Exploitation Plan

Deliverable D7.7

Release Status: Public
Author: Dr Romain F H Viguier, SCCS
Date: 12 July 2024
Filename and Version:
Project ID Number: 101022664

PilotSTRATEGY (H2020- Topic LC-SC3-NZE-6-2020 - RIA)

Document History

1.1 Location

This document is stored in the following location:

Filename	PilotSTRATEGY Exploitation Plan D7.7
Location	

1.2 Revision History

This document has been through the following revisions:

Version No.	Revision Date	Filename/Location stored:	Brief Summary of Changes
1	04th May 2022	PilotSTRATEGY_Exploitation_Plan_D7.7_V1	Initial version
2	1st June 2022	PilotSTRATEGY_Exploitation_Plan_D7.7_V2	Addition of a conclusion
3	21st March 2023	PilotSTRATEGY_Exploitation_Plan_D7.7_V3	Addition of stakeholders and end users
4	April 2024	PilotSTRATEGY_Exploitation_Plan_D7.7_V4	
5	July 2024	PilotSTRATEGY_Exploitation_Plan_D7.7_V5	Exploitation table, stakeholders table

1.3 Authorisation

This document requires the following approvals:

AUTHORISATION	Name	Signature	Date
WP 7 Leader	Romain F H Viguier		12/07/2024
Project Coordinator	Isaline Gravaud		12/07/2024

1.4 Distribution

This document has been distributed to:

Name	Title	Version Issued	Date of Issue
		Public	00/00/0000

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Executive summary

This Exploitation plan was developed as part of work-package 7 [Public Communication and Project Impact Management], in collaboration with the consortium partners and will be further updated with industry partners and potential end-users (CCUS sites developers, local governments, etc...) and members of the project advisory board.

The exploitation plan has three key objectives:

- for the project outcomes to benefit the development and maturation of CO_2 geological storage sites after the end of the project
- for potential end-users to be identified and consulted during the time of the project and
- for the project results to be made accessible to end users

This document lists all expected innovation, resulting from the project and maps potential end-users who will more likely use the innovation. When necessary, the exploitation plan considers a commercialisation route, and assess the position of the Intellectual Property Right (IPR) of the identified innovation, as part of the project IPR management.

Exploitation activities are also listed, with some activities to be initiated during the project time. The exploitation plan will support both commercial and non-commercial exploitation activities after the end of the project.

The Exploitation Plan presented in this deliverable D7.7 is an updated version of the plan and will be further updated before the end of the project. It will be completed with new identified innovation and potential end-users as the project progresses.

A final version of the exploitation plan will be produced as deliverable D7.8 in Month 60.

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Table of Contents

The PilotSTRATEGY project has received funding from the European Union's Horizon 2020 under grant agreement No. 101022664

1. Project objectives

The PilotSTRATEGY project is investigating geological CO_2 storage sites in industrial regions of Southern and Eastern Europe to support development of carbon capture and storage (CCS).

The project is focusing its research on deep saline aquifers – porous rock formations filled with brine several kilometres below ground – which promise a large capacity for storing CO_2 captured from clusters of industry.

The main results from the project include detailed studies on deep saline aquifers in the Paris Basin in France, the Lusitanian Basin in Portugal and the Ebro Basin in Spain. The project will also enhance our knowledge of CO_2 storage options in West Macedonia in Greece and Upper Silesia in Poland.

PilotSTRATEGY will engage with citizens and stakeholders and ensure that community perspectives are fully represented in the project.

PilotSTRATEGY, funded by the European Union's Horizon 2020 programme, involves 16 research partners from seven European countries and builds on research carried out by the STRATEGY CCUS project (H2020 Grant Agreement 837754).

2. Region of focus

PilotSTRATEGY aims to advance understanding of deep saline aquifers (DSA) for geological CO_2 storage in five European industrial regions. DSAs have much promise and potential for CO_2 storage, yet are not well studied. There is a need to increase confidence in and understanding of these sites to enable faster deployment of carbon capture and storage (CCS), an essential set of technologies for combatting climate change. CCS involves capturing CO_2 and injecting it into the subsurface for safe and permanent storage.

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2.1 Paris basin, France

- Industrial facility already capturing > 300 kt/CO2 per year
- Storage resources within Keuper & Dogger Formations
- Keuper: identified effective storage capacity Tier 2 of 0.22Gt
- Dogger: identified theoretical storage capacity Tier 1 of 0.2Gt

2.2 Lusitanian basin, Portugal

- Includes CO2 emitters in the Setúbal – Figueira da Foz axis
- Onshore effective storage capacity Tier 2 of 0.2Gt; offshore theoretical storage capacity Tier 1 of 1.2Gt
- As elsewhere, societal acceptance will help determine storage pilot's location

2.3 Ebro basin, Spain

- Region includes Tarragona and South Aragon industrial areas
- Potential CO2storage sites onshore and offshore. Social acceptance one of the criteria determining which proceeds
- DSA CO storage capacity estimated at up to 0.85Gt Tier 2 and 0.2Gt Tier 1

2.4 West Macedonia, Greece

- Region covers Kozani and Ptolemaida industrial areas
- Storage resource provided by the Mesohellenic Trough
- CO2 storage in DSA estimated at 1.16Gt Tier 1 (theoretical)

2.5 Upper Silesia, Poland

- Region includes industrial areas of Katowice, Rybnik and Bedzin
- Poland's most industrialised region, with 16 coal mines and 7GW of power generation
- CO2 storage capacity of 0.015Gt in uneconomic coal beds and of 0.1GT In DSA

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3. Identified innovation and potential end users

Seven innovations have been identified, and for each of them potential end-users that the project should start engaging with.

Table: Identified innovation and potential users

Identified innovation	Potential end users
Low-cost of 3D seismic acquisition onshore	Private, public and scientific actors leading with underground exploration and exploitation. Operators of monitoring and measurements activities.
Optimization methodology of well location for maximizing the potential capacity considering the uncertainties in properties and minimizing identified risks	Operators of CO_2 injection and storage sites. Research engineer in simulation of fluid flow, geomechanics, geochemistry, optimization
Storage quality maps methodology: a visual and statistical analysis of key characteristics for storage capacity and integrity	Operators of storage sites and regulating and permitting authorities. Research engineers in simulation of fluid flow, geomechanics, geochemistry
Multicriteria methodology for selecting a pilot development concept	Decision takers: industry, governments, regulators, citizens´ representatives
CO_2 Geological Storage permits road map	CCUS developers
Selection of technical and economical feasible oil and gas industry methodologies and tools that can be utilised to maximize the pilot project performance, the pilot design	Consultancy companies. Geologist, geophysics, reservoir engineers, well engineers, facilities engineers, project engineers
Full quantitative risk and decision analysis workflow	CCUS pilot operators and service companies. Of interest to national permitting authorities

Ten groups of outputs have been identified, for which ten key impacts are expected.

Table of Expected impacts with associated outputs

Output and quantification	Expected impacts
- Conceptual Geological Model for the 5 regions. - New data including 3D active seismic and passive seismic - Characterization (geological, geochemical and geomechanical) at field and sample scale for 5 regions.	Detailed geological characterisation
Optimisation of well location and CO_2 injection rate by numerical simulations for 4 regions. - Short- and Long-term CO_2 fate in subsurface for 5 regions - Pressure, geomechanical and geochemical impacts for 4 regions. - Impacts in near wellbore linked to injectivity issue - Fault/fractures and caprock integrity for 4 regions	Safe storage sites: numerical simulations of CO_2 fate and its impacts in subsurface.
- Pre-FEED level development plan for CO_2 storage sites in France, Portugal and Spain. - Guideline for risks identification in CO_2 geological storage sites developments and assessment including mitigation and preventive measures particularized at least to 3 cases (FR, PT, ES).	Development planning of promising safe storage sites
- Complete documentation set for injection permit for France, Portugal and Spain in their own languages (FR, PT, ES) - 3 Guidelines & road maps for permit submission adapted to France, Portugal and Spain in their own language and overview for other 2 countries with high level of CO_2 emissions (Greece and Poland).	Facilitate the subsequent application for storage and kick start of CCS in three regions

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- 3 Class 4 estimation costs for FR, PT and ES. - Creation of an estimation cost database for future CO_2 storage sites as well in other European countries.	Baseline for estimation of storage cost
- 8 surveys in 5 countries (FR, PT, ES, GR, PL) for public acceptance map definition. - Public engagement plans (activities, targets, schedule, material) for the 5 regions (FR, PT, ES, GR, PL). - Project dissemination plan and material, with webinars, media and social-media engagement, clear and accessible information accessible on the project website.	Increased local, regional and national public awareness
- Complete studies for pre-FID in the three main regions, including pre-FEED design. - Techno-economical pre-feasibility studies for the CCUS concept for 5 European regions (FR, PT, ES, GR, PL)	Prepare the ground for full and active development into operational stage in the mid 2020's
- Synergies map of CCUS with other technologies and CO_2 uses, i.e., geothermal energy, for future developments (PT, ES, GR) - Overview of regional possibilities for CO_2 uses (FR, PT, ES, GR, PL)	Create new market opportunities
- 3 proposals for CO_2-emissions reduction and impact on the regional (and national) scale.	Address issues related to climate change
- Report of estimated impact of implementing CCS pilots in the area on employees and direct and indirect economic impact. (ES) - TCE and LCA on the three main regions as well as a socioeconomic impact assessment at the pilot scale to have an overview of the direct and indirect impact of the CCUS development to share with local and national governments.	Re-conversion of skilled employees affected by the energy transition

Further outcomes /impacts

- Create new market opportunities
- Improve collaboration between different sectors and stakeholders
- Address issues related to climate change
- Helping the re-conversion of employees and knowledge affected by the energy transition

4. Target stakeholders

The development of our exploitation plan aids in identifying potential impacts arising from the project results, as well as the areas where these results will have the most significant effect. This exercise allows us to pinpoint end-users and the project's target audience. As shown in the following table, the initial list of potential end-users has been expanded and now includes information regarding their preferred methods of engagement. We have categorised stakeholders into the following four groups: researchers and consultants, CCS developers, regulators, and decision makers.

Target stakeholders	Preferred engagement methods
Researchers/Consultants	

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Project Partners	Regular updates via email, collaborative tools (e.g., Microsoft Teams), project management platforms, and virtual meetings (Zoom, Teams)
Scientific Community	Publishing in academic journals, presenting at conferences, email newsletters, webinars, and online forums (Zenodo, ResearchGate, LinkedIn)
Research Institutions	Academic publications, conferences, institutional newsletters, email, and internal communication platforms
Academic Researchers	Academic conferences, peer-reviewed journals, email, collaborative research tools (Zenodo), and webinars
Environmental Consultants	Detailed reports, email, project management tools, and video conferencing
Geothermal Companies	Industry conferences, email updates, project management tools, and site visits
Energy Consultants	Industry reports, email, webinars, project management tools, and video conferencing
Hazard Assessment and Mitigation Experts	Detailed assessment reports, email, video conferencing, and project management platforms
Hydrogeologists	Academic publications, conferences, email, and collaborative research tools
Water Resource Managers	Email, industry conferences, webinars, and project management tools
Geological Survey Professionals	Academic journals, conferences, email, and project management platforms
Geological Modelers	Email, project management tools, academic journals, and video conferencing
CO2 Storage Optimization Experts	Email, project management tools, academic journals, and industry conferences
CCUS Technology Experts	Industry conferences, detailed reports, email, and project management tools
Engineers	Email, technical reports, project management platforms, and video conferencing
Data Managers	Data management platforms, email, and project management tools
Local Teams	Regular meetings, email updates, project management tools, and local community engagement
Legal Experts	Email, detailed legal reports, video conferencing, and in-person meetings
Financial Analysts	Email, financial reports, video conferencing, and investor meetings
CCS Developers	
Oil and Gas Companies	Industry reports, email, and industry conferences

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CCUS Project Developers	Project management platforms, email, virtual meetings, and industry events
CCUS Technology Experts	Industry conferences, technical reports, email
CCS Project Managers and Engineers	Email, technical reports, and video conferencing
Operators of CO2 Injection and Storage Sites	Operational reports, email, and site visits
CCUS Project Partners	Collaborative tools, email, project management platforms, and virtual meetings
Investors	Financial reports, email, investor meetings, and webinars
Regulators	
Environmental Agencies	Regulatory reports, email, public consultations, and video conferencing
Regional Planners	Email, regional planning meetings, public consultations
Regulatory and Permitting Authorities	Email, regulatory reports, public consultations, and video conferencing
Environmental Agencies	Email, regulatory reports, video conferencing, and public consultations
Decision Makers	
Industry	Industry reports, email, industry conferences, and video conferencing
Local Stakeholders	Community meetings, email updates, public consultations, and social media
Government Agencies and Bodies	Governmental reports, email, public consultations, and video conferencing
Economic Development Agency	Economic reports, email, public consultations, and video conferencing
Policy Makers	Policy reports, email, public consultations, and video conferencing
Citizen's Representatives	Community meetings, email updates, public consultations, and social media
Local Communities	Community meetings, public consultations, social media, and local media
General Public	Public consultations, social media, local media, and public notices
NGOs	Email, social media, public consultations, and video conferencing
Media	Press releases, email, press conferences, and social media

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5. The exploitation team

As part of the exploitation strategy, all project partners should be identified, and their role clearly defined, to facilitate all collaboration and cooperation between partners. The following consortium bodies are involved in Exploitation and the exploitation team should include at least one representative from each body:

Project General Assembly (PGA) comprises a nominated representative or his substitute from each party and act as an internal steering and decision-making body on exploitation related subject.

The PGA includes representatives from the 16 partners:

1. BRGM, Project coordinator
2. IFPEN
3. Pole AVENIA
4. GEOSTOCK
5. IGME
6. CIEMAT
7. REPSOL
8. UEVORA
9. CERTH
10. HHRM
11. GIG
12. Fraunhofer
13. UEDIN
14. Symlog
15. ICS-ULisboa
16. GALP

Project Management Board (PMB) is the supervisory body for the execution of the project and is responsible for implementing the exploitation plan. The PMB is composed of project coordinator and work-package leaders and co-leaders:

- WP1 - Project coordinator (BRGM)
- WP2 - UEDIN and REPSOL
- WP3 – IFPEN and BRGM
- WP4 – IGME and REPSOL
- WP5 – BRGM and CIEMAT
- WP6 – Fraunhofer and CIEMAT
- WP7 – UEDIN and IGME

Local teams are groups of partners from countries in charge of conducting the main works in their regions. Teams are composed of one or more institutions and are led by the following project partner:

- BRGM for Paris/Brie area

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- IGME for Ebro basin
- UEVORA for Lusitanian basin
- CERTH for West Macedonia basin
- GIG for Upper Silesia basin

Advisory Board. The Advisory Body is composed of external persons who are representatives of key organisations for enabling or accelerating the roll-out of CO_2 geological storage in Europe. The members of the Advisory Board may be consulted on exploitation / commercialisation issues.

The Advisory Board is constituted by representatives from:

- IASS Postdam
- Leiden University
- EERC
- TNO
- DETEC-Switzerland
- Pole Avenia
- Emerson
- Air Products and Chemicals
- CGG

6. Exploitation strategies

Exploitation strategies refer to the various routes and methods used to maximize the impact and value of a project result. These routes can be broadly categorised into different types based on the confidential nature of the result the anticipated outcomes and the target audience. Here are the main types of exploitation strategy that the project will consider:

1. **Scientific and academic exploitation**

Publications
Collaborative research
Training, education

2. **Capacity building and knowledge transfer**

Workshops and webinars
Providing expert advice
Networking building partnerships (Industry, Academia, Gov)

3. **Policy and Social exploitation**

Informing and influencing policy and regulation with research findings
Evidence-based recommendations

4. **Technological and commercial exploitation**

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Patent and IP
Prototyping and pilot
Product development to marketable product or service
Licensing
Spin-offs and Start-ups

7. Exploitation activities

Exploitation activities typically include using project results in further research activities that are not covered by the project, developing and providing a product process or services, or using the project results in standardisation, policy making or regulatory actions.

8. IPR strategies

All new knowledge generated by the project must be identified and any arising Intellectual Property (IP) will be evaluated, and when necessary, protected by the owners of the IP. According to the project Consortium Agreement, all decisions regarding intellectual property rights shall be taken by the General Assembly.

The European IP Helpdesk offers useful guidance to European SMEs and project beneficiaries - and is free of charge.
Link: https://intellectual-property-helpdesk.ec.europa.eu/regional-helpdesks/european-ip-helpdesk_en

In addition, the European patent office runs regular online courses to learn about IP issues.
Link: https://e-courses.epo.org/

9. Conclusion

The Exploitation Plan presented in this deliverable D7.7 has been updated from the initial plan and will be regularly updated during the project with the help of industry partners and potential end-users (CCUS sites developers, local governments, etc...) and members of the project advisory board. Updated version will include any new identified innovation and/or potential end-users as the project progresses.

This document lists all expected innovations resulting from the project, and maps potential end-users who will more likely use the innovations. When necessary, the exploitation plan considers a commercialisation route, and the Intellectual Property Right (IPR) of the identified innovation is assessed as part of the project IPR management.

A final version of the exploitation plan will be produced as deliverable D7.8 in Month 60 and will include a list of exploitation activities to support both commercial and non-commercial exploitation activities after the end of the project.

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PilotSTRATEGY

Table - Exploitation plan (public deliverables)

Expected results	Deliverable	Lead partner	Potential impact	Area where results will make an impact	End users, target audience	Exploitation strategy: Share/ Transfer/ Commercialise	Exploitation activities
Report describing assembled data for Paris Basin plus gap analysis. Report with the inventory of available data in the selected area (geophysics, petrophysics, maps and numerical models and horizons) and propositions of site target for the 3D seismic survey.	2.1	BRGM	Improved understanding of geological structure; optimised site selection for seismic surveys; support for decision making	CO2 Storage exploration, Energy industry, Environmental management and protection, Infrastructure planning and development	Scientific community, CCS projects developers, Regulator, Industry, Governments, Citizen's representatives, Media	Public report, to share with all stakeholders	Upload on website Social media announcement with link Upload report on Zenodo
Report on gravity survey and interpretation, Ebro Basin including survey results. Task 2.2.1 Description of the gravity survey applied on north and southwest of proposed onshore structure of Ebro Basin, complementing exiting 2014-gravimetry survey, and interpretation of results. The objective is to complement the knowledge on structure closure using low-cost techniques.	2.2	IGME	Improved understanding of geological structure; structural closure analysis, support for decision making	CO2 storage exploration, Geological research and the academic community, Environmental and regulatory agencies, Investors and developers of CCS sites, local community, economic development	CCS developers, Scientific community, environmental agency, investors, local stakeholders, economic development agency	Public report, to share with all stakeholders	Upload on website Social media announcement with link Upload report on Zenodo
Report - Description of Paris Basin seismic survey plus survey results (Survey interpretation in D2.7). Task 2.2.1 The permitting of seismic acquisition on private land, based on a fixed permitting	2.3	POLE AVENIA	Improved subsurface imaging, enhanced exploration efficiency, CCUS	CO2 Storage exploration, resource management and planning, economic and infrastructure development,	CCS developers, Scientific community, environmental agency, investors, local	Public report, to share with all stakeholders	Upload on website

budget, to optimise the design and cost of the project. Seismic data acquired using latest generation equipment and state of the art acquisition technologies, as well as a new kind of design, to demonstrate the feasibility of dense acquisitions (Randomized Source Acquisition (Carpet Shooting)) with broadband data, in a complex European environment, at an economic cost.			cost reduction, technological advancement, potential streamline of permitting process	Environmental and regulatory agencies, economic development	stakeholders, economic development agency		Social media announcement with link Upload report on Zenodo
Report - Seismic Reprocessing West Macedonia including results. task 2.2.2: Report of reprocessing steps and examples of reprocessed lines. Interpretation of the reprocessed seismic data (from the GRV survey) with basin geometry; lateral continuity of interpretable seismic units focusing reservoir formations and basin-scale major faults. Indicative seismic lines with and without interpretation, seismic surfaces (isochrones). Depending on data quality: depth map of the basin, thickness maps for reservoir seismic units. SEGY files will not be available to the partners.	2.4	HHRM	Improved geological understanding, Reduction of exploration risk, Risk mitigation, support for decision making (land use planning, environmental management, Policy in West Macedonia)	CO2 Storage exploration, resource management and planning, economic and infrastructure development, Environmental and regulatory agencies, economic development	CCS developers, Scientific community, environmental agency, investors, local stakeholders, economic development agency	Public report, to share with all stakeholders	Upload on website Social media announcement with link Upload report on Zenodo
Report - Local seismicity for Lusitanian Basin and Ebro Basin, including earthquake catalogue. task 2.2.3: Assessment of the natural seismicity of the Ebro and Lusitanian basin target regions. Construction of an earthquake catalogue (time, location, magnitude, depth) and interpretation of the geological origin and active structures.	2.5	REPSOL	Seismic hazard assessment, Risk mitigation, CCS infrastructure resilience, public safety and awareness, environmental impact assessment and compliance	Risk reduction, land use and infrastructure planning, public safety, environmental and regulatory agencies, Insurance and risk management	Scientific community, governmental and environmental agencies, local communities, insurance companies	Public report, to share with all stakeholders	Upload on website Social media announcement with link Upload report on Zenodo

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			with policy and regulation				
Report - Petrophysics Report of all regions. Report on petrophysical measurements; (i) for reservoir samples (15) : porosity and clay bound water from NMR measurements, permeability and formation factor from flooding experiments, and irreducible water saturation from centrifuge experiments, pore size distribution from mercury injection experiments (ii) for caprock samples (5): permeability and gas entry pressure, pore size distribution.	2.6	IFPEN	Reservoir characterisation and performance prediction, caprock integrity assessment, risk management, economic evaluation	Reservoir management, CO2 storage exploration strategy, risk management, regulatory, economic evaluation, environmental impact assessment,	CCS developers, environmental agency, investors, local stakeholders, economic development agency	Public report, to share with all stakeholders	Upload on website Social media announcement with link Upload report on Zenodo
Other - Geological models for the 3 areas. Task 2.3.2 Geological model based on facies analysis from available cores and cuttings, field analogs, log analysis, surface data and depositional environments, integrated with seismic stratigraphic and structural interpretations where available.	2.7	UEDIN	Improved CO2 storage exploration targeting, enhanced reservoir characterisation, optimised drilling and well placement, risk reduction and support to decision	CO2 storage exploration targeting; reservoir characterisation; optimised drilling ad well placement, risk reduction, support to decision making	Oil and Gas companies, Government and regulatory agencies, Policy makers and NGOs, research institutes and Universities, CCS project developers and operators, Energy consultants, Local communities	Public report, to share with all stakeholders	Upload on website Social media announcement with link Upload report on Zenodo
Report on Geo-mechanical results for 3 areas. Report on geo-mechanical properties: tensile strength from Brazilian tests, uniaxial compressive strength and static elastic moduli, dynamic elastic moduli from ultrasonic measurements (15 reservoir samples and 5 caprock samples).	2.8	IFPEN	Enhanced understanding of reservoir and caprock integrity, optimised injection strategies, Risk mitigation, support for regulatory compliance, improved reservoir characterisation ,	CCS projects, in the oil and gas sector, in Geothermal projects, Regulatory development, environmental impact assessment, academic research	CCS Project managers and engineers, Oil and gas and Geothermal companies, Environmental protection agencies, Energy and environmental consultants, academics, NGOs, local	Public report, to share with all stakeholders	Upload on website Social media announcement with link Upload report on Zenodo

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			monitoring strategy,		communities, hazard assessment and mitigation expert		
Report of geochemical results for 3 areas. Task 2.5.4 An evaluation of the thermodynamic and kinetic data available prior to modelling. Results of geochemical modelling of reactions observed in task 2.5 (if any) to inform large-scale reaction extent during and after injection.	2.9	UEDIN	Enhanced CO2 storage security, optimised injection strategies, risk mitigation, support for regulatory compliance and permitting, improved reservoir characterisation and modelling, environmental protection	CCS and Geothermal projects, environmental protection management, regulatory development, academic research, Risk management, Sustainability and climate change mitigation	CCS Project managers and engineers, Oil and gas and Geothermal companies, Environmental protection agencies, Energy and environmental consultants, academics, NGOs, local communities, hazard assessment and mitigation expert	Public report, to share with all stakeholders	Upload on website Social media announcement with link Upload report on Zenodo
Report on reactive transport modelling for 3 areas. Task 2.5.4 An evaluation of the thermodynamic and kinetic data available prior to modelling. Results of geochemical modelling of reactions observed in task 2.5 (if any) to inform large-scale reaction extent during and after injection.	2.10	UEDIN	Enhanced understanding of subsurface geochemical processes, improved CO2 storage security, optimisation of injection strategy, risk mitigation, support for regulatory compliance and permitting	CCS, the energy sector, regulatory and policy, academic research, risk management	CCS Project managers and engineers, Oil and gas and Geothermal companies, Environmental protection agencies, Energy and environmental consultants, academics, NGOs, local communities, hazard assessment and mitigation expert	Public report, to share with all stakeholders	Upload on website Social media announcement with link Upload report on Zenodo
Report on hydrogeology for 3 areas. Report on the regional hydrogeological system for the 3 studied basins (Ebro Basin, Lusitanian Basin and Paris Basin). State of art of the general	2.11	BRGM	Understanding of regional hydrogeological systems, Identification of	Hydrogeological research, CCS site selection, Environmental management, Water resource management	Scientific community, Hydrogeologists, CCS developers, Environmental agencies,	Public report, to share with all stakeholders	Upload on website

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characteristics of the regional aquifers/aquicludes and designation of the aquifers of strategic importance for CCS development.			strategic aquifers for CCS development		Water resource managers		Social media announcement with link Upload report on Zenodo
Report and geological maps of West Macedonia. Task 2.7 Mapping of rocks and structures including discontinuities for kinematic analysis (60 measurements at least in each related place) and rock mass classification. Where possible, hydrogeological information from collected from existing wells and springs (temperature, water depth, hydraulic conductivity) coupled with existing seismicity data obtained from past earthquakes in the area. Rock samples analysed by XRD, SEM and Optical Microscopy with data collated into a GIS database for geological map production.	2.12	CERTH	Detailed geological mapping and analysis, Support for CO2 storage site assessment and development	Geological research, CO2 storage exploration, Infrastructure planning	Geological survey professionals, CCS developers, Environmental agencies, Local communities	Public report, to share with all stakeholders	Upload on website Social media announcement with link Upload report on Zenodo
Report on storage potential of Upper Silesia. Task 2.8 Existing data for the Upper Silesia basin will be acquired, re-processed and re-interpreted. The geo-data for the prospective Skoczow reservoir will be supplemented with the new data obtained from newly drilled boreholes. Report of the new storage CO2 potential of Upper Silesia using the updated data.	2.13	GIG	Assessment of CO2 storage potential in Upper Silesia, Support for future CCS projects	CO2 storage exploration, Energy sector development	CCS developers, Environmental agencies, Investors, Local stakeholders	Public report, to share with all stakeholders	Upload on website Social media announcement with link Upload report on Zenodo
Report on static modelling and uncertainties /Task 3.1 Report on the 3D geological model of the domain of interest. Description of the input data, the model building (mesh and properties	3.2	IFPEN	Detailed geological models, Understanding of uncertainties, Basis for further studies	Geological modeling, CO2 storage site assessment, Infrastructure planning	CCS developers, Geological modelers, Policy makers, Research institutions	Public report, to share with all stakeholders	Upload on website; Social media announcement with link; Upload report on Zenodo

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computed for the whole grid) and the uncertainties associated to the properties							
Report on Optimization - Injection strategy and storage capacity. Task 3.2 . Report on the storage capacity optimization. Description of the injection scenario, the surrogate models, and the simulation results (injection strategy) of the optimization maximizing the storage capacity while minimizing the risks	3.3	BRGM	Optimised injection strategies, Increased storage capacity, Risk management	CO2 storage optimisation, CCUS technology	CO2 storage optimization, CCUS technology	Public report, to share with all stakeholders	Upload on website; Social media announcement with link; Upload report on Zenodo
Report on CO2 fate on the long-term /Task 3.3 Report on the CO2 fate on the long-term. Assessment of the CO2 mass distribution per trapping mechanism over time	3.4	BRGM	Understanding of CO2 mass distribution, Long-term storage assessment	CO2 storage management, Environmental impact assessment	CCS developers, Environmental agencies, Researchers, Policy makers	Public report, to share with all stakeholders	Upload on website; Social media announcement with link; Upload report on Zenodo
Report on near wellbore, caprock and faults/fractures integrity. Task 3.4 Report on the CO2 injection impacts: near wellbore, caprock and faults/fractures integrity, its effects on the environment (geomechanical, geochemical), CO2 leakage. Analysis of the simulation results for impact assessment.	3.5	IFPEN	Assessment of CO2 injection impacts, Environmental and geomechanical analysis	CO2 injection impact assessment, Environmental protection, Infrastructure resilience	CCS project managers, Environmental agencies, Engineers, Local communities	Public report, to share with all stakeholders	Upload on website; Social media announcement with link; Upload report on Zenodo
Report - Methodology for alternatives definition, prioritisation and selection. task 4.1. Explanation of the methodology to be used for alternatives definition and prioritisation based on multicriteria approach.	4.1	IGME	Framework for CCS alternatives, Structured decision-making process	CCS project planning, Policy development, Environmental management	CCS developers, Policy makers, Researchers, Environmental agencies	Public report, to share with all stakeholders	Upload on website; Social media announcement with link; Upload report on Zenodo
Report - Conceptual scenarios definition to enable decision support. Task 4.1. Methodology for the matrix concept definition considering the scope for each region and main objective.	4.2	IGME	Conceptual frameworks for CCS scenarios, Support for decision-making	CCS project planning, Environmental and economic evaluations	CCS developers, Policy makers, Environmental agencies, Researchers	Public report, to share with all stakeholders	Upload on website; Social media announcement with link; Upload report on Zenodo

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Report - Final concept description and preliminary consideration by regions. task 4.1. Concept description and process carried out for each region presented as one unique deliverable	4.3	IGME	Comprehensive concept descriptions, Preliminary regional considerations	CCS project design, Regional planning, Policy development	CCS developers, Regional planners, Environmental agencies, Investors	Public report, to share with all stakeholders	Upload on website; Social media announcement with link; Upload report on Zenodo
Report - Injector well and injection facilities design: methodology, definition, and recommendations. task 4.2.1 - Different well design alternatives electing a final design based on technical, economic and HSE criteria.	4.4	REPSOL	Well and facility design alternatives, Recommendations for CO2 injection	CO2 storage infrastructure, Technical and economic evaluation	Engineers, CCS project managers, Environmental agencies, Investors	Public report, to share with all stakeholders	Upload on website; Social media announcement with link; Upload report on Zenodo
Report - From capture to the injection facilities definition: capture, transport, and CO2 stream quality. task 4.2.3- Description of the surface facilities and conditions.	4.5	REPSOL	Definition of CO2 capture, transport, and quality conditions, Basis for facility design	CO2 capture and transport, Quality control, Facility design	CCS developers, Engineers, Environmental agencies, Transport companies	Public report, to share with all stakeholders	Upload on website; Social media announcement with link; Upload report on Zenodo
Report - Permit Dossier: Operation, logistics and well maintenance plans description, Well permits road map, MMV plan and HSE, emergency response and well containment plans. Task 4.2.1- Generation of technical and HSE plans of final well design (well construction, permits, operational, logistic and maintenance plans, HSE, emergency response and well containment plans...) and MMV	4.6	REPSOL	Comprehensive permit dossier, HSE plans, MMV strategies for CO2 injection	CO2 storage operations, Regulatory compliance, Safety and environmental management	CCS developers, Regulatory agencies, Environmental agencies, Operations managers	Public report, to share with all stakeholders	Upload on website; Social media announcement with link; Upload report on Zenodo
Report - Compiling of Environmental Impact assessment legal frame and permit requirements for CO2 geological storage. task 4.3-Collection of national legal frame and permits requirements for CCUS implementation	4.7	REPSOL	Compilation of legal frameworks, Permit requirements for CO2 storage	Legal compliance, Environmental impact assessment	Legal experts, CCS developers, Regulatory agencies, Environmental consultants	Public report, to share with all stakeholders	Upload on website; Social media announcement with link; Upload report on Zenodo

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EIA report - Identifying and assessing potential impacts of the CO2 storage in the surroundings in terms of human health, biodiversity, water, land and atmosphere. task 4.3-Identifying and assessing potential impacts of the CO2 (short term and permanent) storage in the surroundings in terms of human health, biodiversity, water, land and atmosphere	4.8	IGME	Identification of environmental impacts, EIA for CO2 storage projects	Environmental protection, CO2 storage project planning	Environmental agencies, CCS developers, Local communities, Policy makers	Public report, to share with all stakeholders	Upload on website; Social media announcement with link; Upload report on Zenodo
Report - Economic evaluation of alternatives and prioritization results. task 4.4-Description of economic evaluation (process and parameters) of the proposed alternatives and prioritization results for each region.	4.9	IGME	Economic evaluation of alternatives, Prioritization for CO2 storage projects	CCS project development, Economic assessments, Policy making	CCS developers, Financial analysts, Policy makers, Environmental agencies	Public report, to share with all stakeholders	Upload on website; Social media announcement with link; Upload report on Zenodo
Report - Socioeconomic impact of CCUS pilot implementation. Methodology and application to Ebro Basin. task 4.4-Socioeconomic impacts of a CCUS implementation on Ebro Basin	4.10	CIEMAT	Analysis of CCUS impacts, Socioeconomic benefits and challenges	CCUS pilot projects, Socioeconomic assessments	Researchers, Local communities, CCS developers, Policy makers	Public report, to share with all stakeholders	Upload on website; Social media announcement with link; Upload report on Zenodo
Report - Description and results of the probabilistic assessment and sensitivity analysis of the development concept. task 4.5-Description of probabilistic/stochastic economic evaluation of the concept selected for each region.	4.11	IGME	Probabilistic assessment results, Sensitivity analysis for development concepts	CCS project planning, Risk management, Economic evaluations	CCS developers, Risk analysts, Policy makers, Environmental agencies	Public report, to share with all stakeholders	Upload on website; Social media announcement with link; Upload report on Zenodo
Report - Pre-FEED and Final proposal for a concept development by regions. Task 4.5-Final proposal description and justification for a concept development by regions	4.12	IGME	Pre-FEED analysis and final concept proposal, Regional development strategies	CCS project development, Concept evaluation, Regional planning	CCS developers, Policy makers, Investors, Environmental agencies	Public report, to share with all stakeholders	Upload on website; Social media announcement with link; Upload report on Zenodo
Report - Methodological guidelines for risk assessment. Description of methodological common standards and the main workflow that will be applied in	5.1	BRGM	Guidelines for risk assessment in the PilotSTRATEGY regions, but can be useful for others	in the PilotSTRATEGY regions, but can be useful for other regions	Project's local teams; scientific community	Public report, to share with all stakeholders	Upload on website

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the risk assessment of each target region.							Social media announcement with link Upload report on Zenodo
Report - Recommendations for safety and performance analyses of storage pilot in the Paris Basin. task 5.6: Based on the outcomes of tasks 5.1-5.5 for Pilot Paris Basin, the deliverable will regroup the recommendations based on the risk assessment related to: Future research, options recommendations, draft monitoring and corrective measure plans and other regulatory requirements.	5.2	BRGM	Recommendations for pilot project safety and performance, Future research directions	CCS project management, Pilot project evaluations	CCS developers, Environmental agencies, Researchers, Local communities	Public report, to share with all stakeholders	Upload on website Social media announcement with link Upload report on Zenodo
Report - Recommendations for safety and performance analyses of storage pilot in the Ebro Basin. Task 5.6: Based on the outcomes of tasks 5.1-5.5 for Pilot Ebro Basin, the deliverable will regroup the recommendations based on the risk assessment related to: Future research, options recommendations, draft monitoring and corrective measure plans and other regulatory requirements.	5.3	CIEMAT	Recommendations for pilot project safety and performance, Future research directions	CCS project management, Pilot project evaluations	CCS developers, Environmental agencies, Researchers, Local communities	Public report, to share with all stakeholders	Upload on website Social media announcement with link Upload report on Zenodo
Report - Recommendations for safety and performance analyses of storage pilot in the Lusitanian Basin. task 5.6: Based on the outcomes of tasks 5.1-5.5 for Pilot Lusitanian Basin, the deliverable will regroup the recommendations based on the risk assessment related to: Future research, options recommendations, draft monitoring and corrective measure plans and other regulatory requirements.	5.4	UEVORA	Developing planning promising and safe storage sites	Facilitate the subsequent application for storage and kick start of CCUS	Operators of CO2 injection and storage sites; regulating and permitting Authorities; CCUS developers	Share with partners; share with stakeholders	Technical conference and workshops; Guidelines for the application for storage publishes on project webpage and promote in partners networks; Scientific papers, technical

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							conference; meeting with regulator and policy makers
Report - Draft analysis of policy alignment including country case studies. This deliverable will look into the policy context for CCUS on the European level as well as for the countries under study. The analysis includes an analysis of the alignment of the policies.	6.1	Fraunhofer	Analysis of policy context, Policy alignment for CCUS implementation	Policy development, CCUS strategies, European and national regulations	Policy makers, CCS developers, Researchers, Environmental agencies	Public report, to share with all stakeholders	Upload on website Social media announcement with link Upload report on Zenodo
Report - Community Acceptance: Findings from community profiles and first local survey. Task 6.2 and 6.3: Community profiles for the regions will be developed. The basis for the profiles is desk research, interviews and a media analysis and will be complemented by the first survey round.	6.2	CIEMAT	Community profiles, Initial acceptance survey findings	Community engagement, CCUS project support	Local communities, Policy makers, CCS developers, Environmental agencies	Public report, to share with all stakeholders	Upload on website Social media announcement with link Upload report on Zenodo
Report - Citizen engagement strategy: development of regional concepts. Task 6.4: Based on the outcomes of tasks 6.1-6.3 at this point in the project a strategy for community engagement will be developed in task 6.4. This will be described in detail in the deliverable	6.3	CIEMAT	Strategies for community engagement, Regional concepts for participation	Community engagement, Regional planning, CCUS project support	Local communities, Policy makers, CCS developers, Environmental agencies	Public report, to share with all stakeholders	Upload on website Social media announcement with link Upload report on Zenodo
Report - Stakeholder engagement: regional committees. Task 6.5: The regional committees are a key element of the participation strategy as through them the project reaches out to the regions. The methodology and implementation strategy for the committees will be	6.4	Fraunhofer	Methodology for stakeholder committees, Outcomes of committee discussions	Stakeholder engagement, Community relations, CCUS project planning	Local communities, CCS developers, Policy makers, Environmental agencies	Public report, to share with all stakeholders	Upload on website Social media announcement with link Upload report on Zenodo

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described in this deliverable as well as the outcomes of the committee discussions.							
Report - Summary report on public acceptance: findings from second survey and citizen engagement. Task 6.3: This deliverable presents the findings from the second survey. In addition, the outcomes of the citizen engagement strategy will be described.	6.5	Fraunhofer	Findings from second survey, Citizen engagement outcomes	Public acceptance, Community feedback, CCUS project support	Local communities, Policy makers, CCS developers, Environmental agencies	Public report, to share with all stakeholders	Upload on website Social media announcement with link Upload report on Zenodo
Report - Revised analysis of policy alignment. Task 6.1: Towards the end of the project the analysis of the policy alignment will be repeated and updated and, thus, a second deliverable on alignment will be presented.	6.6	Fraunhofer	Updated policy alignment analysis, Insights for future CCUS policies	Policy development, CCUS strategies, European and national regulations	Policy makers, CCS developers, Researchers, Environmental agencies	Public report, to share with all stakeholders	Upload on website Social media announcement with link Upload report on Zenodo
Report - Policy brief with guidelines for public engagement and recommendations. Task 6.1-6.6: A policy brief towards the end of the project will summarise the main outcomes of WP6 regarding social acceptance and participation. This brief is directed at policy makers.	6.7	Fraunhofer	Policy brief summarizing public engagement outcomes, Recommendations for future CCUS policies	Policy development, Public engagement, CCUS project support	Policy makers, CCS developers, Environmental agencies, General public	Public report, to share with all stakeholders	Upload on website Social media announcement with link Upload report on Zenodo
Project website and social media accounts fully operational	7.3	UEDIN	Communication and dissemination tool	CCUS project visibility	General public, CCS stakeholders, Research community	Regular updates, Engaging content, Project visibility	Update website with news, announcements, and results; Maintain social media presence Website open and accessible to all during the project

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							and up to 2 years after the end of the project
Project poster and briefing leaflet	7.4	UEDIN	Communication and dissemination tool	Project visibility	Scientists, project partners, CCUS project developers, Policy makers, Media	Share knowledge	Upload on website Social media announcement with link Email partners with link to poster and project briefing leaflet
Newsletters & Videos compilation. Project newsletters with Media content including a series of videos to broadcast research results and outputs to a targeted list of key stakeholders. Month 6, 12, 18, 24, 30, 36, 42, 48, 54. Task 7.3.3. Newsletters and Task 7.3.4. Videos. Project newsletters with Media content including a series of videos to broadcast research results and outputs to a targeted list of key stakeholders. Month 6, 12, 18, 24, 30, 36, 42, 48, 54	7.5	UEDIN	Communication and dissemination tool	Project visibility	Scientists, project partners, CCUS project developers, Policy makers, Media	Share knowledge	Upload on website Social media announcement with link Email partners with link to poster and project briefing leaflet
Report - Exploitation plan - Initial Version of Exploitation plan. Description of anticipated applications for commercial CO2 storage site development, with an initial assessment of key end-users. Report - Exploitation plan – Final. Description of specific applications for commercial CO2 storage site development, early investment evaluation, climate change	7.7 7.8	UEDIN	Exploitation of project results	CCUS development	Scientists, project partners, CCUS project developers	Share with partners	Email partners with a link

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policy and regional technology roadmap, with an initial assessment of the key end-users.							
Data management plan ORDP - Data Management Plan – Final version of Data Management Plan	7.9 7.10	UEDIN	Comprehensive data management strategy, Guidelines for data handling	Data management, Research data sharing, Project documentation	Research institutions, Data managers, Policy makers, CCS developers	Public report, to share with all stakeholders	Upload on website; Social media announcement with link; Upload report on Zenodo

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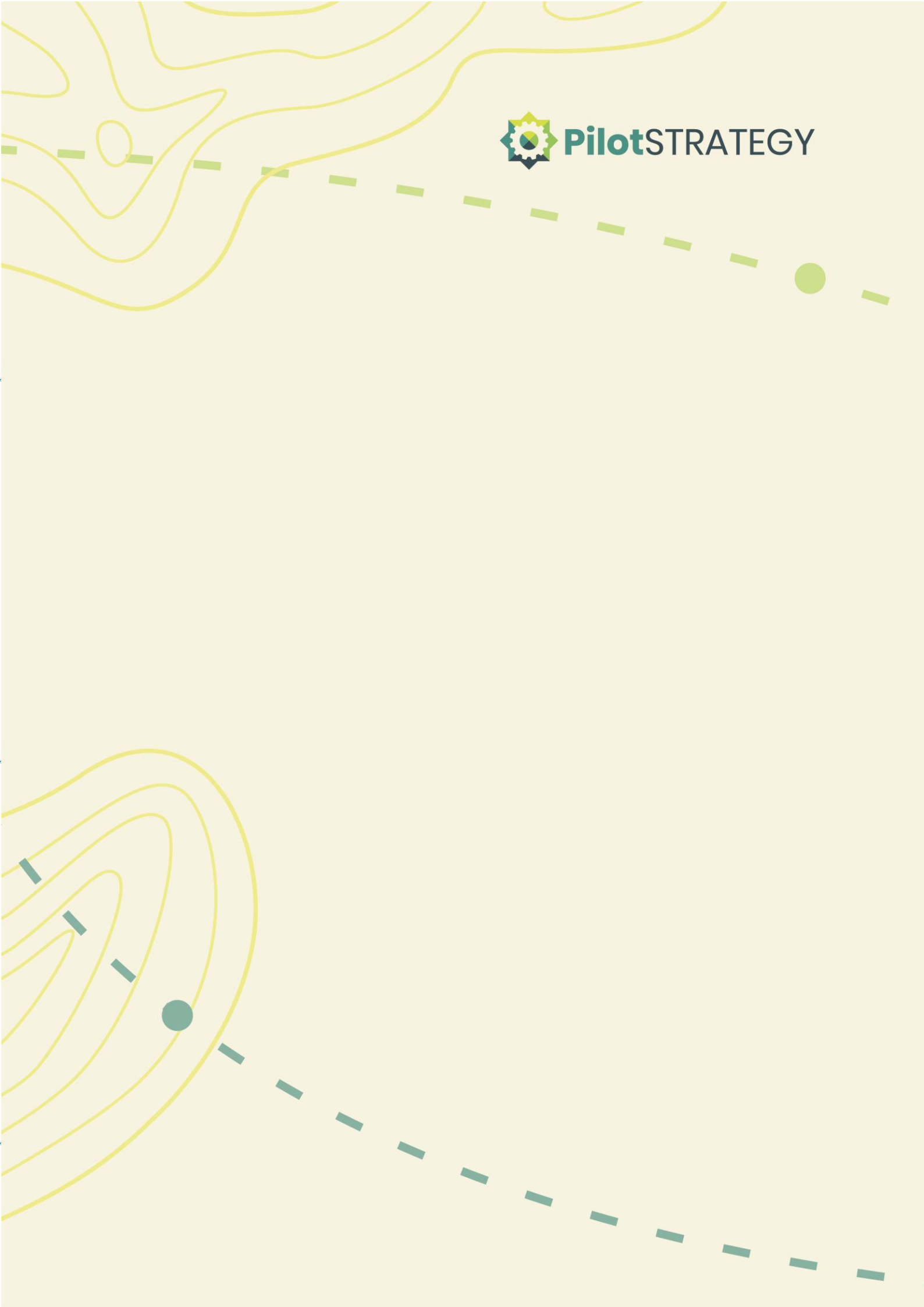
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