation strategies.

DISTENDER AND THE DECISION SUPPORT SYSTEM TOOL

DISTENDER is an EU-funded project helping Europe design and prioritise robust climate adaptation and mitigation strategies.

The project integrates climate models, socio-economic scenarios, and stakeholder participation across five diverse case studies: **Austria (BMK)**, **The Netherlands (HUAS)**, **Spain/Portugal (Dehesas/Montados)(EURAF)**, **Italy (Turin)(CMTo)**, and **Portugal (Guimarães)**.

At the heart of DISTENDER is the **Decision Support System (DSS)**, which evaluates strategies across **five dimensions of robustness**:

- Cross-sectoral coherence
- Adaptation–mitigation synergies
- Socio-economic feasibility
- Effectiveness across climate scenarios
- Transferability across contexts

Each **adaptation and mitigation strategy** assessed by the DSS is classified according to two complementary dimensions:

STRATEGY TYPE

Referring to **the nature of the action** including governance, policies and institutions; infrastructure and nature-based solutions; knowledge, capacity and innovation; lifestyles, behaviour and culture; and finance and economy

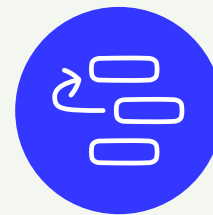
SECTOR TYPE

Referring to **the domain of impact** including AFOLU (Agriculture, Forestry and Other Land Use), built environment, energy, health, mobility/transport, water, and cross-sectoral/other.

Introduction

This **dual classification** helps decision-makers understand both **where** and **how** strategies perform best across Europe.

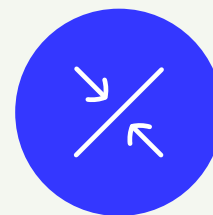
The DSS **translates complex data into practical**, ranked strategies based on 26 indicators, enabling decision-makers to:



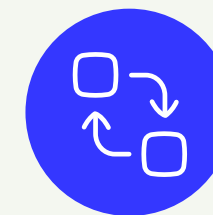
PRIORITISE no-regret actions that work under uncertainty



SAFEGUARD vulnerable sectors such as water, AFOLU, and health.



ALIGN with sustainability pathways (SSP1) for long-term feasibility.



REPLICATE successful solutions across European regions.

The key findings, challenges and opportunities, and policy recommendations from this process are presented for each case study in this policy brief.

POLICY INSIGHTS
FROM DISTENDER'S
CASE STUDIES

Austria

(BMK)



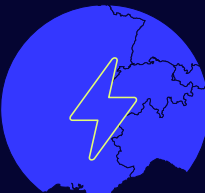
Key Findings By Strategy Type

BROAD PORTFOLIO: 75 adaptation and mitigation strategies distributed across Cross-sectoral/Other (15), Mobility/Transport (15), Energy (13), Built Environment (11), AFOLU (8), Water (8), and Health (5).

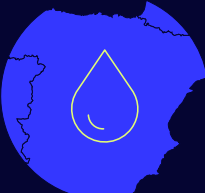
ROBUSTNESS: Governance, policies and institutions and infrastructure and nature-based measures score highest in positive interactions across sectors.

ADAPTATION–MITIGATION SYNERGIES: 96% of strategies show synergies between adaptation and mitigation objectives.

Key Findings By Sector Type



ENERGY & BUILT ENVIRONMENT
100% robust under DSS evaluation; highly synergistic with mitigation.



WATER
Around 75% of water sector strategies less robust due to climate sensitivity (precipitation and crop yields).



HEALTH
Underrepresented, with only 5 strategies in total.



TRANSFERABILITY
Governance (92%), lifestyle (91%), and water (100%) highly transferable; AFOLU and built environment more context dependent.

POLICY INSIGHTS FROM DISTENDER'S CASE STUDIES

Austria

(BMK)



Challenges & Opportunities

LOW CURRENT FEASIBILITY: financial and social capital deficits limit implementation of adaptation and mitigation strategies at present.

SECTORAL GAPS: health and water measures remain underrepresented in prioritized strategies.

EFFECTIVENESS ACROSS CLIMATE SCENARIOS: 75% of water sectors strategies less robust due to vulnerability to climate changes impacts on precipitation.

FEASIBILITY TODAY: infrastructure and governance-related strategies are most feasible at present; lifestyle and behavior change most challenging to implement due to need for significant social capital.

FUTURE FEASIBILITY: SSP1 trajectories (i.e., Sustainability) strongly improve feasibility, while other less desirable socio-economic scenarios (SSP3, 4, 5) render many strategies infeasible.

TRANSFERABILITY: Water (100%), governance (92%), and lifestyle (91%) strategies are most transferable across contexts, while AFOLU and built environment remain more context specific.

Policy Recommendations

INVEST IN ENABLING CONDITIONS for implementation of strategies (finance, incentives, social capital).

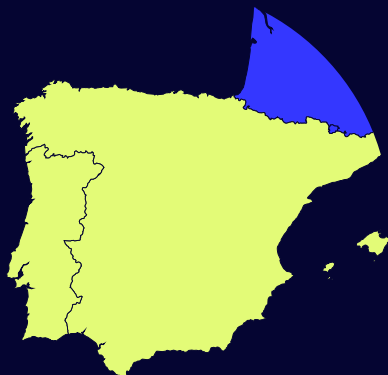
ALIGN POLICIES with a broader sustainability agenda (e.g., SSP1) to ensure long-term feasibility.

INTEGRATE HEALTH AND WATER STRATEGIES into the climate agenda to achieve a climate resilient future.

POLICY INSIGHTS
FROM DISTENDER'S
CASE STUDIES

Spain &
Portugal
(Dehesas &
Montados)

(EURAF)



Key Findings By Strategy Type

BROAD PORTFOLIO: 64 strategies distributed across AFOLU (23), Cross-sectoral/Other (14), Water (8), Built Environment (7), Energy (6), Mobility/Transport (4), and Health (2).

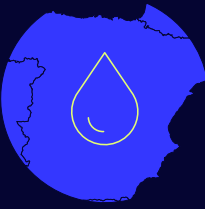
ROBUSTNESS: Governance, policies and institutions and infrastructure and nature-based strategies highly robust across all components.

ADAPTATION-MITIGATION SYNERGIES: 98% of strategies synergistic, particularly agroforestry and livestock reduction.

Key Findings By Sector Type



AFOLU
78% robust; highest-performing sector under DSS evaluation.



WATER
Moderately robust but highly climate-sensitive.



HEALTH
Medium robustness and transferability.



TRANSFERABILITY
Governance, biodiversity, and agroforestry strategies most transferable; irrigation-intensive or industrial measures least transferable.

**POLICY INSIGHTS
FROM DISTENDER'S
CASE STUDIES**

Spain & Portugal (Dehesas & Montados)

(EURAF)



Challenges & Opportunities

LOW CURRENT FEASIBILITY: Strong financial and social capital constraints limit implementation of adaptation and mitigation strategies at present.

EFFECTIVENESS ACROSS CLIMATE SCENARIOS: Effectiveness of AFOLU and water sector strategies highly sensitive to climate variability.

FEASIBILITY TODAY: Governance and infrastructure-related strategies moderately feasible; lifestyle and behaviour change, and knowledge and capacity building are weakest.

FUTURE FEASIBILITY: SSP1 creates an enabling environment that unlocks feasibility across many strategies; SSP5 creates limited gains.

TRANSFERABILITY: High for governance, biodiversity, agroforestry strategies; low for irrigation-intensive or industrial measures.

Policy Recommendations

DIRECT FINANCIAL SUPPORT and rural development tools to boost feasibility.

SAFEGUARD AFOLU/WATER with adaptive policies.

SCALE GOVERNANCE, BIODIVERSITY & AGROFORESTRY STRATEGIES to demonstrate solutions for learning across the EU.

POLICY INSIGHTS
FROM DISTENDER'S
CASE STUDIES

Portugal

(GUIMARÃES)



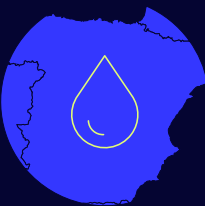
Key Findings By Strategy Type

BROAD PORTFOLIO: 55 strategies across AFOLU (13), built environment (10), energy (9), water (9), governance (8), mobility (5), and health (1).

ROBUSTNESS: Infrastructure and nature-based and governance strategies rank highest in robustness.

ADAPTATION–MITIGATION SYNERGIES: 96% synergistic across all strategy types.

Key Findings By Sector Type



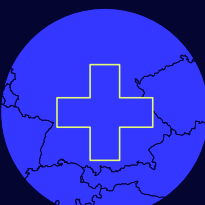
BUILT ENVIRONMENT & WATER
Around 60–75% of strategies not robust under changing climate conditions.



AFOLU & ENERGY
High synergy but medium robustness.



MOBILITY & GOVERNANCE
Highly transferable between contexts.



HEALTH
Underrepresented, showing need for integration.

**POLICY INSIGHTS
FROM DISTENDER'S
CASE STUDIES**

Portugal

(GUIMARÃES)



Challenges & Opportunities

EFFECTIVENESS ACROSS CLIMATE SCENARIOS: 75% of water strategies and 60% of built environment strategies not robust.

INSTITUTIONAL GAPS: limited municipal capacity and incentives.

FEASIBILITY TODAY: feasibility very low at present, especially for strategies related to the built environment and lifestyle and behavioural change.

FUTURE FEASIBILITY: feasibility improves under SSP1 and 5, particularly strategies related to governance, lifestyles and with the AFOLU sector. Feasibility remains weak under SSP3/4.

TRANSFERABILITY: governance, energy, mobility highly transferable between contexts; AFOLU-related strategies more context-dependent.

Policy Recommendations

STRENGTHEN municipal support, financial tools, and capacity building.

PRIORITISE decentralised energy and governance reforms.

SAFEGUARD vulnerable sectors (water, built environment) with flexible policies.

POLICY INSIGHTS
FROM DISTENDER'S
CASE STUDIES

Italy
(Turin)

(CMTO)



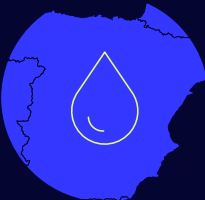
Key Findings By Strategy Type

BROAD PORTFOLIO: 75 strategies distributed across water (14), built environment (13), mobility (11), energy (10), AFOLU (9), health (7), and governance (11).

ROBUSTNESS: Infrastructure and nature-based and governance strategies most robust (~79%).

ADAPTATION–MITIGATION SYNERGIES: 96% of strategies synergistic; key trade-off identified in biomass for heating.

Key Findings By Sector Type



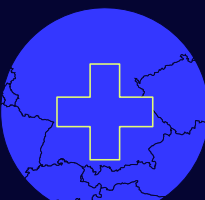
WATER & BUILT ENVIRONMENT
Highest robustness (79%) and strong adaptation–mitigation potential.



AFOLU
Low current feasibility.



ENERGY
Generally robust but risks mitigation setbacks from biomass reliance.



HEALTH
Increasingly important under heat impacts but underdeveloped.

**POLICY INSIGHTS
FROM DISTENDER'S
CASE STUDIES**

Italy (Turin)

(CMTO)



Challenges & Opportunities

LOW CURRENT FEASIBILITY: especially in AFOLU and built environment.

EFFECTIVENESS ACROSS CLIMATE SCENARIOS: water and health strategies depend heavily on precipitation/temperature changes.

OVER-RELIANCE ON BIOMASS: risks mitigation setbacks.

FEASIBILITY TODAY: implementation of most strategies limited by financial/social/human capital at present.

FUTURE FEASIBILITY: feasibility improves under SSP1 and 5, especially strategies related to governance and lifestyles.

TRANSFERABILITY: lifestyle, mobility, health highly transferable across contexts; infrastructure and AFOLU context-specific.

Policy Recommendations

ADDRESS capital deficits for implementation of strategies in the AFOLU and built environment sectors.

PRIORITISE green/blue infrastructure and heat-health systems for their synergies and effectiveness.

AVOID biomass lock-ins; pursue electrification/efficiency.

PROMOTE transferable governance, mobility, and health solutions.

POLICY INSIGHTS
FROM DISTENDER'S
CASE STUDIES

The Netherlands

(HUAS)



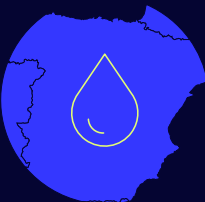
Key Findings By Strategy Type

BROAD PORTFOLIO: 64 strategies covering AFOLU (16), governance (13), built environment (10), water (10), energy (7), mobility (6), and health (2).

ROBUSTNESS: Knowledge, capacity and innovation strategies highest in robustness (89%), followed by governance.

ADAPTATION-MITIGATION SYNERGIES: 95% synergistic; trade-offs noted in flight caps (economic loss) and peatland building bans (development loss).

Key Findings By Sector Type



WATER
80% robust but highly sensitive to climate change.



AFOLU
35% robust - lowest among all sectors due to vulnerability to emissions and soil carbon loss.



ENERGY & MOBILITY
Moderate feasibility and transferability.



HEALTH & KNOWLEDGE
High potential for replication across the EU.

**POLICY INSIGHTS
FROM DISTENDER'S
CASE STUDIES**

The Netherlands

(HUAS)



Challenges & Opportunities

LOW CURRENT FEASIBILITY: across all CCSs; constrained by social and financial capital limiting implementation.

EFFECTIVENESS ACROSS CLIMATE SCENARIOS: strategies weakest in water (73%) and AFOLU (35%) sectors.

GEOGRAPHIC SPECIFICITY: peatland/polder measures hard to transfer.

FEASIBILITY TODAY: very low feasibility for many strategies at present; those in the mobility and water sector less constrained.

FUTURE FEASIBILITY: feasibility improves for many strategies under SSP1; SSP3/5 selective gains.

TRANSFERABILITY: lowest among CCSs (66%); knowledge/energy/health more portable than AFOLU/water.

Policy Recommendations

INVEST in social and financial capital to unlock feasibility.

SAFEGUARD AFOLU/water with adaptive strategies.

PAIR trade-off policies with economic just transition tools.

SCALE KNOWLEDGE/INNOVATION and health strategies for EU-wide learning.

Policy Conclusions

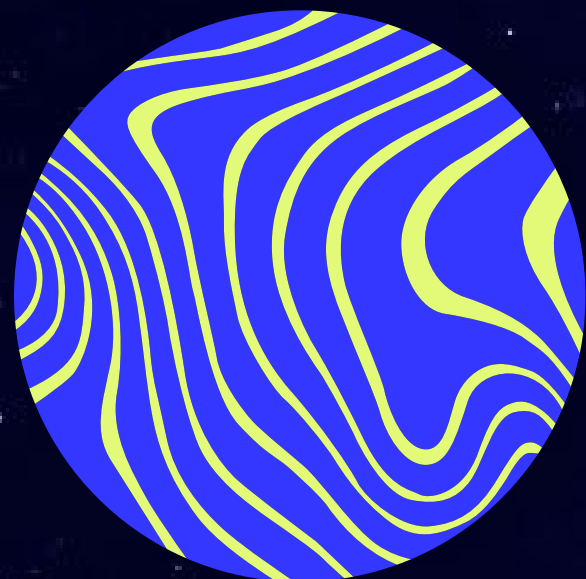
GUIDING LOCAL CLIMATE ACTION: POLICY RECOMMENDATIONS & THE CONTRIBUTION OF THE DSS

Across all core case studies, DISTENDER's findings highlight several priorities for strengthening local and regional climate action:

- Policymakers should **invest in enabling conditions**, addressing the financial, social, and human capital gaps that remain the main barriers to implementation.
- The **SSP1 pathway** should serve as a policy compass, as it consistently improves the feasibility and coherence of adaptation and mitigation strategies.
- To ensure long-term resilience, it is essential to **protect vulnerable sectors**, particularly water, AFOLU, health, and the built environment, through flexible and adaptive measures.
- Authorities should also **scale governance and knowledge-based strategies**, which have proven consistently robust, feasible, and transferable across European regions.
- Encouraging **transferable solutions**, especially in governance, lifestyle, and innovation, will enhance replication potential, while locally tailoring strategies in AFOLU and water sectors will ensure contextual relevance.
- Finally, **clustering strategies** that integrate water, energy, and mobility can maximise synergies and reduce trade-offs.

The **DISTENDER DSS** supports these recommendations by offering **evidence-based guidance** through 26 indicators, **stress-testing strategies under uncertainty**, and applying a **transferability lens** to identify and replicate what works across Europe.

Together, these insights help local and regional authorities design robust, integration, and future-proof climate strategies.



DISTENDER

Equilibrium for Climate Change

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SOURCES

→ [D6.3: ROBUST ADAPTATION AND MITIGATION POLICIES AND STRATEGIES](#)

AUTHORS

→ EVA LOERKE (UKCEH)

→ LOKENDRA KARKI (UKCEH)

→ JOANA FERREIRA (UAVR), SÍLVIA COELHO (UAVR)

→ SÍLVIA COELHO (UAVR)

→ HÉLDER RELVAS (UAVR)

→ SILVESTRE GARCÍA DE JALÓN (UPM)

→ ANITA LAZURKO (UKCEH)

FOR FURTHER INFORMATION

→ INFO@DISTENDER.EU

→ WWW.DISTENDER.EU

