

SuPeRBE Training Material

Macro Area of Expertise:

1 Climate change and built environment

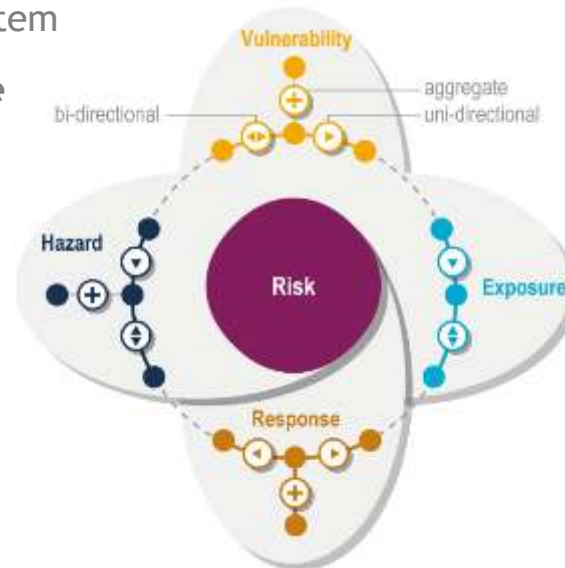
Area of Expertise:

1.2 Policies and governance for climate adaptation

Level of competence:3

CLIMATE RISK

- Potential for adverse consequences of a climate-related hazard on human or ecological systems
- Results from dynamic interactions between climate-related hazards with the exposure and vulnerability of the affected human or ecological system
- **Risk = vulnerability + exposure + hazard + response**
- **Risk management** - plans, actions, strategies, or policies to reduce the likelihood and/or magnitude of adverse potential consequences, based on assessed or perceived risks



COMPONENTS OF RISK

Hazard:

- “The potential occurrence of a natural or human-induced physical event or trend that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems, and environmental resources.” (<https://www.ipcc.ch/sr15/chapter/glossary/>)

Vulnerability:

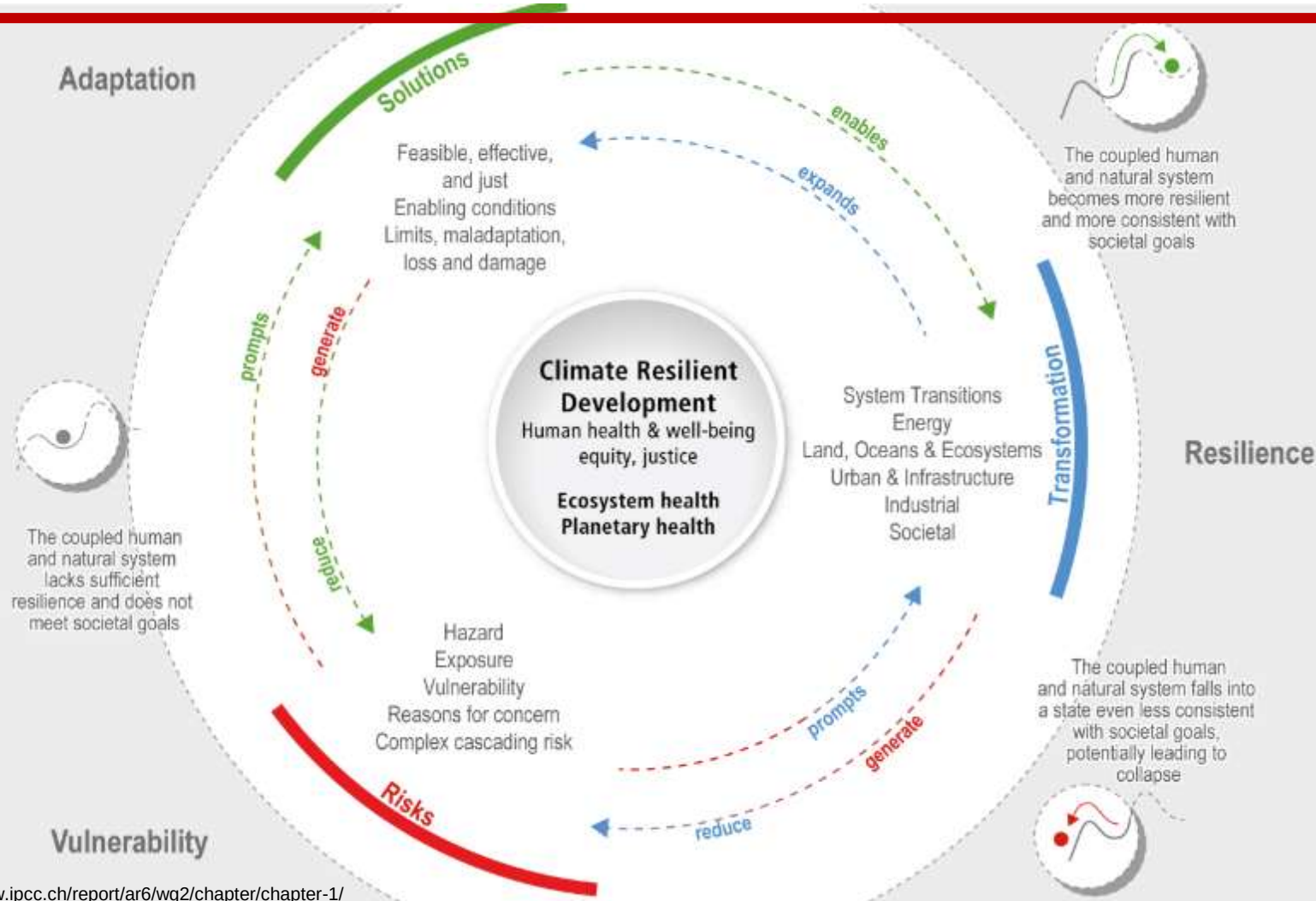
- “The propensity or predisposition to be adversely affected” (<https://www.ipcc.ch/sr15/chapter/glossary/>)

Exposure:

- “The presence of people; livelihoods; species or ecosystems; environmental functions, services, and resources; infrastructure; or economic, social, or cultural assets in places and settings that could be adversely affected” (<https://www.ipcc.ch/sr15/chapter/glossary/>)

Response (Adaptive capacity):

- “The ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences” (<https://www.ipcc.ch/sr15/chapter/glossary/>)



CLIMATE RISK AND VULNERABILITY ASSESSMENT (RVA)

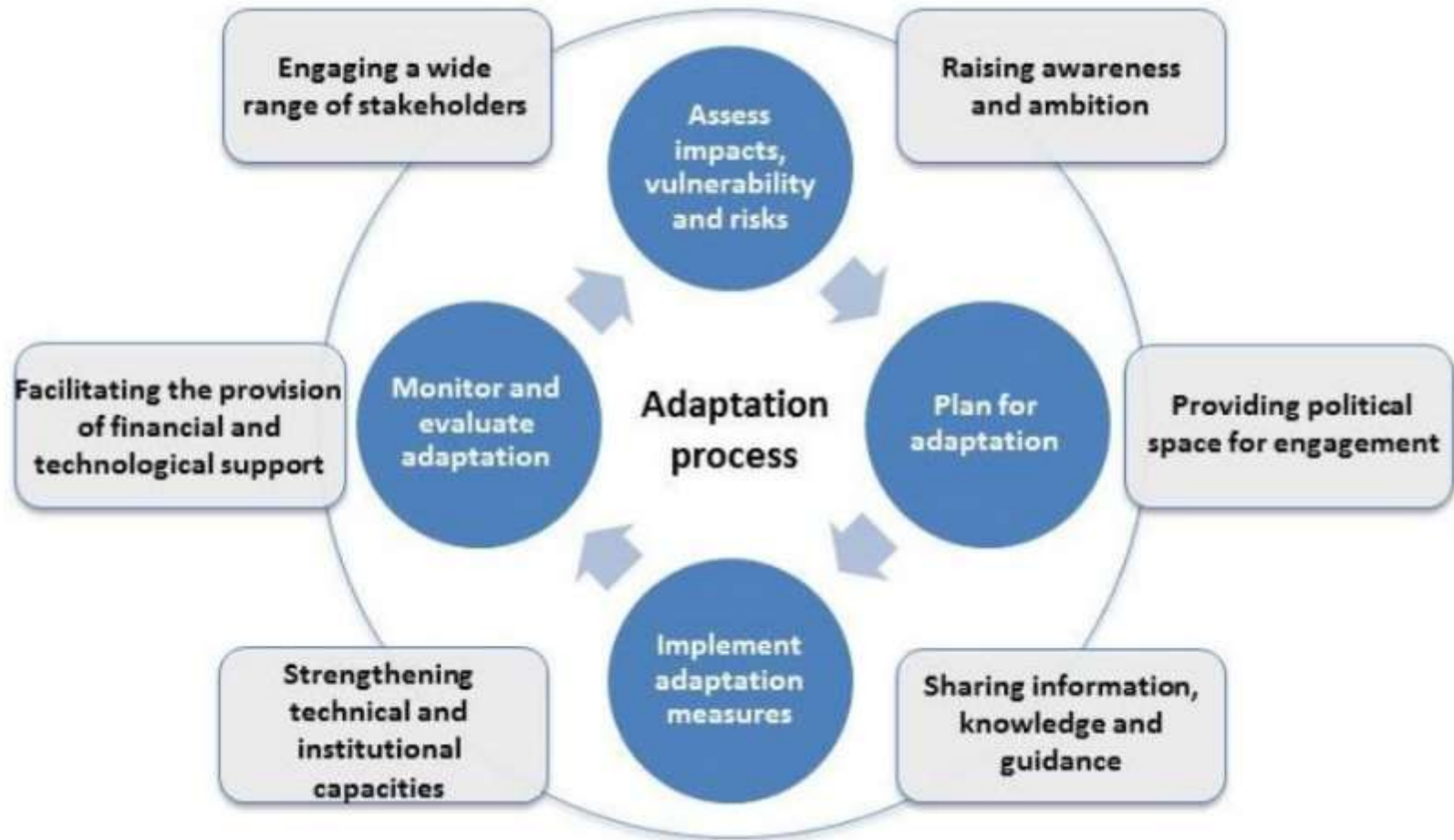
- The qualitative and/or quantitative scientific estimation of risks
- A tool for understanding how likely communities, systems, or sectors are to be affected by climate change, and what can be done to adapt
- Identifies short- and long-term climate risks to build resilience in development projects, policies and programs
- Helps determine the overall level of climate risk:
 - Identifies climate hazards
 - Assesses exposure (assets, people, systems)
 - Evaluates sensitivity (how badly they could be affected)
 - Estimates adaptive capacity (how well they can cope or recover)

STEP BY STEP RVA

1. Define scope and objectives (what is being assessed, why, and what time frame)
2. Gather relevant data
3. Identify climate hazards (using climate data and scenarios)
4. Assess exposure (who and what is at risk)
5. Assess sensitivity (how vulnerable and exposed systems are)
6. Evaluate adaptive capacity (ability to cope, respond, or recover)
7. Highlight key risks (who and what is most at risk)
8. Determine adaptation priorities and set adaptation objectives
9. Engage relevant stakeholders in the whole process

CLIMATE ADAPTATION

- Adjustments in ecological, social, and economic systems in response to actual or expected climatic stimuli and their effect
- Adaptation in processes by which individuals, communities, and countries seek to cope with the consequences of climate change
- No one-size-fits-all solution □ actions depend on the context
- An important part in responding to climate change
- Helps protect people, livelihoods, and ecosystems



CLIMATE ADAPTATION VS MITIGATION

ADAPTATION

- Adjustments in ecological, social, and economic systems in response to actual or expected climatic stimuli and their effect.
- Critical component in responding to climate change
- Examples: flood defences, setting up early warning systems, switching to drought-resistant crops, redesigning communication systems, business operations, and government policies,...

MITIGATION

- Actions taken to reduce or prevent greenhouse gas (GHG) emissions or to enhance carbon sinks that remove them from the atmosphere
- Critical component in preventing climate change
- Examples: shifting away from fossil fuels, improving energy efficiency, changing agricultural practices, sustainable management and conservation of forests, restoring and conserving critical ecosystems,...

CLIMATE RESILIENCE

“The capacity of social, economic, and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity, and structure while also maintaining the capacity for adaptation, learning, and transformation.” (<https://www.ipcc.ch/sr15/chapter/glossary/>)

- Essential component of any climate action program
- 3 components of climate resilience:
 - **Resilient people and livelihoods** - early warning systems; decent, secure and green jobs; resilient value chains; social protection; getting finance to local communities
 - **Resilient businesses and economies** - climate risks are fully understood by all businesses, investors, and society; ensuring investments are climate risk-informed and deliver social, environmental, and economic impacts
 - **Resilient environmental systems** - nature is the first line of defence against climate risks of extreme events and long-term changes in climate; biodiversity and ecosystems are protected to ensure food, clean air, fresh water, fertile soil, and pollination services

STEPS TO BUILD CLIMATE RESILIENCE

1. Awareness raising and advocacy
2. Climate risk assessment
3. Develop and implement appropriate actions
4. Mobilize resources
5. Monitor and track progress
6. Share knowledge, experiences, and solutions

TYPES OF INTERVENTIONS TO BUILD CLIMATE RESILIENCE

- Climate risk and vulnerability assessments
- Early warning systems
- Preparedness
- Climate risk governance and capacity building
- Nature-based solutions (NBS)
- Climate-proofing
- Risk transfer
- Sharing knowledge and best practices
- Access to finance

BUILDING RESILIENCE GUIDELINES

- Reference technical standards for design and construction to take account of most weather-related hazards, including those generated by climate
- Developed by International Code Council (ICC)
- Principles:
 - Urgency
 - Clarity of objectives
 - Robust climate science
 - Risk clarity
 - Forward-looking
 - Durability
 - Holistic approach
 - Affordability
 - Existing buildings
 - Building maintenance
 - Compliance
 - Implementation
 - Monitor and evaluate
 - Engagement
 - Emission reduction

CLIMATE ADAPTATION POLICIES

- An essential part of managing the inevitable impacts of climate change
- Help reduce human and economic losses
- They are cost-effective investments in resilience
- Promotion of social and climate justice
- Supporting long-term development goals



SUSTAINABLE DEVELOPMENT GOALS (SDGs)

- A set of 17 global goals established by the UN in 2015, aimed at addressing various global challenges
- Blueprint to achieve a better and sustainable future for all
- SDG 13: Climate Action
 - Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards
 - Target 13.2: Integrate climate change measures into national policies and planning
- Other related goals:



IPPC

IPPC - The Intergovernmental Panel on Climate Change

- The UN's body for assessing the science related to climate change
- 3 Working Groups prepare assessment and special reports
 - Working Group I: The Physical Science Basis
 - Working Group II: Impacts, Adaptation and Vulnerability
 - Working Group III: Mitigation of Climate Change
- Task Force on National Greenhouse Gas Inventories
- Prepares comprehensive Assessment Reports about the state of knowledge of climate change, its impacts, and future risks
 - Latest: Sixth Assessment Report, 2023 (<https://www.ipcc.ch/assessment-report/ar6/>)
 - Currently in the seventh assessment cycle, began in July 2023

THE PARIS AGREEMENT

- Legally binding international treaty on climate change
- Adopted by 195 parties at the UN Climate Change Conference (COP21) in Paris on the 12th December 2015
- Overall goal: limit the global average temperature to well below 2°C above pre-industrial levels
- Countries submit their national climate action plans known as nationally determined contributions (NDCs)
- Provides a framework for financial, technical and capacity building support

COVENANT OF MAYORS (CoM)

- The largest global alliance of local governments voluntarily committing to climate change, including:
 - Mitigation: reducing GHG emissions
 - Adaptation: increasing resilience to climate change
 - Ensuring access to sustainable, affordable, and secure energy
- Working towards a resilient and low-emission society
- Signatory cities commit to:
 - Conducting climate risk and vulnerability assessment
 - Developing a Sustainable Energy and Climate Action Plan (SECAP)
 - Monitoring progress and reporting every two years
- CoM offers technical guidance, templates, peer-to-peer learning, funding guidance, and access to tools



THE EUROPEAN GREEN DEAL

- Policy initiative aimed at making the EU the world's first climate-neutral continent by 2050
- Covers both climate mitigation and adaptation
- Adaptation focus:
 - Calls for stronger action on climate resilience to effectively get ahead of climate risks
 - Focus on nature-based solutions and green infrastructure
 - Restoring biodiversity, addressing pollution, and the efficient using of resources



THE EUROPEAN CLIMATE LAW

- Writes into law the goal set out in the European Green Deal
 - Climate neutrality by 2050
 - 55% emission reduction by 2030
- Measures to keep track of progress and adjust our actions accordingly based on existing systems
- Requires EU and Member States to enhance adaptive capacity, strengthen resilience, and reduce vulnerability to climate change

EU ADAPTATION STRATEGY

- In 2021, the EU adopted its new strategy on adaptation to climate change
- Sets out how the EU can adapt to the impacts of climate change and become climate resilient by 2050
- 4 principal objectives:
 - Smarter adaptation
 - Faster adaptation
 - More systemic adaptation
 - Stepping up international action for climate resilience



Source: <https://climate-adapt.eea.europa.eu/en>

THE EUROPEAN CLIMATE PACT

- Participatory initiative encouraging citizens, communities, and organizations to take climate action
- Part of the European Green Deal
- Promotes awareness, resilience, and local adaptation efforts
- Supports bottom-up adaptation through education, citizen science, and nature-based projects

NATIONAL CLIMATE PLANNING

- Strategic framework for how a country as a whole will adapt to climate change
- Sets national vision and priorities, allocates funding, coordinates action across sectors, supports climate diplomacy
- Key tools:
 - National Adaptation Plans (NAPs)
 - National Energy and Climate Plans (NECPs)
 - National risk and vulnerability assessment
 - Sectoral adaptation plans

LOCAL CLIMATE PLANNING

- Focuses on city, municipal, or regional levels
- Addressing site-specific climate impacts and working closely with communities and local stakeholders
- Context-specific, flexible, and innovative, enables bottom-up action and public engagement, integrates with local infrastructure and land use
- Key tools:
 - Local adaptation plans (Sustainable Energy and Climate Action Plans (SECAPs), Climate Action Plans,...)
 - Urban planning regulations (zoning, green infrastructure)
 - Local risk and vulnerability assessment
 - Public consultations, participatory tools



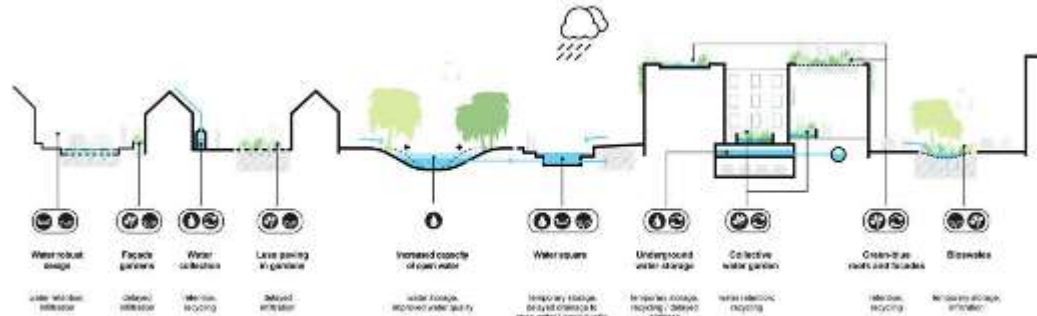
LOCAL VS NATIONAL PLANNING

	NATIONAL	LOCAL
Scope	National and sectoral	Local risks, community
Coordination	Across ministries, regions	With local stakeholders, municipal departments
Flexibility	Slower, more standardized	Agile, context specific
Funding access	Access to national/international funding	Limited but can pilot innovation
Innovation	Strategic and larg-scale	Grassroots, experimental
Best for	Setting priorities, coordination, finance	Implementation, engagement, place-based action

SUCCESSFUL ADAPTATION STRATEGIES - CASE STUDIES

Rotterdam, Netherlands:

- Focus: flood resilience, heat stress, water retention in a low-lying city
- Successfully combines infrastructure with green space and public engagement
- Multi-layered flood protection: adaptive building and design, flood resilient public spaces, nature-based solutions, dikes, capturing and storing rainwater, robust infrastructure
- Good example of urban water management and nature-based solutions



Source:

https://static1.squarespace.com/static/5f082078d610926644d22e00/t/62b19d595f452d43febaa862/1655807334154/20121210+RAS+EN+Ir+versie+4_compressed.pdf

Copenhagen, Denmark:

- Plan adopted in 2012 after a severe flood
- Focus: Managing extreme rainfall and urban flooding through combining underground grey infrastructure drainage tunnels and large-scale blue-green infrastructure surface projects
- Long-term urban planning with innovative water design
- Five types of solutions:
 - Cloudburst boulevards to transport water
 - Pipes for underground water transportation
 - Retention boulevards to delay water
 - Central delays for storing water
 - Green roads to transport and delay water on smaller roads



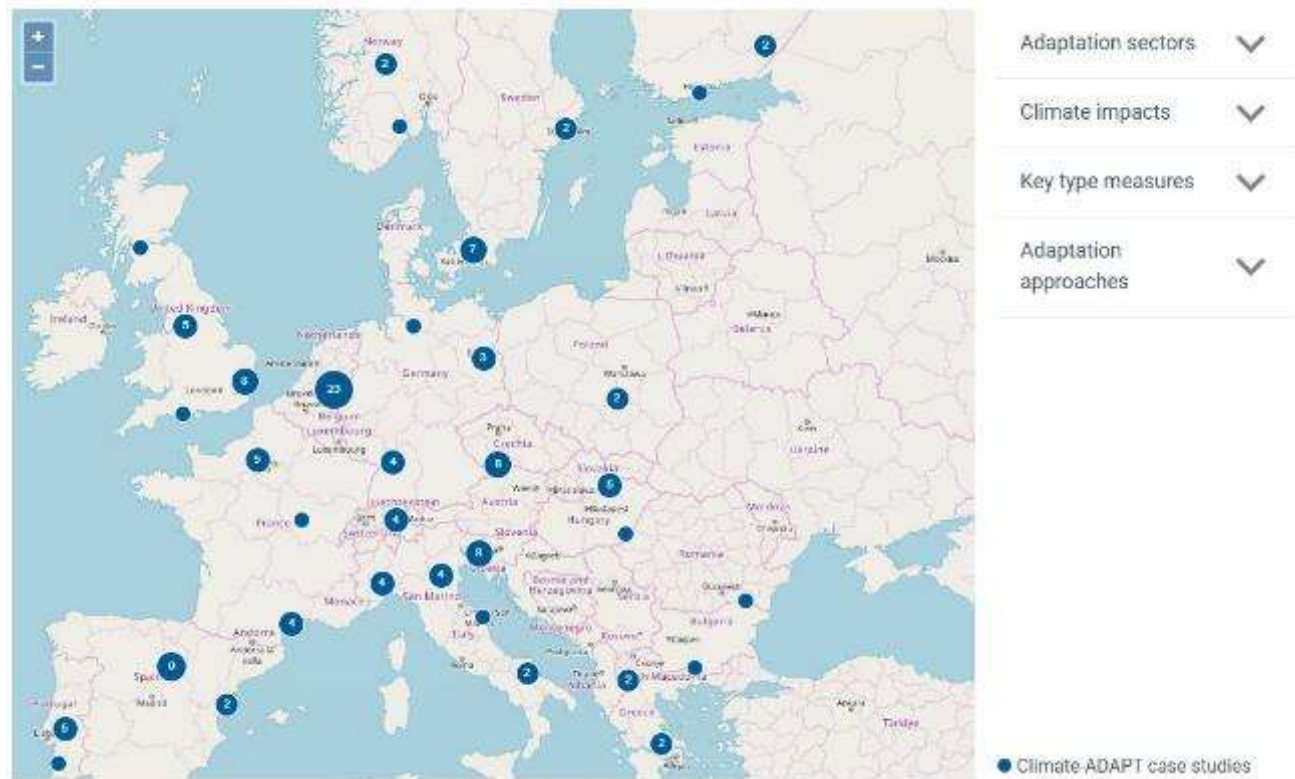
Melbourne, Australia:

- The city declared a climate and biodiversity emergency in 2019
- Key climate risks: heatwaves, sea level rise, bushfires, droughts, intense rainfall, and windstorms
- Goals:
 - Enhance natural environment and green spaces
 - Construct buildings and urban areas to withstand future climate change impacts
 - Strengthen the resilience of the community
 - Protect and enhance the economy
 - Continue to build adaptation capabilities and expertise
- Actions:
 - Increasing quantity and quality of green infrastructure
 - Increasing alternative water supply
 - Building to increase thermal comfort



Explore other good practices:

- <https://climate-adapt.eea.europa.eu/en/knowledge/tools/case-study-explorer>



FINANCIAL INCENTIVES

- Public or private financial tools that aim to encourage individuals, businesses, and governments to invest in climate adaptation, resilience, and sustainability
- To bridge the funding gap for costly investments
- Make climate-resilient choices more attractive
- Types:
 - Grants and subsidies
 - Tax credits and deductions
 - Low-interest loans
 - Insurance discounts
 - Public-private partnerships
 - Green bonds/climate bonds
 - Market-based tools

