

CARISMA

First Synthesis Report

Overview of intermediate project results (February 2015-July 2016)



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Key messages based on preliminary findings CARISMA



1. Research & innovation (R&I) for mitigation

- Information on Member States' and EU R&I funding is difficult to find
- EU R&I funding gravitates towards solar energy and CO₂ capture and storage

2. Policies for climate change mitigation

- Information on mitigation policies is hard to find, poorly organised and the quality is difficult to assess
- Mitigation policies often interact with energy policies as they target similar stakeholders. This could lead to synergies, but it is important to have provisions in place in case of unanticipated and undesired effects of policy interactions.

3. Global climate mitigation R&I networks are emerging

- Benefits for European firms are: access to emerging markets, stronger R&I efficiency and higher innovation quality
- Disadvantages are: EU knowledge industries may lose employment, knowledge base and intellectual property



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Introduction to CARISMA

Introduction to CARISMA

About CARISMA



CARISMA supports development and diffusion of technologies and practices for climate change mitigation. While often known, for several reasons they do not enter the mainstream.

Through identifying, unpacking and discussing these reasons, CARISMA aims to help decision-makers in the public and private sector to resolve implementation issues, with a specific focus on:

- Research and innovation, including international cooperation, around climate change mitigation options;
- Economic costs, social aspects, and environmental impacts of climate change mitigation options;
- Existing mitigation policies and how these interact with other environmental and climate policies;
- How the success of policies for climate change mitigation depends on their socio-economic implementation contexts and policy implementation cycles.



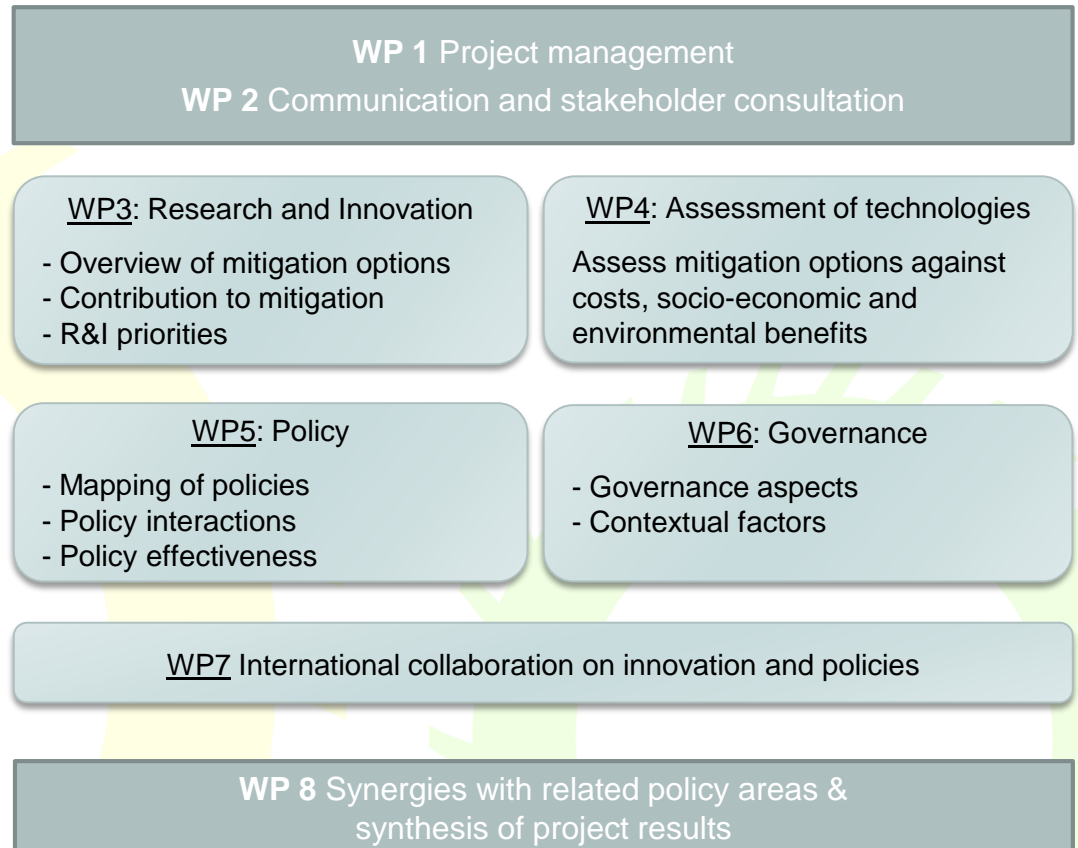
Introduction to CARISMA

Structure of the project



The CARISMA project is structured along 8 work packages, with the core content work formed by work packages 3-7:

3. Research & innovation
4. Assessment of technologies
5. Policy effectiveness and interaction
6. Governance and contextual factors
7. International collaboration on innovation and policy



Introduction to CARISMA

Policy context



CARISMA aims to contribute to climate change mitigation policy developments in the EU and its Member States, and internationally.

Examples of key developments include:

- IPCC Special Report on the impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways
- Embedding the Paris Agreement (incl. the 1.5 °C target) in national, regional, and local planning, taking into account domestic social, economic, and environmental criteria
- Transparency framework of the Paris Agreement
- Developing the Technology Framework and enhancing the Technology Mechanism under Article 10 of the Paris Agreement
- Development of future European Commission's and EU Member States' climate mitigation research & innovation agendas
- Mission Innovation and the Breakthrough Energy Coalition



Introduction to CARISMA

Project partners



**Radboud
University
Nijmegen**

Radboud University
Nijmegen, Netherlands



**Stockholm Environment
Institute (SEI)**
Stockholm, Sweden / Oxford, UK



**University of Piraeus
Research Center (UPRC)**
Piraeus, Greece



**Centre for European
Economic Research (ZEW)**
Mannheim, Germany



**JIN Climate and
Sustainability**
Groningen, Netherlands



**Centre for European Policy
Studies (CEPS)**
Brussels, Belgium



**Institute for Climate
Economics (I4CE)**
Paris, France



ENVIROS, s.r.o.
Prague, Czechia



University of Graz
Graz, Austria



UNEP DTU Partnership
Kongens Lyngby, Denmark



CARISMA work and next steps

Objective: What type of innovation policy makes the EU '2050-proof' from a mitigation perspective? What needs to be done?

- CARISMA has created databases of:
 - mitigation options, both technologies and practices
 - EU research and innovation (R&I) projects (draft version)
- Both databases are forthcoming on CARISMA-project.eu.

Preliminary results:

- Information on Member States and EU R&I funding is difficult to find
- Several technologies – solar energy and CCS - seem to be favoured in the European Commission's FP7 and Horizon 2020 research funding

CARISMA work and next steps (WP3)

Research and innovation, *cont.*



Next steps:

- Present and discuss early findings on the state of the EU innovation system on mitigation with innovation policy makers and business stakeholders
- Finalise R&I project database, also for EU Member States
- Work on demand side for R&I:
 - Identify priority areas for R&I based on climate change mitigation targets and R&I requirements explicitly expressed in policy documents, sector-level technology roadmaps, business strategies, and briefs by NGOs and knowledge institutes



Objective: Improved insights on social, economic, and environmental benefits and costs of technologies for mitigation at the national or regional level

Three types of assessments of technologies for mitigation are being conducted:

1. Assessment of **costs and benefits** of technologies for mitigation:
 - ±10 technologies selected for this analysis, including Bio-energy with carbon capture and storage (Bio-CCS), Solar parks, Smart grids, Offshore wind energy and Artificial trees
 - With a model run, costs related to the development and transfer of these technologies are estimated as well as potential economic benefits
 - This is complemented by gathering expert opinions from stakeholders
2. Assessment of **environmental** aspects, using life-cycle analysis, for the above mitigation options

CARISMA work and next steps (4.3, 4.4)

Assessment of technologies



3. Assessment of **social** aspects: public engagement and mapping of social controversies
 - For the technology options solar parks (fields), smart grids and bio-CCS, 'unexpected' negative and positive outcomes of their implementation are explored, such as societal controversies that emerge from their implementation. This is intended to help policy makers anticipate how technologies for mitigation may be received by society and what can be done to strengthen social acceptance of otherwise beneficial technology options.

Next steps:

- Complete these assessments for publication in ***January 2017***
- Assess the synergy potential of multiple technologies by exploring aspects that they share (such common components and production)



CARISMA work and next steps (5.1)

Mapping and assessing policies



Objective: Analysis of data sources for climate change mitigation policies (classification and visualisation of mitigation policy databases)

- Review of 24 databases: including IEA Policies and Measures; European Environment Agency (EEA); Renewable Energy and Energy Efficiency Partnership (REEEP) and its search tool Reegle; GLOBE Climate Legislation; Climate Action Tracker; Odyssee-MURE
- Analysis of geographical distribution and sectoral coverage of databases
- Classification according to key attributes: costs, emissions savings, policy interactions

Current work: online survey to complement preliminary findings (available [here](#)) and follow-up with key stakeholders; engagement with EEA



Preliminary findings ([CARISMA Working Document No.1](#)):

Information on climate change mitigation policies is increasingly available in online databases, but hard to find, poorly organised and the quality is difficult to assess:

- Uneven geographical distribution (less information available for the global South)
- Uneven sectoral distribution (e.g. much information for energy, less for agriculture)
- Limited localised information on costs, emissions savings, policy interactions
- Limited comparisons between jurisdictions
- Insufficient links between databases

Next step:

Help fill the knowledge and data gaps on climate change mitigation policies

CARISMA work and next steps (5.2)

Identify policy interactions



Objective: Identify policy interactions through case studies

Interactions between climate and energy policies can occur if they target the same stakeholders. Interactions can be positive (synergies) or negative (opposite directions) and can cause climate policy results to deviate from expected results. For analysis how and to what extent policy interactions can occur, the following four case studies have been carried out:

Case study country	Interaction level	EU ETS	Renewable energy	Energy efficiency
France	National-regional level interaction	X	X	X
Austria	National-regional			X
Greece	National level interaction	X	X	X
EU	EU-level interaction	X	X	



CARISMA work and next steps (5.2)

Identify policy interactions, cont.



Findings (The report will be posted at CARISMA-project.eu)

1. Policy interaction can take place through policies' overarching objectives, policy instruments (to achieve policy objectives) and their design characteristics (target, scope, technologies, and target groups). Policy co-existence can be justified if the policies are aimed at different targets, such as one policy to achieve short-term environmental targets and another policy for longer-term targets.
2. However, there can be cases where a specific policy interaction is assumed to lead to synergistic effects (e.g. policies all contribute to CO₂ emission reduction), but that actual practice shows that the policy results are undesirable. For example, short-term interactions between EU ETS and renewable energy policies may result in negative impacts on renewable energy technology deployment in the longer term. It is important to have provisions in place (e.g. market stability reserve for the ETS) should effects of policy interactions be unanticipated or stronger than anticipated.



CARISMA work and next steps (5.2)

Identify policy interactions, cont.



Findings, cont.:

3. Policy interactions can take place within one policy area within the same country but between different policy levels. The case study for Austria on energy efficiency policies at federal and provincial government levels has shown that energy consumption in households decreased over the last years, but it can be questioned how efficient the current policy mix has been. At the same time, subsidies have the largest political acceptance among policy instruments in the country.
4. The French case study shows how renewable energy targets were 'automatically' met as a result of achieving energy efficiency goals. This reduces the need to increase investments in renewable energy technologies, which may slow down development of renewable technologies.



Objective: Support policy makers and stakeholders in understanding how contextual factors could affect decision-making on mitigation options

Climate policy making takes place in complex environments with different circumstances (contexts). In order to learn how policy contexts could affect policy-making and results, CARISMA:

- Conducts a literature survey on possible contextual factors (e.g. IPCC Fifth Assessment Report)
- Explores how and to what extent these factors have influenced climate change mitigation policies in, e.g., Germany, Netherlands, Norway and UK
- Groups contextual factors in categories for easier use by policy makers, using insights from case studies and literature

CARISMA work and next steps (WP6)

Contextual factors



Next steps:

- Interviews & meetings with experts from case studies in EU Member States (mentioned above) and in accession countries in the Balkan region
- Prepare guidelines (in consultation with experts and stakeholders from case study countries)
 - for policy makers at the EU, Member State and subnational levels,
 - to support making well-informed assumptions about contextual factors,
 - assessing how these factors could influence the effectiveness of mitigation policies, and
 - addressing these factors in order to keep actual policy results in line with policy goals.
- CARISMA publication on **contextual factors**, expected September 2016



Objective: Globalisation of R&I and transfer of technologies and policies

- Case studies elaborated on research and innovation (R&I) initiatives at regional, government-to-government and industrial sector-levels
 - Report on case studies is due for January 2017
- Firm-level analysis of globalisation of R&I was the topic of a **Workshop on R&I offshoring** held in Copenhagen (March 2016)
 - A policy brief based on this workshop can be found [here](#).

Preliminary findings are:

- Benefits for European firms involved in international R&D collaboration are:
 - access to emerging markets;
 - enhanced cost-efficiency of R&D; and
 - improved innovative performance
- Disadvantages include:
 - loss of employment in knowledge-intensive industries
 - 'hollowing out' the knowledge base and industrial leadership, and
 - loss of intellectual property

Next steps:

- A workshop on *Research and Innovation Collaboration between Europe and Emerging Economies* will be held in the Netherlands, Early 2017
- R&I collaboration case studies in Peru, Kenya, Vietnam and Indonesia

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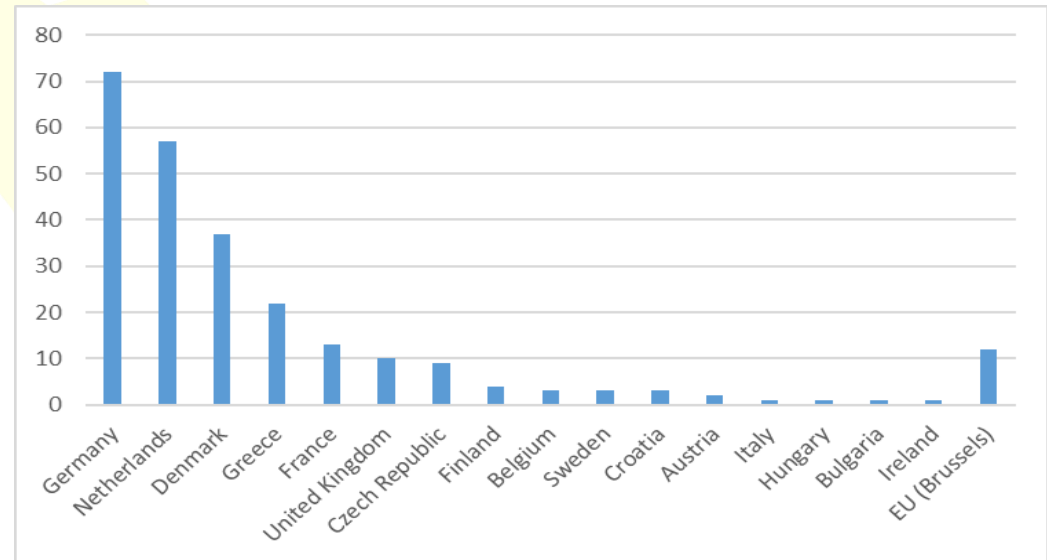
Communication and stakeholder engagement

CARISMA work and next steps (WP2)

Stakeholder engagement



- Stakeholder consultation takes place throughout the project, for collection of tacit knowledge and validation of results
- 280 stakeholders have been recruited from countries throughout the EU and beyond.
- Balanced representation of stakeholders in energy, environment, industry, transport, regional development, agriculture/forestry, and finance/trade sectors



Number of EU-based stakeholders per country



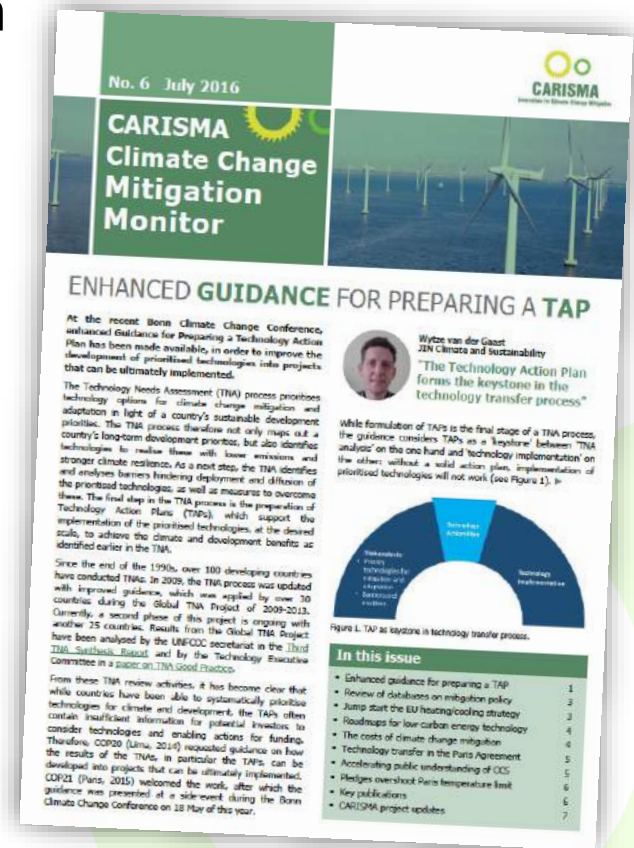
- Published
 1. ["Reviewing Implementation under the Paris Agreement"](#)
 2. ["Outsourcing and Offshoring R&D in Green Technology to Emerging Economies"](#)
- In the pipeline
 3. "Interactions between climate and energy policies in the French electricity sector"
 4. "Interactions between energy efficiency policies in the household sector in Austria"
 5. "Interactions between the energy efficiency obligation and the EU ETS in Greece"
 6. "Interaction between the EU ETS and the Renewable Energy Directive (at EU-level)"

CARISMA communication Climate Change Mitigation Monitor



Integrated publication with commentaries on current climate change mitigation topics, overview of key mitigation publications, and CARISMA project news.

- First four issues published by POLIMP project (2015), fifth issue jointly by POLIMP and CARISMA (March 2016)
- Sixth issue published by CARISMA (July 2016), with a commentary on guidance for Technology Action Plans
- Download the CARISMA Climate Change Mitigation Monitor issues [here](#).



CARISMA communication Climate Change Mitigation portal



- CARISMA has taken the initiative to develop an online knowledge portal on EU-funded research on climate change mitigation.
 - Mitigation options
 - Scenarios, models and data
 - Case studies
 - Policies and governance
 - Stakeholder engagement
- Rather than a platform specifically on CARISMA, collaboration has been initiated with other EU-funded mitigation research projects: ADVANCE, TRANSrisk, PATHWAYS, CD-LINKS, and GREEN-WIN.
- Expected release: September 2016



Beta version of the Mitigation Portal



CARISMA

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The CARISMA project team at the project meeting in Prague, February 2016

