DevelopIng STratEgies by integrating mitigatioN, aDaptation and participation to climate changE Risks

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- DevelopIng STratEgies by integrating mitigatioN, aDaptation and participation to climate changE Risks (DISTENDER)
- Topic : Better understanding of the interactions between climate change impacts and risks, mitigation and adaptation options
- Funding Institution: European Commission, Horizon Europe. **Climate sciences and responses** (HORIZON-CL5-2021-D1-01-05) + UK.
- Funding budget for EU partners: 6.4 M EUR + United Kingdom contribution (0.6 m EUR).
- Partners: 31 partners from 13 countries: Austria, Germany, Greece, Hungary, Italy, Lithuania, Netherlands, Poland, Slovenia, Portugal, Spain, Ukraine and United Kingdom
- Project Duration: 06/2022-11/2025 (42 months)
- Core Case Studies: Guimaraes (PT), Hanze University (HUAS) (NL), Turin (IT), Austria Government (BMK) (AT) and EURAF (FR).
- Followers: Lviv (UA), Miskolc (HU), GOLEA (SI), GDANSK (PL), VCE (ES) and ALCORCON (ES)
- Coordinator: Technical University of Madrid (UPM)

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DISTENDER will

- ✓ develop a methodological framework to bring together adaptation and mitigation strategies against the risks of climate change and to enable their creation through.
- ✓ use a participatory processes of those involved in decision-making about strategies.
- ✓ produce localized climate, bio-physical and economic information for quantitative and qualitative analyses.
- ✓ apply the methodologies from five core case studies at national, regional, and local levels.
- ✓ take into account cross-sectoral-scale impacts to improve the understanding of interactions, synergies and trade-offs of the climate strategies.
- ✓ support the replication with by five follower case studies enabling further cities and regions to plan their climate change strategies in a transversal and interdisciplinary way.
- ✓ develop a Decision Support System to help policy makers to take the most out of the knowledge, tools and recommendations generated by DISTENDER.

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CALL vs DISTENDER

Deliver progress in integrating the analysis of the impacts and risks of climate change, mitigation pathways and adaptation strategies into a single framework to help understand and quantify their numerous interactions

Integrate state of the art climate science stemming from Earth System Models, Reduced Complexity Models and similar into a common integrated assessment framework

Improve the general understanding of the synergies, conflicts and trade-offs between mitigation and adaptation strategies.

Non linear impacts and biophysical models for multiple sectors (air quality, health, water, agricultural and energy).

Methodological framework for integration adaptation and mitigation strategies, analyzing synergies and trade-offs.

Vulnerability and risk assessment methodology multi-scale.

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CALL vs DISTENDER

Better knowledge about the risk and impacts of climate change and their interaction with mitigation pathways, including their feasibility across various scenarios of global warming.

Actions should explore effective ways for bridging the gap between modelling theory and practical applications, including through active involvement of and co-creation with stakeholders.

Formulate a set of technical and policy recommendations to reduce the tensions between mitigation (global) and adaptation strategies (local).

Synergies with relevant EU climate projects

Methodology to develop local climate and socio-economic scenarios

Stakeholder engagement and co-creation methodology

Co-develop strategies and testing the robustness across multiple scenarios

Five core case studies and six followers

Networking activities and active plan of communication, dissemination and exploitation

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ADAPTATION vs MITIGATION

Adaptation actions enhance the adaptive capacity of human and natural systems to the changing climate and increase their resilience to vulnerabilities and impacts.

Adaptation actions happen locally and are more context specific to local realities and capacities

Mitigation refers to actions that reduce anthropogenic greenhouse gas (GHG) emissions by switching to low-carbon energy systems and increasing carbon sinks, such as forests, vegetation, and soil.

Mitigation actions are mainly addressed at a larger scale (national)

Different sets of stakeholders and actors are involved in each domain, with limited inter-communication

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ADAPTATION + MITIGATION

Achieving synergistic and integrated climate action requires effectively linking mitigation and adaptation and realizing a framework for identifying and assessing synergies and trade-offs. This framework will be developed in DISTENDER.

Example (trade-off): Adapting to increased precipitation by building new drainage systems; but these grey infrastructures are built with high-emission grey materials and may have a negative impact on climate mitigation efforts that lead to an overall increase in GHG emissions.

Example (synergy): Ecosystem based adaptation uses the power of natural ecosystems, such as mangrove forests and healthy soils, to provide adaptation functions while acting as a carbon sink for mitigation.

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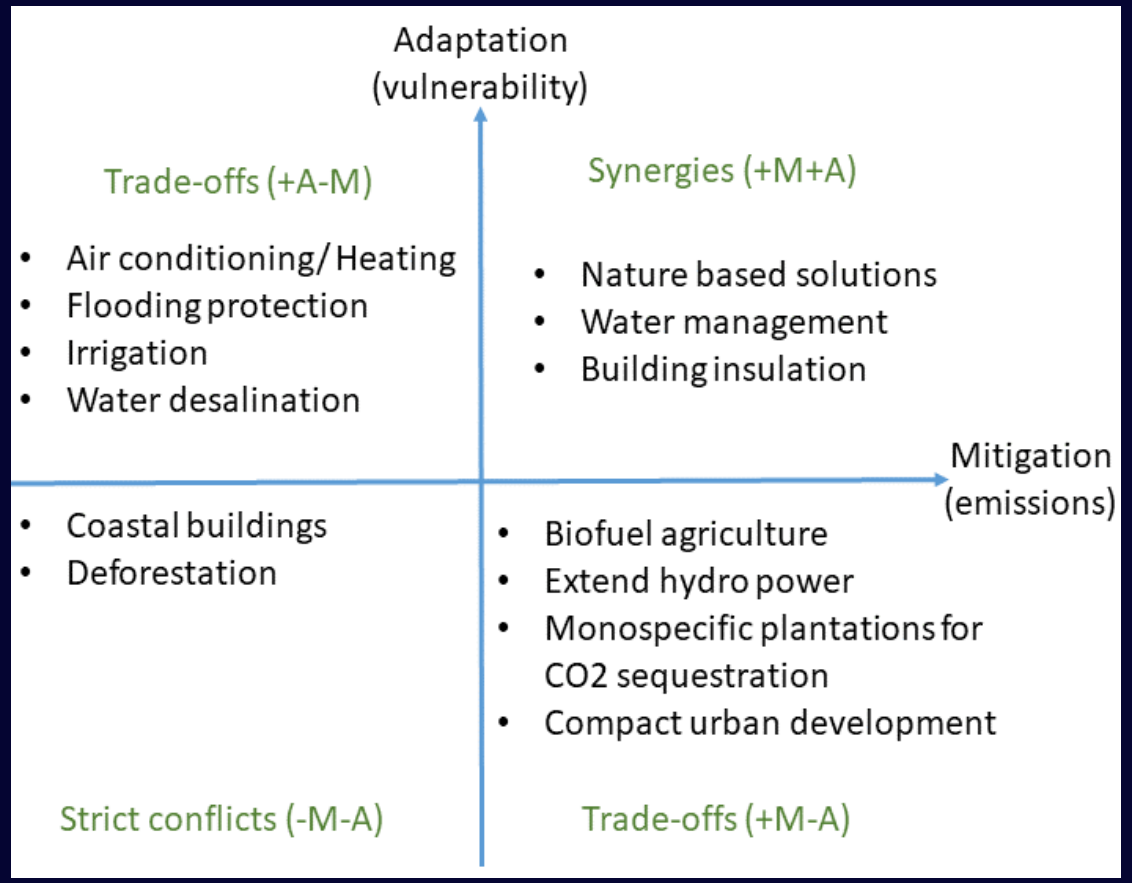
ADAPTATION & MITIGATION

DISTENDER increases the general understanding of the synergies, conflicts and trade-offs between mitigation and adaptation strategies, examining multi-scale and multi-sector interactions of them.



Adaptation (A) : Local scale, bottom-up approaches

Mitigation (M): Global scale, top-down approaches

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ADAPTATION & MITIGATION

Assessing trade-offs and synergies requires a conceptual understanding of the relationships between mitigation and adaptation.

DISTENDER Solution →

Apply bio-physical, social and economic multi-scale and cross-sectorial modelling tools under future climate and socio-economic scenarios to develop cross-reference GHG emission and vulnerability assessments

Allows to answer

Adaptation → Impacts on emissions?

Action is vulnerable and increase or decrease the resilience? ← Mitigation

To get the objective ←

Maximize synergies and minimize trade-offs through joint objectives

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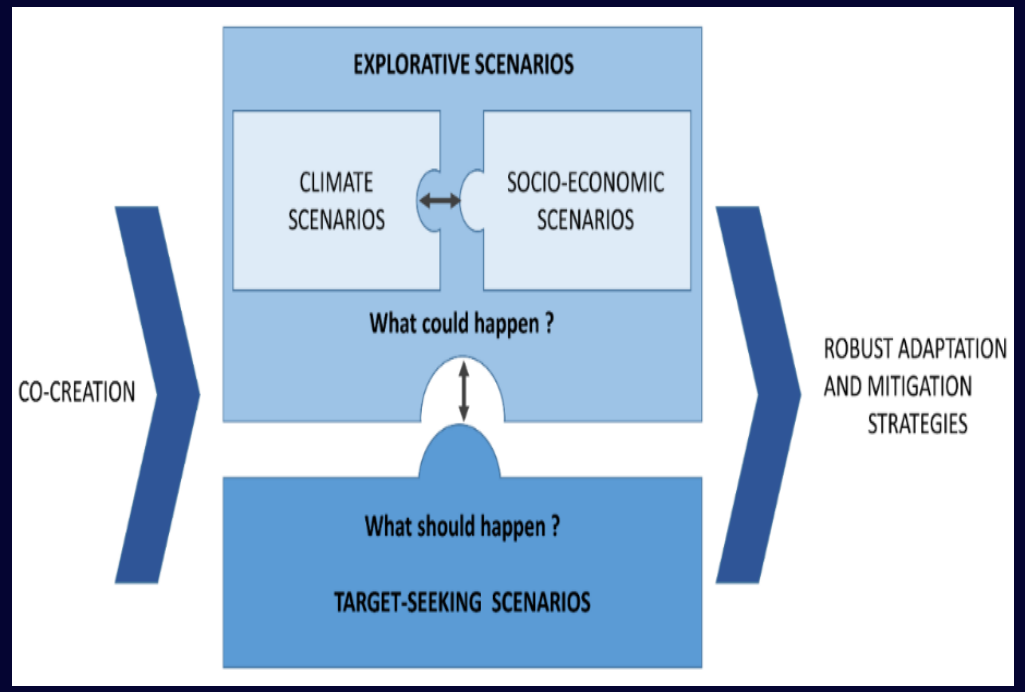
SCENARIOS PLANNING

- Exploratory scenarios to examine a range of possible future scenarios based on indirect drivers (socio-economic) and direct drivers (climate change).
- Exploratory scenarios will be integrated with “target-seeking” or normative scenarios for examining the viability and effectiveness (robustness) of alternative integrated strategies.
- DISTENDER proposes an integrated top-down and bottom-up approach to guidance for adaptation and mitigation that begins with the evaluation of exposure and vulnerability to different hazards under several local climate (top-down) and socio-economic scenarios (bottom-up).
- Robustness checks to examine their suitability for different contextual futures (scenarios) will be done. Feasibility and effectiveness checks will prioritize actions.



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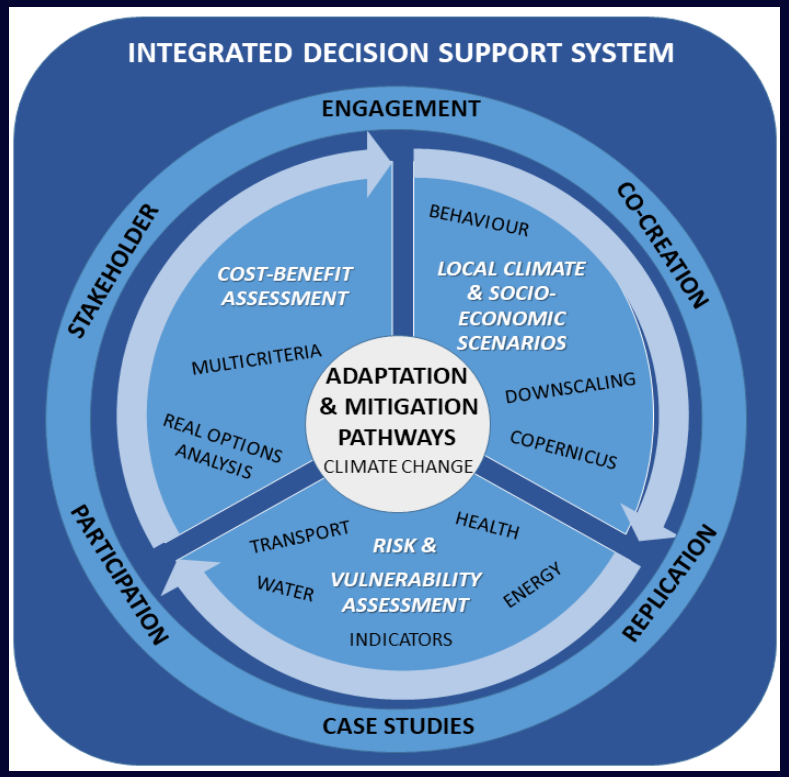
OBJETIVES

- **Participatory** development of **localized socio-economic scenarios** using **co-creation** for **the stakeholder engagement** process
- Produce **localized climate storylines** through a **downscaling** framework
- **Risk and vulnerability assessment** based on a set of bio-physical, social and economic indicators produced by a wide range of multi-scale and cross-sectorial models
- **Robust adaptation and mitigation actions and policies** from a suite of harmonized strategies constructed through participatory methods
- Sectoral, integrated and economy-wide **economic evaluation** of climate strategies
- Test and replication of the outcomes of the project through **five core case studies.**
- Develop a **Decision Support System** (DSS) that will offer a transferable set of information sources that support the integration of adaptation and mitigation actions into practice including a **multi-criteria decision analysis** to help select the preferred strategies and rank the options.



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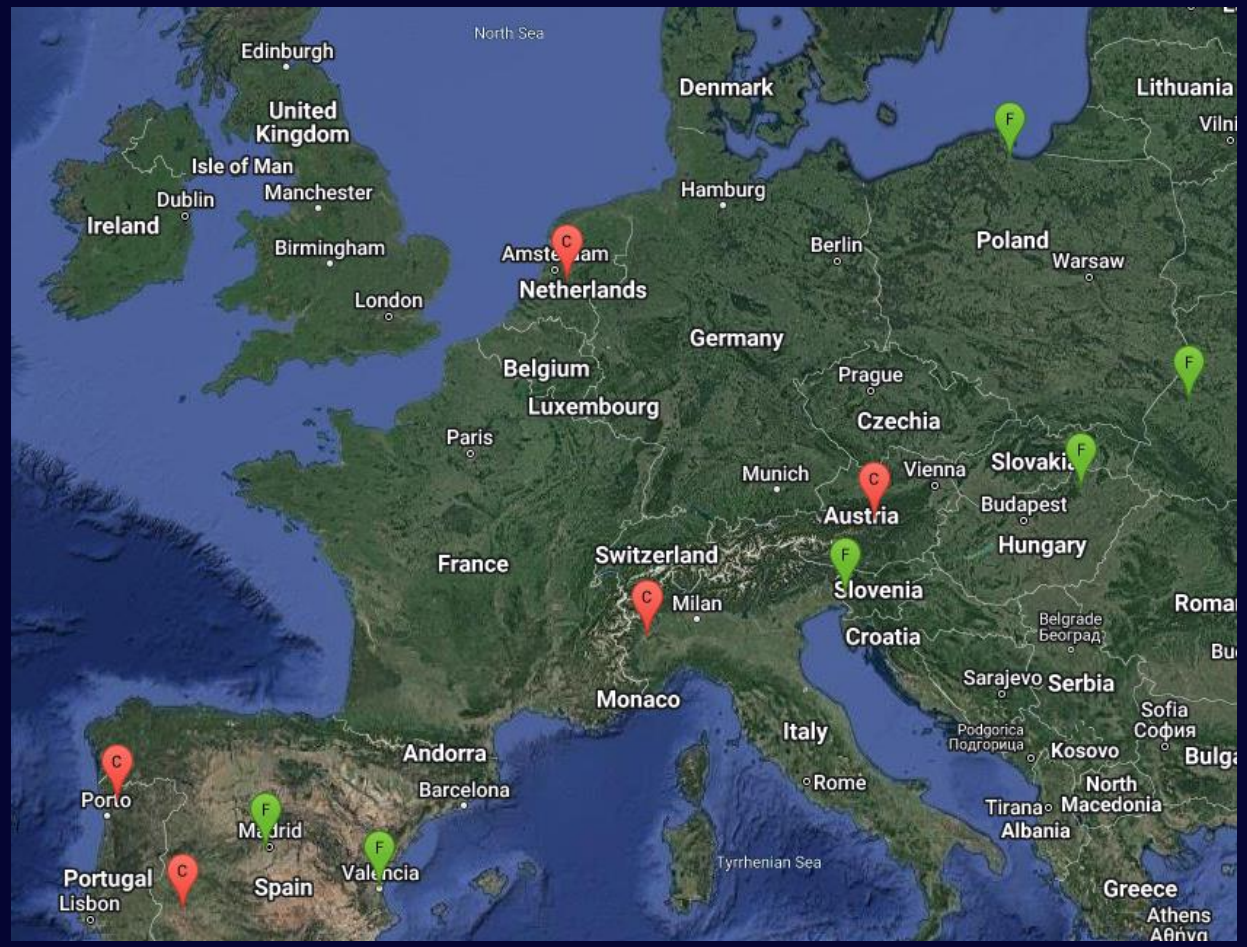
CASE STUDIES

- Core Case Studies:
  - Austria (national scale); Federal Ministry For Climate Protection, Environment, Energy, Mobility, Innovation And Technology (BMK)
  - North-east of The Netherlands (regional scale); The Netherland Water Management Authority represented by Hanze University (HUAS)
  - South-West Iberian Peninsula, Dehesa-Montado (regional scale) European Agroforestry Federation (EURAF)
  - Metropolitan City of Turin in Italy (regional/urban scale)
  - Guimaraes City in Portugal (urban scale)
- Follower case studies: Alcorcón (Spain), LVIV (Ukraine), Miskolc (Hungary), Nova Gorica represented by GOLEA (Slovenia), Gdansk (Poland) and Valencia represented by VCE (Spain).



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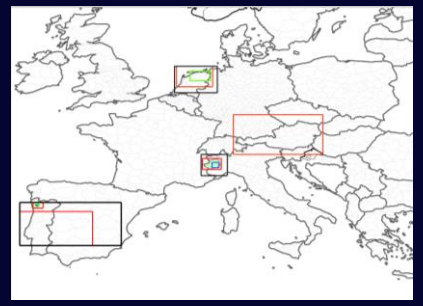
EUROPE

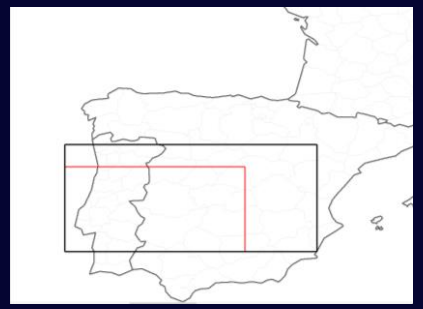


5 CASE STUDIES

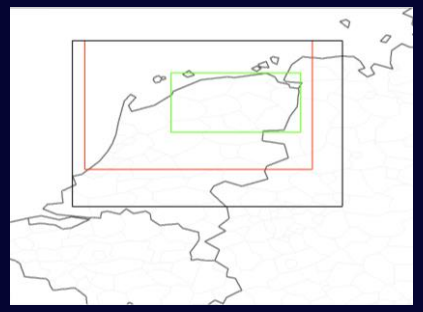
NATIONAL

AUSTRIA

REGIONAL

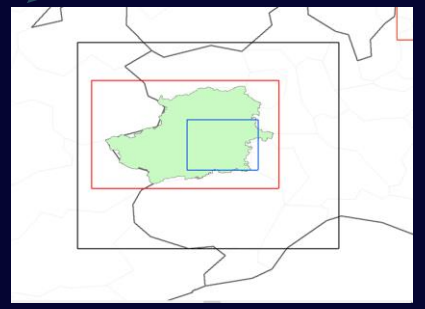


DEHESA-MONTADO

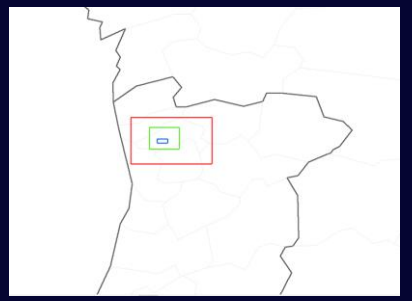


NORTH-EAST NETHERLANDS

URBAN



METROPOLITAN CITY OF TURIN



GUIMARAES

MULTIPLE-SCALES CASE STUDIES

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CASE STUDIES & SECTORS

	Austria	Iberian-Pen. (ES-PT)	North-east of NL	Guimarães (PT)	Turin (IT)
Climate impact resilience		X	X	X	X
Agriculture, Forestry and Land Management		X	X	X	X
Land use planning	X		X	X	X
Biodiversity		X		X	X
Urban and infrastructure	X		X	X	
Transport	X			X	X
Financial	X				
Energy			X	X	
Health & Lifestyles	X				

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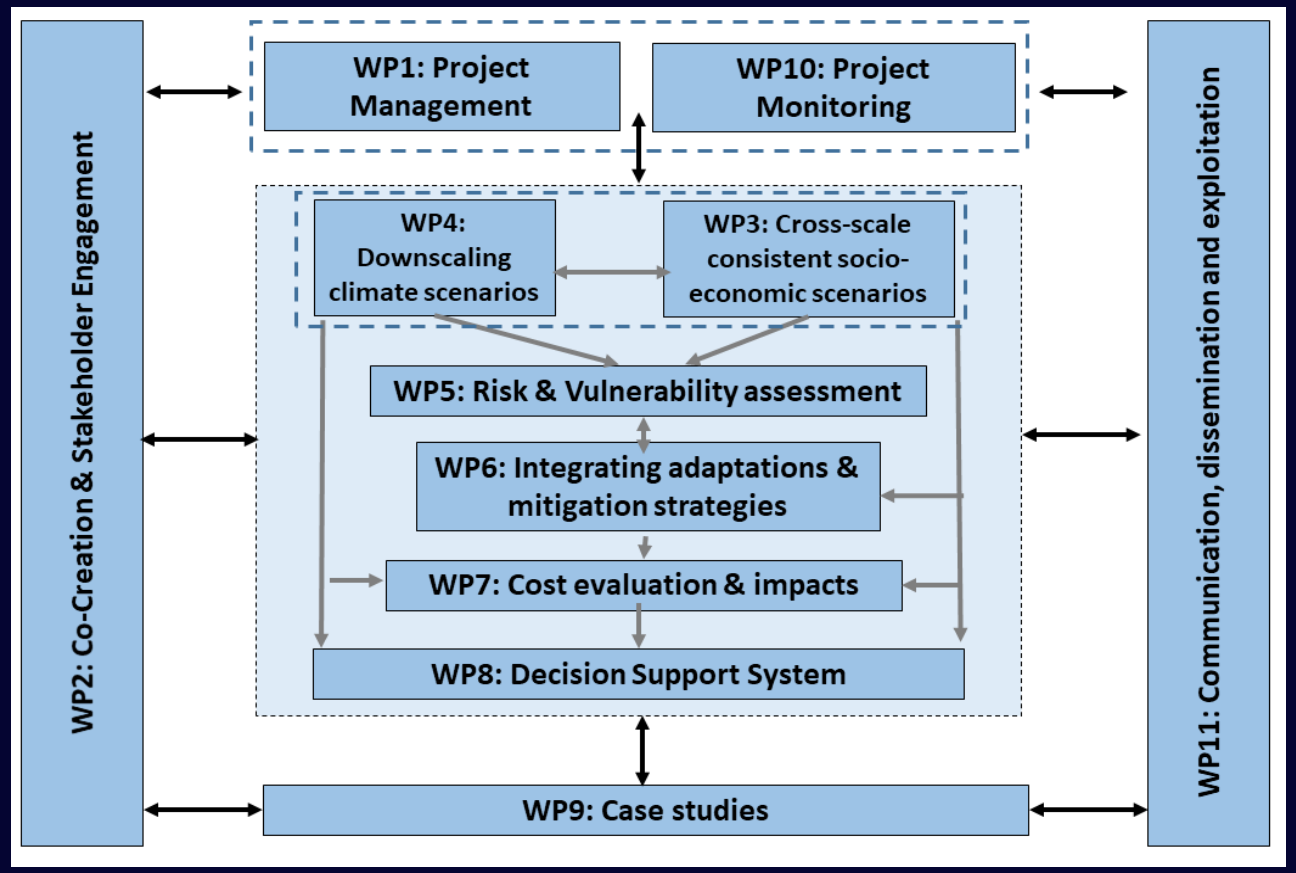
IMPLEMENTATION

- The explorative scenarios will integrate local socio-economic scenarios (WP3) and downscaled climate scenarios (WP4).
- Participatory co-creation methods (WP2) will be utilized in the development of the socio-economic scenarios (WP3) and strategies (WP6) for the CCS (WP9).
- The scenarios will be evaluated in WP5 (risk and vulnerability) and WP7 (economic evaluation).
- The DSS (WP8) will allow the replication and upscaling of the DISTENDER methodologies and tools in other cities and regions.
- Outcomes will be communicate, disseminate and exploit in WP11.
- The project will be managed in WP1 and monitored (progress and impact) by WP10,



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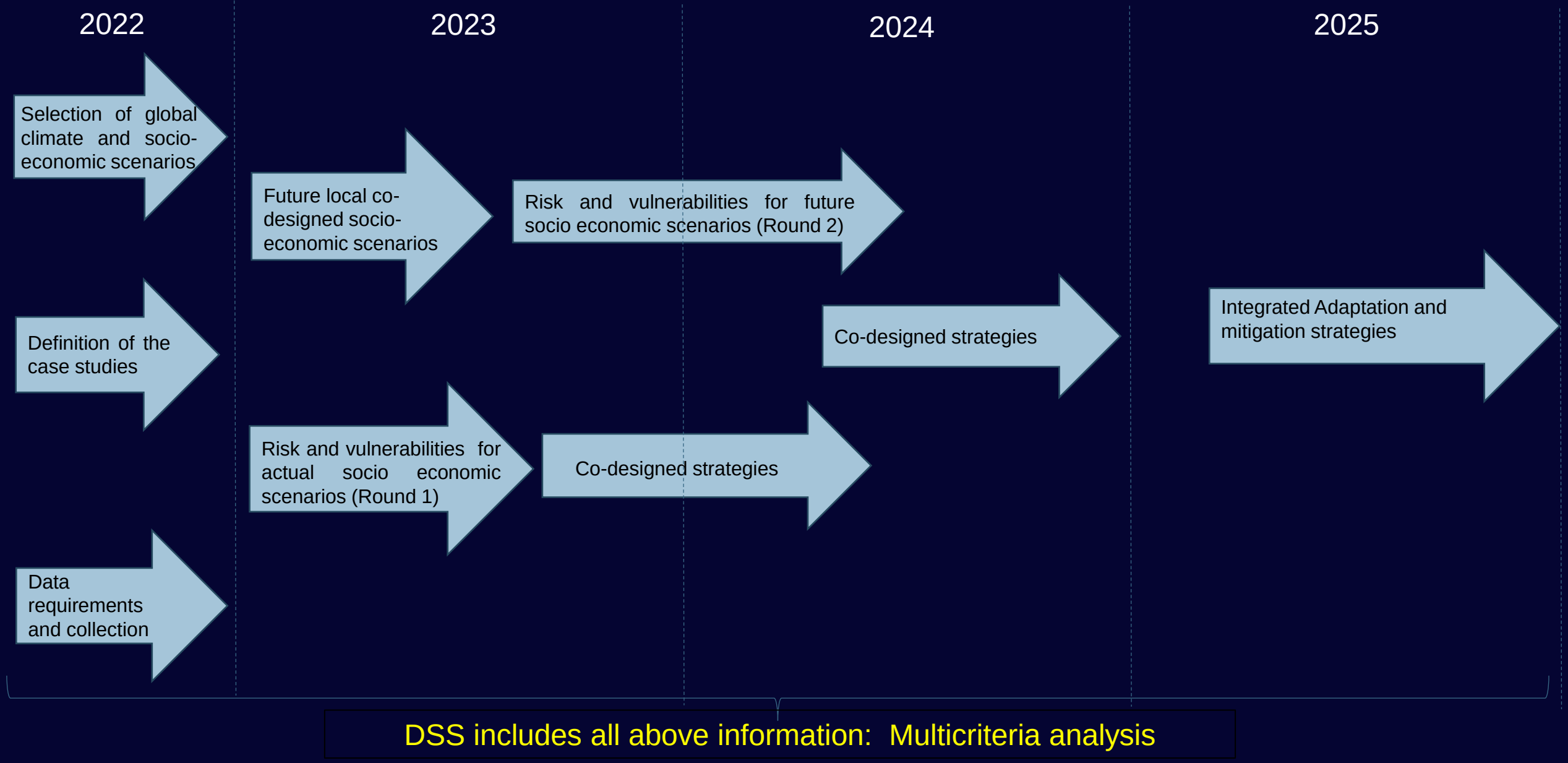

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DISTENDER TEAM

- DISTENDER is bringing together the critical mass of scientific leading institutions in the fields:

  - 1. Earth Observation
  - 2. Atmospheric/climate modelling
  - 3. Economics
  - 4. Urban thermal environment
  - 5. Urban and spatial sustainable planning
  - 6. Social behavior
  - 7. Active nation/association/cities

with experience in adaptation/mitigation plans

  - 21 public-body and 10 non-public body

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No.	Participant Legal Name	Country
1 (C)	UNIVERSIDAD POLITECNICA DE MADRID (UPM)	ES
2	ETHNIKO KAI KAPODISTRIAKO PANEPISTIMIO ATHINON (NKUA)	EL
3	FONDAZIONE ICONS (ICONS)	IT
4	UNIVERSIDADE DE AVEIRO (UAVR)	PT
5	UNIVERSITAET ZU KOELN (UoC)	DE
6	WAGENINGEN UNIVERSITY (WUR)	NL
7	ITTI SP Z.O.O. (ITTI)	PL
8	JOHANN WOLFGANG GOETHE-UNIVERSITAET FRANKFURT AM MAIN (GUF)	DE
9	STEINBEIS 2I GMBH (S2i)	DE
10	ADELPHI RESEARCH GEMEINNUTZIGE GMBH (ADELPHI)	DE
11	UK CENTRE FOR ECOLOGY & HYDROLOGY (UKCEH)	UK
12	URBANISTICNI INSTITUT REPUBLIKE SLOVENIJE (UIRS)	SI
13	FONDAZIONE LINKS - LEADING INNOVATION & KNOWLEDGE FOR SOCIETY (LINKS)	IT
14	DINAMIKA - IDEJA – PROSTOR (DIPSTOR)	SI
15	RDA - CLIMATE SOLUTIONS UNIPESSOAL LDA (RDA)	PT
16	UNIVERSITAET GRAZ (U-GRAZ)	AT
17	SENIOR EUROPA SOCIEDAD LIMITADA (KVC)	ES
18	FUNDACION PARA LA INVESTIGACION DEL CLIMA (FIC)	ES
19	UNIVERSITA COMMERCIALE LUIGI BOCCONI (UB)	IT
20	MUNICIPAL INSTITUTION CITY INSTITUTE (LVIV)	UA
21	CITTA' METROPOLITANA DI TORINO (CMTo)	IT
22	MISKOLC MEGYEI JOGU VAROS ONKORMANYZATA (MISKOLC)	HU
23	GORISKA LOKALNA ENERGETSKA AGENCIJA, NOVA GORICA (GOLEA)	SI
24	BUNDESMINISTERIUM FUER KLIMASCHUTZ, UMWELT, ENERGIE, MOBILITAET, INNOVATION UND TECHNOLOGIE (BMK)	AT
25	EUROPEAN AGROFORESTRY FEDERATION ASSOCIATION (EURAF)	FR
26	MUNICIPIO DE GUIMARAES (GUIMARAES)	PT
27	GDANSK MIASTO NA PRAWACH POWIATU (GDANSK)	PL
28	FUNDACIO DE LA COMUNITAT VALENCIANA OBSERVATORI VALENCIA DEL CANVI CLIMATIC (VCE)	ES
29	SMART CONTINENT LT UAB (SC)	LT
30	STICHTING HANZEHOGESCHOOL GRONINGEN (HUAS)	NL
31	AYUNTAMIENTO DE ALCORCÓN (ALCORCON)	ES

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Thank you!

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