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D4.5 Sustainability and Exploitation Plan

Final version

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D4.5: Sustainability & Exploitation Plan		
Summary		
This document presents the final version of the Sustainability and Exploitation Plan. It includes the strategies for the use, commercialisation, and long-term sustainability of the project's results, with a focus on ensuring continued impact and value beyond the project's conclusion.		
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List of Acronyms and Abbreviations

AMB	Barcelona Metropolitan Area
BY	Attribution
CC	Creative Commons
CI	Critical Infrastructure
CoP	Community of Practices
CS	Case Study
CSF	Case Study Facilitators
D	Deliverable
DSS	Decision Support System
EC	European Commission
EEA	European Environment Agency
E&S	Exploitation and Sustainability
EU	European Union
GA	Grant Agreement
GIS	Geographic Information System
HRB	Horizon Results Booster
IP	Intellectual Property
IPR	Intellectual Property Rights
KER	Key Exploitable Result
M	Millions
NC	Non-Commercial
NDA	Non-disclosure agreement
R&I	Research and Innovation
RAF	Resilience Assessment Framework
RAT	Resilience Assessment Tool
SAR	South Aegean Region
SLZ	Salzburg Region
UVP	Unique Value Proposition
WP	Work Package

Executive Summary

The ICARIA project is a Research and Innovation Action (RIA) project, primarily focused on advancing scientific knowledge, methodologies, and tools for multi-hazard climate risk assessment, resilience planning, and adaptation decision-making. While the main emphasis of the project is on research and innovation, the project also addresses the potential for commercialisation and practical application of the results, where relevant.

This report is the **final version of the Sustainability and Exploitation Plan, developed within the ICARIA project (GA No. 101093806)**. It builds upon the first sustainability and exploitation deliverable (D4.4), which included the initial plan and expectations of the ICARIA's Key Exploitable Results. Current deliverable showcases the project's achievements and outlines the individual exploitation plans for the results with the biggest potential to be exploited after the end of the project, as well as a plan for joint exploitation for several results, with the main focus on the Decision Support System (DSS), as the central platform. This report also indicates the lessons learnt, and the sustainability pathways following the finalisation of the project's implementation, validation, and replication work.

Particular emphasis is being given to the **main result of ICARIA, the DSS platform**, which has been designed to consolidate multiple tools and methods contributing to an integrated, user-friendly decision-support system. The DSS approach to the market involves firstly a pilot-driven approach, inspired by the mini trials conducted during the project. The platform will be first showcased to selected civil protection agencies (indicatively appeared in Section 2.5.1), aiming to meet region or sector specific requirements. After the end of the project, and following successful pilots, the **DSS will be positioned as a market-ready solution under a subscription-based SaaS model, complemented by expert consulting and optional premium datasets**, allowing for sustainable commercial uptake, while respecting the intellectual property contributions of all partners.

Additionally, lessons learnt from **trial events (T4.2; detailed in Section 8.1)** highlight the usefulness of the DSS across different stakeholder groups, with policy-oriented users valuing the RAF, and infrastructure operators particularly appreciating the RAT, and asset-level impact assessments. Feedback from the **replication activities (T4.3; detailed in Section 8.2)** that will follow up in the project, will provide further insights on the stakeholders' interest and the potential of transferring ICARIA results to other contexts across Europe.

Overall, this report demonstrates how the **ICARIA consortium has systematically translated research outputs into exploitable results, combining individual KER exploitation with joint platform-based strategies**. This approach balances scientific robustness with practical applicability, ensuring that ICARIA's innovative solutions for climate adaptation and resilience can achieve long-term impact across different sectors.

1. Introduction

In recent years, Europe has experienced a sharp increase in the frequency, intensity, and complexity of climate-related disasters, such as floods, heatwaves, droughts, and cascading compound events, which have become more common. According to the European Environment Agency (EEA), between 1980 and 2024, the EU suffered economic losses of approximately €822 billion from weather and climate related extremes, with hydrological hazards (flood) alone accounting for 47% half of the total (European Environment Agency, 2023). They are also increasingly recognised as posing serious risks to human health, public safety, and critical infrastructure, including energy, water, and transport systems, disrupting essential services and undermining quality of life across the continent. (European Environment Agency, 2024a). Such multifaceted impacts highlight the urgent need for robust adaptation and resilience planning.

The **ICARIA project responds to the rise in climate-related risks by developing a new, asset-level framework** to better understand how climate hazards affect critical infrastructure and how resilience can be strengthened in a cost-effective way. The project looks at climate risks not only individually, but also altogether in combination, considering multiple hazards and their potential cascading impacts on interconnected systems. ICARIA tests this approach in **three case study regions with different climates and local needs**, where these pilots help demonstrate how the framework and tools can be applied in real conditions and how they can be adapted for use in other territories.

The **central result of ICARIA is the Decision Support System (DSS)**, developed under SS06 by DRAXIS, in collaboration with the consortium partners, bringing together several of ICARIA's scientific tools such as climate projections, multi-hazard and impact modelling, resilience assessment, and a portfolio of adaptation solutions, within a single digital platform. Its primary intended users are civil protection managers, infrastructure and service asset operators. The DSS helps these users compare different adaptation options, understand their expected benefits and costs, and support more informed and transparent decision-making.

This deliverable (D4.5) focuses strongly on the **exploitation and sustainability of the main Key Exploitable Results (KERs)** that were initially identified in D4.4. **Main attention is on the exploitation and sustainability of the DSS**, which is considered the KER with the highest economic exploitation potential by the consortium. The aim is to define how the DSS and the associated methodologies can continue to create value for public authorities, infrastructure owners, and the other potential users after the project ends.

Overall, this report builds on the preliminary plan presented in D4.4 and incorporates all insights gained during the project's implementation and replication work. It reflects lessons learnt from Task 4.2, Task 4.3, the input received through Horizon Results Booster services, partner workshops, and bilateral consultations with the partners. Together, these elements form the final strategy for exploiting and sustaining ICARIA's results and supporting their uptake in other regions.

1.1 Document Scope

The purpose of this report is to **present the final strategy for the exploitation, sustainability, and replication of the ICARIA project results**. It builds on the preliminary plan outlined in D4.4, and integrates the findings and insights obtained from the implementation and replication activities carried out under Tasks 4.2 and 4.3. The current document outlines the methodology adopted for exploitation, and IPR management, provides an updated market analysis, and lists the final KERs with the most potential of exploitation after the end of the project. It also describes both individual and joint exploitation strategies, incorporates feedback from the HRB services, and presents the business plan for ICARIA's commercial results. In addition, it explores potential business schemes and funding mechanisms to ensure the long-term sustainability and market uptake of the ICARIA solutions. Finally, the deliverable captures the lessons learnt during the project's implementation and offers guidance for the continued exploitation of ICARIA results beyond the project's duration.

1.2 Methodology

The development of this deliverable followed a structured, multi-step process designed to maximise the exploitation potential of the project's results and ensure their lasting impact beyond the project's duration. The process began with an updated market analysis, conducted through targeted desk research to identify current trends, emerging opportunities, and potential barriers affecting the market uptake of the ICARIA's solutions. Building on this foundation, the consortium has made targeted use of the Horizon Results Booster (HRB) services, a process led by DRAXIS, which provided tailored guidance to strengthen the exploitation readiness of the project's tools, more specifically the **DSS**, the **RAF** and the **RAT**, and improve their potential market entry.

Additionally, a dedicated workshop held during the project's plenary meeting in Rhodes, Greece served as a key milestone for this process. During the session, partners engaged in collaborative discussions on **exploitation pathways**, **IPR management**, and **business models**, as well as on **joint exploitation activities** between partners. The outcomes of these exchanges were instrumental in refining the strategic direction of the exploitation plan.

Following the workshop, each partner's **Individual Exploitation Plan** was revisited and further developed. To support this, a set of customised questionnaires were distributed to partners in order to collect detailed information on ownership, target users, and post-project intentions. In addition, bilateral meetings were being held when necessary to deepen the analysis, validate assumptions, and ensure that all exploitation strategies reflect realistic and achievable commitments.

Finally, all inputs collected through these steps, including findings from the market research, HRB feedback, workshop outcomes, and partner consultations, were consolidated, analysed, and synthesised into the present deliverable. This integrated approach ensures that the final Exploitation and Sustainability plan reflects both the diversity of ICARIA's results and the shared ambition of the consortium to sustain and expand their impact beyond the project's lifetime.

1.3 Structure

Section 1. Provides an overview of the ICARIA project, defines the structure and scope of this deliverable, and presents the methodology applied.
Section 2. Includes an updated market analysis reflecting the latest trends and developments in the industry.
Section 3. Presents the updated list of KERs and the associated IPR measures for each.
Section 4. Presents the exploitation strategies, covering both individual exploitation plans and joint exploitation efforts among partners.
Section 5. Showcases the contribution of Horizon Results Booster services and their integration into the project's exploitation planning.
Section 6. Includes the Business Strategy and Sustainability Plan for ICARIA's commercial result and explores potential business schemes to ensure long-term sustainability.
Section 7. Includes the Lessons learnt from the implementation activities and the recommendations for replication based on the outcomes of T4.2 and T4.3 respectively.

Section 8. Synthesises the key insights derived from the exploitation planning process and summarises the overall conclusions regarding the continued relevance and impact of ICARIA's results beyond the project's lifetime.
Appendix 1: Data Management Statement
Appendix 2: Horizon Results Booster Templates
Appendix 3: Horizon Results Booster Final Report

1.4 Overview of D4.4

Deliverable D4.4 submitted in M21, presented the 1st version of the Sustainability and Exploitation Plan and set out the partners' initial intentions for how the project's results could be used and protected. Based on input from the consortium, eight Key Exploitable Results (KERs) were initially identified. As the project progressed, two additional KERs were introduced, and the original KERs were further broken down into sub-KERs - named Other Exploitable Results (OERs) - to better capture their specific components and value. At the same time, three results that were initially considered as KERs were removed from the KERs' list after being assessed as having no exploitable potential. Additionally, D4.4. also included partners' early preferences for individual or joint exploitation, initial plans for managing intellectual property, and a first view of how the results could support long-term sustainability in the case studies. This version served as the starting point for the more refined, consolidated plan presented in the current deliverable.

2. Market Analysis

The current market analysis is concentrated around the climate adaptation market where the ICARIA DSS will be positioned as the main exploitable result of the project. The global climate adaptation market was valued at USD 30.13 billion in 2024 and is expected to increase to USD 35.50 billion in 2025, reaching USD 104.93 billion by 2032. This growth reflects a compound annual growth rate (CAGR) of 16.74% over the forecast period (Fortune Business Insights, 2025). Europe in particular, is increasingly affected by extreme weather events such as floods, droughts, heatwaves, and storms (European Environment Agency, 2025). These hazards, intensified by rising temperatures and shifting precipitation patterns, pose serious risks to critical infrastructure, public health, ecosystems, and water systems (European Environment Agency, 2025b). Furthermore, disasters can cause severe or even irreversible damage to natural environments and cultural heritage, which are often not fully captured in monetary loss statistics, highlighting the importance of safeguarding these invaluable resources. In addition, such hazards negatively affect the competitiveness of our economies and overall welfare, underlining the broader economic and social stakes of effective climate adaptation and resilience planning.

This market context is further reinforced by historical evidence of the growing economic burden of climate-related disasters across Europe. As illustrated in **Figure** *1*, and according to the European Environment Agency, weather and climate related extremes cause an estimated €822 billion in economic losses between 1980 and 2024, with €208 billion, around a quarter of the total, incurred in just the last four years. Average annual losses have risen sharply over time, from €8.6 billion in the 1980s to nearly €45 billion per year in 202-2024. **Floods** account for **47%** of total losses, followed by **storms (17%)** and **heatwaves (18%)**, illustrating the complex multi-hazard landscape of the EU (European Environment Agency, 2023). This accelerating loss pattern underscores the need for anticipatory, data-driven risk management tools.

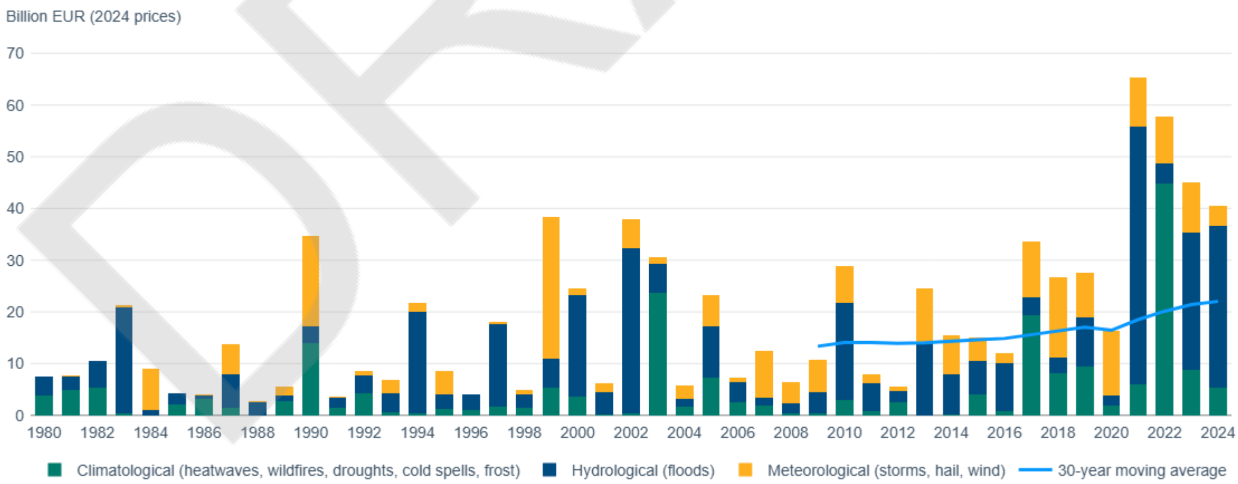

Figure 1 - Annual economic losses caused by weather and climate-related extreme events in the EU Member States

Source: EEA, https://www.eea.europa.eu/en/analysis/indicators/economic-losses-from-climate-related

Projections further highlight the urgency of taking action: annual damage to Europe's critical infrastructure due to climate change alone is projected to increase tenfold by the end of the century under business-as-usual scenarios, from EUR 3.4 billion to EUR 34 billion, with the industry, transport, and energy sectors being most affected (European Commission, 2020). Interdependencies between infrastructure systems amplify the risk of cascading failures, making resilience planning more urgent and complex. In response to these evolving risks, there is **growing demand for proactive and data-driven adaptation strategies that can help regions and sectors anticipate and manage climate-related impacts** (European Commission, 2021). The use of advanced digital tools, scenario analysis, and participatory planning is becoming central to the European approach to climate adaptation, supporting evidence-based decision-making and operational agility in disaster response (European Environment Agency, 2025c). ICARIA DSS responds to these needs by providing integrated modelling, vulnerability assessment, and scenario-based capabilities that directly support authorities in anticipating and reducing future climate impacts effectively.

The human toll of climate extremes further highlights the critical need for such solutions. As shown in **Figure *2***, **Spain (113,627)**, **Germany (107,508)**, **France (69,059)**, and **Italy (56,855)** account for the highest absolute numbers of fatalities from weather related events in EU-27 between 1980 and 2024, largely due to floods, heatwaves, and storms. Other Southern European countries, including **Portugal (20,339)**, and **Greece (14,096)**, have also suffered significant losses, largely due to heatwaves, wildfires, and droughts. Smaller nations such as **Malta (170)**, **Luxembourg (218)**, and **Cyprus (253)** report lower absolute fatalities, though their smaller populations make these events proportionally impactful (European Environment Agency, 2023). This pattern suggests a clear correlation between climate hazard exposure and fatalities, particularly in Mediterranean and central-western Europe, underscoring the value of proactive adaptation tools like the ICARIA DSS, which aims to help authorities and infrastructure managers anticipate risks, prioritise interventions, and reduce human losses from future extreme events.

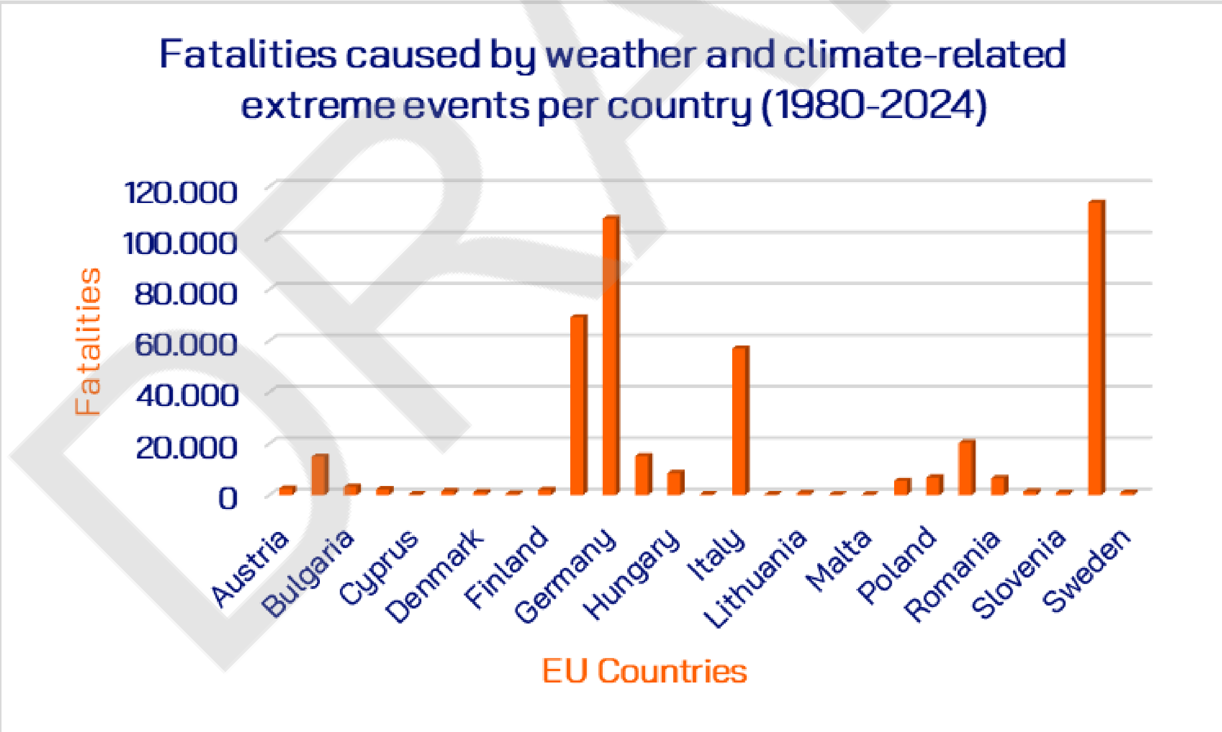

Figure 2 - Fatalities caused by weather and climate related extreme events
Source: EEA, https://www.eea.europa.eu/en/analysis/indicators/economic-losses-from-climate-related

Additionally, the European climate adaptation market is expanding as a result of heightened climate risks, rising public and institutional awareness followed by supportive regulatory frameworks, increased investment in resilient infrastructure, and technological progress (European Council, 2021). In 2023, the European Union and its 27 Member States allocated €28.6 billion in public climate finance, with an additional €7.2 billion mobilised from private sources (European Council, 2023), which is one of the key factors for success. This substantial investment underlines the scale and urgency of climate adaptation, the growing size of this market, and highlights the relevance of ICARIA's tools as timely and valuable solutions to support adaptation planning and implementation across Europe.

2.1 Market Trends and Opportunities

Table 1 presents the main trends shaping demand for adaptation products and services, and the opportunities these create for the ICARIA's KERs, specifically the DSS.

1. Public and Private Climate Funding as a Market Driver	In 2023, the European Union and its 27 member states contributed €28.6 billion in climate finance from public sources and mobilised an additional €7.2 billion of private finance to support climate action in developing countries. Approximately half of the public funding was directed to climate adaptation or cross-cutting initiatives (European Council, 2023). Private financing is also expected to grow, driven by mechanisms such as business continuity, regulatory compliance, and ESG strategy criteria, increasing the overall resources available for adaptation measures. **How the DSS leverages this:** This large and growing pool of adaptation funding creates a great opportunity for tools like the ICARIA DSS, which can help authorities and infrastructure operators plan, prioritise, and justify adaptation measures in a transparent, evidence-based way, supporting both public resource allocation and private investment decisions aligned with business continuity, regulation compliance, and ESG strategies.
2. Compound and Interconnected Climate Hazards	Europe is facing more complex risks, where one hazard impacting a system can trigger problems in other systems. For instance, a failure in water or energy infrastructure can cascade into wider disruptions that affect communities, the economy, and public services. The European Climate Risk Assessment notes that these connections can lead to risk cascades, where a risk originating in one system is transmitted to others, highlighting the limits of traditional single-hazard planning (European Environment Agency, 2024b). **How the DSS leverages this:** This growing complexity is exactly why the ICARIA DSS is so valuable, as it allows decision-makers to visualise how multiple hazards and system interdependencies interact, helping them compare adaptation options and make smarter, more holistic choices.
3.Data-driven and transparent decision-making	The European Investment Bank (EIB) states that "smart adaptation, is adaptation informed by a robust understanding of the impacts of climate change" and emphasises that "the ability to adapt thus relies heavily on the availability and interpretation of data about current and future climate" (European Investment Bank Group, 2021). These statements reflect how policymakers are demanding tools that bring together climate-data, risk modelling and decision support. **How the DSS leverages this:** This is precisely where the ICARIA DSS comes in, as it integrates climate projections, impact and resilience metrics, and a portfolio of adaptation solutions, enabling decision-makers to compare adaptation pathways transparently and build evidence-based choices.
4.Using Advanced Digital Tools for Adaptation Planning	Recent developments in climate adaptation increasingly rely on digital and data-driven tools. The European Climate Adaptation Platform (Climate-ADAPT), managed by the EEA, highlights the growing role of modelling, indicators, and data services in supporting adaptation planning (Climate

	ADAPT, 2024). These advances help stakeholders visualise climate risks in greater detail and explore future scenarios with more confidence. **How the DSS leverages this:** The ICARIA DSS leverages this trend by integrating multi-hazard modelling, impact assessment metrics, and scenario analysis in one interactive platform, giving decision makers the ability to compare adaptation strategies, assess potential outcomes, and prioritise measures based on a robust evidence base.
5.Strategic foresight and scenario planning	Decision-makers are increasingly applying foresight practices to anticipate future risks, assess uncertainties, and evaluate the effectiveness of adaptation strategies (The Joint Research Centre, 2024). **How the DSS leverages this:** The ICARIA DSS supports these needs by integrating multi-scenario analysis and participatory planning tools, allowing users to explore potential future and stress-test strategies.

Table 1 - Market Trends and Opportunities for ICARIA results

2.2 Potential Barriers

Despite the positive market conditions, several barriers could influence the uptake and adoption of the DSS, as portrayed in **Table *2***.

Type	Barrier	How it can be mitigated
Regulatory/Legal	Differences in national climate adaptation policies and reporting requirements may make DSS deployment inconsistent across EU Member States.	Ensure DSS outputs comply with each country's reporting framework, and provide policy alignment guidelines.
Political/Regulatory	Temporary political shifts may reduce attention, priority, or funding for climate adaptation initiatives.	Highlight DSS relevance for resilience and crisis management beyond climate change agendas, and proactively disseminate pilot results and case studies to maintain visibility.
Technical	DSS requires integration with local infrastructure and hazard monitoring systems, which may have incompatible formats or low-quality data.	Develop flexible data import modules, and offer integration support for different monitoring platforms. Ensure continuous tools development and updates to maintain compatibility with evolving operating systems, web browsers, and local infrastructure. Plan for regular software maintenance and upgrades to prevent technological obsolescence and keep the DSS alive and up-to-date.
Financial/Market	Smaller municipalities or utilities may lack the budget to procure, implement, or maintain the DSS.	Provide tiered pricing, or pilot funding support.
Contractual/Market	Public bodies must procure tools through competitive tendering, meaning the DSS can only be adopted by certain public bodies, if the consortium wins against other providers, creating competition difficulties.	Plan DSS deployment in compliance with public procurement rules. Strengthen competitiveness by demonstrating tool effectiveness through pilot projects, preparing clear documentation, and offering flexible deployment or service models.

User/Adoption	End-users (municipalities, infrastructure operators) may not fully trust model outputs or may be unfamiliar with scenario-based decision-making.	Provide expert consultancy along with the tool: conduct workshops and pilot demonstrations; provide case studies input from ICARIA trial sites, and offer interactive dashboards with clear visualisations.
Privacy Concerns	Sharing detailed infrastructure and vulnerability data may raise privacy, security, or national security concerns.	Use built-in security features, implement strict authentication and access controls, and follow GDPR and national data regulations.

Table 2 - Potential Barriers & Mitigation Measures

2.3 SWOT Analysis

In order to identify key factors influencing the adoption and success of the ICARIA DSS, a SWOT analysis has been conducted, assessing internal strengths and weaknesses of the DSS, as well as external opportunities and threats, as portrayed in ***Table 3***.

Strengths	Weaknesses
• **Integrated, all-in-one solution:** The DSS consolidates multiple ICARIA-developed tools, methods, and models (hazard models, impact assessment, RAF & RAT resilience tools, adaptation measures) into a single, coherent platform, offering a comprehensive climate risk and resilience planning solution. • **User-friendly interface:** Web-based, and interactive; designed to reduce reliance on GIS or advanced modelling expertise, making it accessible to technical experts, public authorities, and broader stakeholders. • **Strong scientific foundation:** All methodologies are grounded in expert-reviewed approaches, validated in three diverse case study regions (Barcelona, South Aegean, Salzburg), enhancing credibility and reliability. • **Powerful visualisation and analysis features:** Includes interactive maps, scenario comparison, multi-hazard support, and localised risk assessments that allow decision-makers to understand, compare, and act on data. • **Built-in resilience assessment tools:** The RAF and RAT enable structured evaluations of urban and infrastructure resilience, providing clear metrics and indices. • **Prioritisation of adaptation options:** A portfolio offering 320 curated adaptation measures that support prioritisation using multi-criteria assessment.	• **Dependence on data availability and quality:** DSS effectiveness relies on the completeness, accuracy, and timeliness of hazard, exposure, and vulnerability data. • **Limited awareness**: As a new tool, initial visibility outside project partners and pilot regions may be limited, potentially slowing early uptake and could create uncertainty for potential adopters and further delay market penetration. • **Initial integration burden:** Organisations may need to adjust internal workflows, processes, or digital infrastructure to fully adopt the DSS. • **Complexity for non-technical users:** Despite simplifications, some users may still require guidance to interpret multi-hazard outputs and resilience indicators.

• **Scenario comparison and decision support:** Enables evidence-based decisions by comparing impacts, resilience scores, and adaptation effectiveness across multiple scenarios. • **Collaboration and communication:** Scenario sharing, reporting tools, and exportable outputs foster transparency, stakeholder engagement, and consistent planning. • **Scalable and adaptable:** Platform design allows replication beyond the pilot regions and potential use in training, policy adoption, and broader resilience planning initiatives.	
Opportunities	**Threats**
• **Growing regulatory and market demand:** EU and national authorities face increasing pressure to implement climate adaptation plans, creating a strong demand for tools like the DSS. • **Public funding and investment:** EU Green Deal, Mission Adaptation, and structural funds provide financial support for tools that improve resilience planning and climate risk management. In parallel, private-sector investment is expected to grow as companies increasingly prioritise business continuity, risk mitigation, and climate-resilient operations. • **Expansion beyond pilot regions:** The tool's modular, scalable design allows adoption in regions beyond the three case studies, addressing similar climate hazards across Europe. • **Synergies with insurance and infrastructure sectors:** Asset-level risk and resilience insights can support insurers, infrastructure operators, and investors in decision-making. • **Positioning within EU climate service platforms:** Integration into Climate-ADAPT or other public platforms could enhance visibility and long-term uptake.	• **Competitive landscape:** Other DSS platforms and climate risk tools available, which may capture market share. • **Data privacy and interoperability concerns:** In some cases, the integration of user-defined data or infrastructure-sensitive information may raise legal or technical concerns. • **Limited early adoption and slow learning curve**: Despite scientific credibility, uptake may be slow until visibility, validation, and trust outside the consortium are established. • **Evolving climate modelling requirements:** Future changes in climate modelling methods, standards or regulations may require continued DSS updates to remain relevant. • **Changing political climate:** Potential backlash against climate change resilience investments, for instance, from shifts in US policy that may influence EU frameworks, could reduce interest and funding for DSS-supported initiatives.

• **Training, teaching, and policy adoption:** DSS can be leveraged in educational contexts, capacity building, and adoption of evidence-based adaptation policies.	

Table 3 - SWOT analysis

2.4 Competitive Landscape of ICARIA's DSS

The ICARIA DSS represents a unique integration of climate risk, resilience assessment, and adaptation planning functionalities into a single, user-friendly platform. Competitive tools, representing indirect competition are listed in **Table *4***, including their strengths, limitations and the competitive advantage the ICARIA DSS holds against them.

Competitive tool	Strengths	Limitations	Competitive advantage of DSS
REACHOUT Triple-A Toolkit: A toolkit that helps cities "Analyse Hazard, Exposure and Vulnerability, et Ambitions and select Actions" for climate adaptation.	Very user-oriented for municipal adaptation planning. It provides tools for assessing risk, setting long-term ambitions, and co-developing adaptation actions with stakeholders.	Focused on city-level adaptation; not designed for advanced multi-hazard physical modelling or detailed quantitative impact assessment.	ICARIA DSS integrates hazard modelling, resilience metrics, and a library of adaptation measures, usable for both municipalities and infrastructure operators.
DISTENDER DSS: A DSS that supports integrated adaptation and mitigation strategies under climate and socioeconomic scenarios.	It supports participatory development of strategies, trade-off analysis, and ranking of adaptation and mitigation strategies across multiple criteria (social, economic, climate)	Primarily geared towards strategy evaluation at policy level; lacks built-in-high-resolution hazard modelling and detailed asset-level impact simulations.	ICARIA DSS offers deep hazard modelling, impact quantification, resilience assessment, and adaptation prioritisation tailored to both strategy and technical planning.
MEDiate DSS: Multi-hazard and risk-informed DSS for disaster risk management and resilience planning.	Integrates multiple interacting natural hazards and social impacts; allows scenario simulations and "what-if" testing; co-developed with decision-makers.	Still in development, primarily research-focused; may not yet be fully marketed or adopted outside pilot regions; complexity may hinder simpler adaptation planning.	ICARIA DSS provides a mature, user-friendly platform with integrated hazard models, impact assessment, resilient metric, and adaptation measure libraries ready for immediate practical use by both planners and infrastructure operators.

Table 4 - Competitive Landscape

2.5 Target Segments and ICARIA's Opportunity

Considering the competitive landscape, ICARIA DSS is well-poised to fill important gaps for its key user segments in Europe:

1. **Municipalities and Regional Authorities:** Local and regional authorities increasingly need to prepare climate adaptation strategies and integrate them in urban/territorial planning but often lack internal modelling capacity or specialised GIS expertise. Many rely on external

consultants or static, non-interactive guidance documents. The ICARIA DSS offers these users a clear advantage by providing:

- **A user-friendly interface** that simplifies the process of running risk and resilience assessments without requiring advanced technical knowledge.
- **Integrated workflows** covering hazard, exposure, and vulnerability inputs, resilience scoring, and adaptation measure comparison.
- **Scenario analysis** that enables authorities to compare current risks, future projections, and the effects of targeted adaptation measures.
- **A library of 320 adaptation measures,** searchable and comparable through a built-in prioritisation method.

This combination through scientific robustness, transparency, and ease of use, meets the growing needs of European municipalities developing Climate Adaptation Plans under EU initiatives such as the Mission Adaptation to Climate Change. ICARIA can act as a practical "adaptation planning workspace" where planners explore options, compare their impacts, and communicate results clearly to decision-makers and citizens.

2. **Civil Protection Agencies and Emergency Management Authorities:** Civil Protection authorities need structured, transparent tools to assess climate-related risks, understand their implications for local systems, and plan long-term resilience actions. ICARIA supports this group by offering:
    - **Structured risk/impact workflows** for multiple hazard types (floods, wildfires, windstorms).
    - **Resilience assessment tools** (RAF and RAT) that help identify governance and infrastructure vulnerabilities.
    - **Scenario comparison features** allowing agencies to evaluate how different adaptation measures reduce impacts under future climate conditions.
    - **Consistent, exportable outputs** for communication and planning purposes.

ICARIA provides a solid foundation for preparedness and long-term planning, enabling authorities to assess climate risks and identify suitable adaptation strategies.

3. **Infrastructure Planners and Operators:** Entities responsible for critical infrastructure, such as utilities, transport networks, industrial facilities, and public services, need reliable tools to assess climate risks, plan adaptation measures, and ensure continuity under future climate scenarios. ICARIA DSS supports this group by offering:
    - **Asset-level risk and impact assessment workflows** that integrate hazard, exposure, and vulnerability data.
    - **Multi-hazard scenario analysis** to evaluate potential impacts from floods, wildfires, and windstorms.
    - **A portfolio of over 320 adaptation measures** with filters and prioritisation tools to identify the most effective interventions.
    - **Interactive visualisation** through the Map Viewer, enabling spatial analysis and scenario comparison.
    - **Structured, exportable outputs** to support internal planning and communication with stakeholders.

By providing a harmonised and user-friendly platform, ICARIA DSS supports infrastructure planners and operators to make evidence-based decisions, compare alternative adaptation strategies, and optimise resilience investments, together with consultancy services that help ensure transparency and consistency.

2.5.1 Examples of Potential Clients

Building on the section of "Potential Collaborators" initially introduced in D4.4, the following table outlines the clients that could be targeted for the introduction and adoption of the DSS platform, including any municipalities selected by the Regional Water Basin Agencies to perform flood risk assessment according to EU Flood directive procedures. The aim is first to demonstrate the platform's capabilities and the value it offers in supporting climate adaptation and resilience planning within the regions, and subsequently to facilitate its adoption through tailored commercial engagements.

Organisation name	Country	Primary Use/Relevance
Region of Central Macedonia	Greece	Use the DSS to support regional-level climate risk screening for heatwaves, floods, and droughts, informing climate adaptation planning, prioritisation of resilience measures, and integration of climate considerations into regional development and cohesion strategies.
Region of Attica	Greece	Apply the DSS to support flood risk and heat-stress assessments in densely populated areas, enabling evidence-based resilience planning for transport, energy, and social infrastructure and supporting the integration of climate adaptation considerations into regional policy frameworks.
Ayuntamiento de Barcelona – Office of Climate Emergency (Oficina d'Emergència Climàtica)	Spain	Use the DSS to support urban-scale assessment of climate hazards such as extreme heat and pluvial flooding, compare adaptation scenarios, and monitor progress of climate resilience actions across municipal services within the city's climate emergency planning framework.
Area Metropolitana de Catalunya	Spain	Employ the DSS to assess and compare climate risks across multiple municipalities, support metropolitan-scale coordination of adaptation measures, and enable scenario-based planning to prioritise resilience investments across transport, water, and urban systems.
Spanish Water Basin Agencies (e.g. Agencia Catalana de L'Aigua)	Spain	Use the DSS to support basin-scale flood and drought risk assessments, explore climate change impacts on hydrological systems, and inform strategic planning of adaptation measures in line with EU Water Framework and Floods Directive requirements.
Lower Austria – Provincial Civil Protection Directorate (NÖ Landeswarnzentrale und Zivilschutz)	Austria	Use the DSS as a strategic decision-support tool to enhance multi-hazard risk awareness, support preparedness and contingency planning, and improve coordination with municipalities by integrating climate-related risk scenarios into civil protection planning processes.
Upper Austria – Department for Environmental Protection and Risk Management (Oberösterreichisches	Austria	Apply the DSS to support regional environmental risk assessments, explore climate-related hazard scenarios, and inform strategic planning and coordination of risk management and prevention

Landesamt für Umwelt und Risikomanagement)		measures across environmental protection and civil protection domains.

Table 5 - Potential Clients

3. Key Exploitable Results (KERs)

As ICARIA reaches its final stage, the consortium has refined and validated the project's list of KERs. They represent the most mature and impactful outputs of the project, those with clear scientific or commercial potential for further use beyond the project's duration. It is important to note that the DSS serves as the central platform that integrates KERs, including hazard models, impact assessment workflows, resilience assessment tools, and adaptation measures, into a single, user-friendly environment. This integration ensures that the project's results are not only scientifically robust but also practically accessible for decision-makers, enhancing the potential for their exploitation and long-term use.

Additionally, two results that were initially included in the list of KERs in the first report (D4.4), those being the **"Project Framework"** and the **"ICARIA Cookbook"**, following discussions with their respective owners and with the consortium partners, have been deemed non exploitable after the end of the project and are therefore not included in the final KERs list. The "Project Framework", while crucial for structuring ICARIA's modelling guide rather than a standalone tool that can be transferred externally. And regarding the ICARIA Cookbook, it provides valuable guidance for addressing data gaps and methodological choices, but its format and content are primarily intended to support internal modelling activities. Both results require context-specific adaptation to be applied externally, and for these reasons, they are not included in the updated list of KERs.

3.1 Updated KERs list

KERs	Responsible Partners
KER 1: Climate scenarios methods and results	FIC/AIT
KER 2: Multi-Hazard modelling tools	AQUATEC
KER 3: Climate-related multi-risk tangible impact assessment method	AQUATEC
KER 4: Resilience assessment framework (RAF)	LNEC
KER 5: Resilience assessment tool (RAT)	NCSRD
KER 6: Portfolio of adaptation solutions	CETAQUA
KER 7: Trial guidance methodology	AIT
KER 8: Decision support system (DSS)	DRAXIS

Table 6 - List of KERs

3.2 Ownership and IPR

The management of intellectual property within ICARIA follows the principles set out in the GA, ensuring that each partner maintains ownership of the results they generate while enabling appropriate access for integration into the project's KERs. This section provides an overview of the foreground IP, accessibility conditions, and post-project use plans for each individually owned KER. The emphasis is on transparency, clarity of rights, and ensuring that all results can be responsibly used, shared, or further developed after the end of the project.

KERs - Owner	Foreground IP	Accessibility conditions	Post-Project IP Management & Future Use
KER 1: Climate scenarios methods and results – FIC / AIT	No protectable foreground IP is expected beyond openly shared datasets and scenario descriptions.	Data is available in ZENODO to be freely downloaded and used under CC-BY-NC license. A reference to the ICARIA project should be made.	FIC will maintain stewardship of the deposited datasets and may reuse them in future research activities. No additional IP management obligations arise.
KER 2: Multi-Hazard modelling tools - AQUATEC	Foreground is generated in the form of methodological descriptions and models, but AQUATEC will not seek specific IP protection.	The results of the multi-hazard modelling tools will be available in an open access repository (Zenodo). They will be open access without any licence conditions.	AQUATEC may continue using, developing, or integrating the modelling approaches into future projects. No specific post-project IP constraints apply.
KER 3: Climate-related multi-risk tangible impact assessment method - AQUATEC	Foreground arises in the form of the method, documentation, and assessment logic.	The results of the multi-hazard impact assessment will be available in an open access repository (Zenodo). The methodologies will be published in open access scientific journals	AQUATEC may further refine and reuse the methodology in future research or consultancy work without restrictions.
KER 4: Resilience assessment framework (RAF) - LNEC	The RAF and RAF App build on background IP from the RESCCUE project. All ICARIA-related improvements constitute a new foreground. Copyright applies; no open-source licensing is foreseen.	Openly accessible under a CC-BY-NC license, with proper attribution required. The software itself is not open source, and users must register and acknowledge the RAF App when reporting results.	LNEC will continue updating and maintaining the RAF where relevant. No post-project restrictions apply beyond attribution.
KER 5: Resilience assessment tool (RAT) - NCSRD	Foreground IP consists of the RAT software, models, and documentation. Copyright is held by the EREL Group of NCSRD.	The RAT is currently provided as an open service for non-commercial use. While the software itself remains proprietary and is not open source, the models, and outputs will be licensed under a CC-BY-NC license, allowing reuse with the proper attribution. All users must comply with applicable regulations, including the CER Directive.	NCSRD (EREL Group) will retain ownership, maintain the service, and define future licensing terms.

KER 6: Portfolio of adaptation solutions - CETAQUA	Foreground arises in the form of curated content and documentation.	It will be made open access via ZENODO repository and is licensed under a CC-BY license, allowing reuse with proper attribution.	CETAQUA may update or expand the portfolio for future initiatives. No restrictive IP management obligations apply.
KER 7: Trial Guidance Methodology - AIT	Foreground consists of refinements to the methodology and related documentation. No specific IP protection is planned.	The methodology is openly accessible. At https://tgm.ercis.org/. Lessons learnt in applying the methodology in ICARIA and recommendations will be published in ICARIA D4.2 "Trial assessments", available from CORDIS, and re-usable under the terms of CC-BY 4.0 international license. Reuse, sharing, adaptation, and building upon this work is permitted for any purpose, including commercially, as long as the credit (attribution) is given to AIT and, where applicable, to original DRIVER+ authors.	AIT will follow up on this activity, but there are other institutions (e.g. other previous DRIVER+ partners) that are also actively applying the methodology in their own work. Where appropriate, AIT might join forces with some of these organisations and /or with the original methodology authors to produce higher impact results such as a new book on applying the methodology outside crisis management or developing CEN agreements. Where possible, these results will also be published as Open Documentation.
KER 8: Decision Support System (DSS) - DRAXIS	Copyright-protected software including source code, interface designs, technical documentation, and underlying algorithms/methodologies. Any unique components may also be protected as trade secrets. All modules integrated into the DSS are either developed by project partners or sourced with proper licensing, ensuring compliance with third-party IP rights.	The DSS will be made available as a commercial software service under tailored licensing agreements (e.g., SaaS subscriptions). Access will be regulated to ensure proper use, while users will benefit from updates of hazard data, modelling outputs, and analytical workflows. Early adopters (e.g., pilot participants) may receive temporary access for testing and feedback purposes. Continued use beyond the project will require a standard licensing agreement.	DRAXIS will lead the ongoing management, maintenance, and commercialization of the DSS, ensuring the protection of copyright and trade secrets. Updates and expansions will be released under regulated licensing models. New foreground IP arising from adaptations or extensions (e.g., custom modules for specific users) will be assessed and incorporated under IP agreements defined by consortium rules.

Table 7 - Intellectual Property Rights (IPR)

IP Framework for the Joint Exploitation of the ICARIA DSS

In addition to the individually owned results, a distinct IP arrangement applies to the joint exploitation of the ICARIA DSS, which integrates contributions from multiple partners. Since the DSS builds on models, datasets, assessment methods, and software components originating from different organisations, its commercialisation requires a coordinated management approach that respects all underlying rights. Rather than establishing new ownership over the integrated platform itself, the partners will rely on a joint exploitation framework that clarifies how the DSS can be maintained, updated, customised, and commercially offered after the end of the project.

Under this approach, each partner retains ownership of their standalone foreground and background assets, while DRAXIS, as the commercial leader, will be responsible for packaging, hosting, and licensing the operational version of the DSS. Any partner-specific components embedded within the platform will be used under internal agreements that govern the conditions of integration and reuse. Because many of these components are open-access, methodological, or conceptual rather than proprietary software, the joint exploitation model does not require complex licensing transfers; instead, it focuses on ensuring that all contributions are acknowledged, properly referenced, and used within the bounds defined by each organisation partner.

As a result, the joint exploitation approach offers a sustainable and flexible way forward. DRAXIS can continue developing the DSS into a fully-market ready product, while partners are free to keep using or expanding their own models and methods in their own work. When customised versions of the DSS are issued for specific clients, the IP will be handled case by case. This will depend on which partners' tools or data are used, whether extra modelling is needed, and whether new software components are developed. If any of the KERs require additional consultancy work, for instance, generating new scenarios or performing new impact assessments, partners involved will provide quotations for these services. This way, any new IP that emerges from customisation can be shared fairly, and each partner is properly acknowledged for their technical contribution.

4. Updated Exploitation Strategies

4.1 Individual exploitation plans

This section presents the individual exploitation plans for the ICARIA results as identified having exploitation potential, whether it is for scientific purposes or commercialisation. In most cases, the KERs will be made available in public repositories, supporting further research, and practical application in climate adaptation projects. It is also important to highlight that all KERs have contributed to the development and functionalities of the ICARIA DSS, forming an integrated platform that benefits from the expertise and methods of the respective partners.

KER 1 - Climate scenarios methods and results – FIC / AIT	
Exploitation Intentions	Primary exploitation pathway is open scientific and practical reuse. The intention is to ensure that these outputs can be easily accessed and integrated by practitioners, researchers, and public authorities who require validated climate projection data for their own analyses or tools.
Timeline	It will be made publicly available upon project completion.
Integration into future projects	Freely available outputs will be shared where possible under permissible licences such as CC0 or CC-BY, allowing reuse for research, policy, and practical applications.
Main users/Beneficiaries	Administration & Research institutions
Availability	Results are accessible through ZENODO. No maintenance expected.
Contribution to overall impact	KPI 2

Table 8 - Individual exploitation plan (KER 1)

KER 2 - Multi-Hazard modelling tools – AQUATEC	
Exploitation Intentions	The multi-hazard modelling tools are tailor-made physical models developed for the three case studies of ICARIA. In many cases, they contain sensitive information disclosed for their use in the ICARIA project only. For this reason, it is not foreseen to carry out any exploitation action of the modelling tools themselves beyond the end of the project. However, the hazard maps developed using these models will be available in public repositories.
Timeline	The hazard maps derived from the multi-hazard modelling tools will be made publicly available upon project completion, together with the final ICARIA data releases on ZENODO.
Integration into future projects	Future projects requiring urban flood assessment can benefit from the results made available or specific improvements on the MODEL DEVELOPED. The econ option would require updating the NDAs currently limiting the model exploitation beyond the end of ICARIA.
Main users/Beneficiaries	Primarily, the Risk Owners of the ICARIA Consortium, meaning AMB, SAR, and Verbund, who plan to use this information to develop adaptation plans and policies. Secondly, any professional in the field of risk assessment with an interest in the hazard maps generated.
Availability	The hazard maps will be available in the ZENODO repository of ICARIA, managed by the consortium partner DRAXIS.
Contribution to overall impact	It will contribute to fulfilling project KPIs related to multi-hazard risk assessment in 3 different European regions (KPI 1.2, 4.2, 4.3, 5.2).

Table 9 - Individual exploitation plan (KER 2)

KER 3 - Climate-related multi-risk tangible impact assessment method - AQUATEC	
Exploitation Intentions	The impact assessment methods applied in ICARIA have been retrieved from literature and open-source documents. They explain methodologies that have been developed in other projects or research activities. The only impact assessment method generated within ICARIA is the one reflecting the impact of floods on WWTPs (Waste-Water Treatment Plants). This method has been published in an open-source scientific journal, making it available to the research community and practitioners. This KER will be used as a methodological example in training and workshops. The aim is to maximise knowledge sharing and uptake within the scientific and professional community.
Timeline	The methodology and results of impact assessments will be available in public repositories and published in scientific journals.
Integration into future projects	Risk assessment results made available can be used as a basis for future projects and activities related to climate adaptation.
Main users/Beneficiaries	Primarily, the Risk Owners of the ICARIA Consortium, meaning AMB, SAR, and Verbund, who plan to use this information to develop adaptation plans and policies. Secondly, any professional in the field of risk assessment with an interest in the hazard maps generated.
Availability	The hazard maps will be available in the ZENODO repository of ICARIA, managed by the consortium partner DRAXIS.
Contribution to overall impact	It will contribute to fulfilling project KPIs related to multi-hazard risk assessment in 3 different European regions (KPI 1.2, 4.2, 4.3, 5.2).

Table 10 - Individual exploitation plan (KER 3)

KER 4 - Resilience assessment framework (RAF) - LNEC	
Exploitation Intentions	RAF will be openly available to support replication, research, and policy design, under a CC-BY-NC license for non-commercial use.
Timeline	Knowledge development and transfer and advanced consultancy services (depending on users' adherence to projects/proposals. **Short term:** -Independent usage of the freely available online tool -Training (1 week activity/course) -Advanced consultancy (tailor made) **Long term:** -Capacitation for users through a joint training and hands-on capacitation programme (2-3 years programme).
Integration into future projects	While no integration is currently planned, the RAF App can be easily reused and /or expanded in future projects if relevant.
Main users/Beneficiaries	Those interested in regional, urban, service and asset's resilience that need to plan, implement or support the development of a strategy to prepare the territory, service and assets for Climate Change events 1. Policy makers and land use planner and managers 2. Urban services managers (e.g. energy, water, wastewater) 3. Consultants and insurance companies 4. Academia, research and investigation organisations
Availability	The link to the RAF App will be available in the ZENODO repository of ICARIA, managed by the consortium partner DRAXIS, and in LNEC's servers, also accessible to external users.

Contribution to overall impact	KPI5.1, KPI5.2

Table 11 - Individual exploitation plan (KER 4)

KER 5 - Resilience assessment tool (RAT) - NCSRD	
Exploitation Intentions	Exploitation of the RAT will focus on both practical application and scientific promotion. The tool will be continuously promoted to critical infrastructure operators, emergency management authorities, and municipal authorities, supported by demonstrations and guidance based on the SAR case study. Bilateral consultancies and provision of services using the RAT will be pursued, allowing organisations to apply the methodology to their own resilience assessments. Additionally, the RAT will be introduced and referenced in future research projects and climate action initiatives, supporting integration into broader resilience concepts, including human and urban resilience.
Timeline	Promotion of the RAT and its integration into future projects will continue after the end of the ICARIA project.
Integration into future projects	There will be a consistent effort to introduce the work in future research and climate actions proposals. On a separate note, this will be used to integrate into wider resilience concepts including human and urban resilience.
Main users/Beneficiaries	Critical entities owners and operators, emergency management authorities, city/municipal authorities
Availability	NCSRD on its own repository, with access provided under a CC-BY-NC license for non-commercial research, training, and practical applications.
Contribution to overall impact	KPI6.2 - KPI6.3: quantifiable at the end of the project

Table 12 - Individual exploitation plan (KER 5)

KER 6 - Portfolio of adaptation solutions - CETAQUA	
Exploitation Intentions	The Portfolio of Adaptation Solutions Data will be openly available for replication, research, policy design, and practical application in climate adaptation projects.
Timeline	Following the end of the ICARIA project, the portfolio will remain accessible indefinitely and can be incorporated into future research, planning, or adaptation activities.
Integration into future projects	The portfolio may be reused in relevant projects, providing a validated and structured resource for adaptation planning.
Main users/Beneficiaries	Expected end users of the platform are the denominated Adaptation Strategies Design Teams and policy makers seeking details on potential adaptation strategies, or researchers looking for potential measures to assess in a research context.
Availability	The Portfolio of Adaptation Solutions data will be available in the ZENODO repository of ICARIA.

Table 13 - Individual exploitation plan (KER 6)

KER 7 - Trial Guidance Methodology - AIT	
Exploitation Intentions	1. Continue applying the Trial Guidance Methodology in EU project proposals and supporting it in projects.

	2. Publish the lessons learnt and clear instructions on how to best apply the methodology in the context of EU projects. 3. In the long term design "profile" or profiles of methodology that are easier to apply to specific contexts (e.g. validating CC adaptation solutions developed in EU research projects as a part of the project, validating innovative CC adaptation solutions in innovation projects and as a part of pre-procurement process by cities and regions) and transfer this knowledge to relevant stakeholders in a form of a training curriculum and/or consulting services offer.
Timeline	Trial guidance methodology is a good method for validating the project results, or more specifically for validating to what extent some "innovative solutions" can resolve the issues (gaps) of the stakeholders. **In the short term**, AIT will continue offering the Trial Guidance Methodology as a way to validate project results in EU projects wherever appropriate. The aim is also to publish the lessons learnt and recommendations for applying the methodology in "CC-adaptation research" domain in D4.2 - Trial assessment report and eventually write a stand-alone paper explaining the lessons learnt and best practices in applying the methodology in EU projects dealing with Climate Change Adaptation and Mitigation, based (mainly) on experiences from ICARIA and ClimEmpower projects. The nature of the paper is still not decided upon - if possible, we aim to publish these findings and recommendations as scientific paper or a book chapter. **In the long term**, AIT aims to keep offering the Trial Guidance Methodology as a way to validate project results both in the EU projects and as a validation method used by authorities (e.g. city/regional administrations, first responder organisations), with AIT providing the training and support for trial organisation and assessment. For specific domains where AIT is particularly active in (e.g. crisis management, climate change adaptation and mitigation and New European Bauhaus), with the ambition to resolve the known discrepancies between the original methodology and the reality of many EU projects in the form of instructions on how to apply the methodology in such a context or by designing a "profile" of methodology that's better aligned with the project needs.
Integration into future projects	Yes, in the foreseeable future.
Main users/Beneficiaries	Main beneficiaries of the methodology are the authorities that need to validate the potential of "solutions" to resolve their needs / gaps. This could be city planners, first responder organisations and similar institutional users that are in a position where they have to decide which solutions best address concrete needs of their organisations and related stakeholders. This could also be companies and institutions that seek to transition such solutions to higher TRL levels and need a way to decide what to concentrate on. Since the methodology is generic, it can be applied to research projects where ideas and early lab prototypes are brought to higher TRL levels and need to be validated by potential users, as well as to innovation and product

	development where mature prototypes are transformed into fully fledged commercial offerings. Secondary beneficiaries are scientists, developers and innovators with ideas, prototypes and commercial grade solutions that are seeking a way to get their offers validated by potential users in a fair and transparent way, whether to receive feedback on improving their offers, qualify for additional funding or qualify for inclusion in procurement lists of large companies and organisations.
Availability	Trial Guidance Methodology is maintained independently from the project and also independently from the AIT, and it will remain accessible on driver for foreseeable future. The trial guidance methodology is published as (Fonio & Widera, 2022) and further elaborated in the "Innovation in Crisis Management" book (Chiara Fonio et al., 2022). Moreover, a CEN workshop agreement CWA 17514 (2020) "Systematic assessment of innovative solutions for crisis management - Trial guidance methodology" is available from CENELEC. AITs ambition is limited to helping the stakeholders make the best use of methodology - especially in domains other than crisis management where naming conventions and organisational structures are different enough that an interpretation and/or profiling of the methodology may be necessary. Guidelines and lessons learnt in doing so will be published as open documentation and made widely available through different channels, including at least Zenodo, and project deliverables (CORDIS).
Contribution to overall impact	Structured validation of the solutions mainly influences the KPI 1.1 and KPI2, by helping to "measure" the innovative potential of ICARIA solutions in a systematic and transparent way.

Table 14 - Individual exploitation plan (KER 7)

KER 8 – Decision Support System (DSS) – DRAXIS	
Exploitation Intentions	Commercialisation of the DSS as a subscription-based Software-as-a-Service (SaaS) platform, complemented by project-based consulting and premium datasets (Data-as-a-Service). DRAXIS aims to offer the DSS to public authorities, municipalities, critical infrastructure operators, and climate adaptation consultancies. Exploitation also includes embedding the DSS in strategic planning workflows and leveraging pilot feedback for continuous improvement and market readiness.
Timeline	**Year 1:** Early pilot implementations and stakeholder engagement to refine the platform. **Year 2:** Expansion of pilot adoption and preparation for full SaaS rollout. **Year 3:** Transition to a fully operational commercial service, scaling to additional regions and user segments. **Beyond Year 3:** Continuous platform updates, market expansion, and additional premium services.
Integration into future projects	The DSS, with a TRL of 7, will be integrated into related climate adaptation and resilience initiatives at regional, national, and EU levels. Its modular structure allows adaptation for new case studies, research

	projects, and technical collaborations, ensuring that the platform remains relevant and can contribute to further R&I activities.
Main users/Beneficiaries	**Primary users** include critical infrastructure managers, technical experts, and academic researchers in climate risk and adaptation planning. **Secondary beneficiaries** include regional and local authorities, urban planners, civil protection agencies, utility service providers, and consultancies supporting adaptation strategies.
Availability	The DSS will be made available through a web-based interface under regulated SaaS licensing, supported by training, technical documentation, and optional consulting services. Pilot participants and early adopters will have temporary access for feedback and testing, while commercial users will subscribe to ongoing services including updates and maintenance.
Contribution to overall impact	KPI 6.2 - Satisfactory implementation of the DSS KPI 6.3 - Use of DSS in all 3 ICARIA case studies

Table 15 - Individual exploitation plan (KER 8)

Overall, the ICARIA results encompass a range of exploitable assets with distinct purposes and beneficiaries. **KER 1 - Climate Scenarios Methods and Results** and **KER 2 - Multi-Hazard Modelling Tools** are primarily intended for scientific and practical reuse, supporting researchers, public authorities, and practitioners in climate risk assessments and adaptation planning. **KER 3 - Climate-related Multi-Risk Tangible Impact Assessment Method** provides a reference for training, workshops, and further research, while **KER 4 - Resilience Assessment Framework (RAF)** and **KER 6 - Portfolio of Adaptation Solutions** offer structured resources for policy design, resilience planning, and practical application. **KER 5 - Resilience Assessment Tool (RAT)** combines operational use with scientific promotion, enabling authorities and infrastructure operators to conduct resilience assessments and integrate findings into broader strategies. **KER 7 - Trials Guidance Methodology** provides a systemic approach for validating innovative solutions in research, innovation, and operational contexts. Finally, **KER 8 - Decision Support System (DSS)** is planned for commercial purposes, bringing scientific methods into practical use for climate adaptation planning, providing actionable insights for public authorities, municipalities, critical infrastructure operators, and researchers. Each partner will be responsible for the exploitation of their own result, managing its use, according to their own strategies.

4.2 Joint exploitation efforts

In this final phase of the ICARIA project, joint exploitation is the cornerstone of the project's strategy for ensuring long-term impact and sustainability. Over the course of the project, partners have developed a clear joint exploitation framework, supported by collaborative planning, and alignment on exploitation priorities. To support this effort, a dedicated **Joint Exploitation Workshop** was held during the **plenary meeting in Rhodes on the 26th of May 2025**, where partners reviewed IPR arrangements, clarified their individual exploitation intentions, refined the Business Model Canvas, and conducted a joint risk assessment.

The outcome of the workshop confirmed that joint exploitation will focus exclusively on the DSS, and the KERs that have been incorporated into this platform. Partners demonstrated strong commitment to co-developing and promoting the DSS as a whole, beyond the project, due to its central role in integrating and operationalising several ICARIA results. The ICARIA DSS brings together contributions from multiple partners, combining hazard models, resilience assessments tools, adaptation measures, and scenario analyses into one platform. Joint exploitation of the DSS will be coordinated by DRAXIS, which will lead the commercialisation of the platform, while the other partners, CERTH, NCSRD, LNEC, AQUA, FIC and AIT, will provide technical support, validation, and updates for the respective components offered into the platform. The joint exploitation of the DSS is structured to respect the

IP contributions of all consortium partners while enabling the platform to be adapted for different end-users. Each partner's ownership of their foreground IP, and the integration of models, tools, and methodologies into the DSS will be carried out under agreed terms that will define how these contributions can be used commercially. As the DSS is addressed to specific areas/users, any new developments or adaptations arising from these deployments may generate new foreground IP. In such cases, the IP will be assessed and managed according to the consortium agreements, ensuring that ownership, licensing, and potential commercialisation rights are clearly defined before deployment. This approach allows DRAXIS to commercially exploit the DSS while maintaining transparency and respecting the contributions of all project partners. To summarise the commercial approach and value creation logic, the Business Model Canvas presented in **Figure *3*** illustrates how joint exploitation is structured, mapping key partners, value propositions, customer segments, channels, and revenue and cost streams.

Key Partners

- Risk modellers providing relevant data.
- ICARIA consortium offering resilience and adaptation methodologies.
- Potential users of Copernicus data for hazard mapping and climate assessment.
- Experts from the consortium offering consultancy and guidance to customers.

Key Activities

- Hands-on user testing.
- Webinars and showcasing events.
- Live presentations at conferences and EU events.
- Continuous support to potential clients.

Channels

- LinkedIn and professional social media platforms.
- Scientific publications.
- Participation in conferences and relevant events.

Value Propositions

- Delivery of a resilience snapshot with a link to a free online resilience assessment tool.
- Novel functionality for compound events probability analysis.
- Multi-hazard and multi-asset resilience planning as a cost-effective alternative.
- Support for systemic risk and resilience assessments.

Key Resources

- Reliable hazard maps and assessments.
- Minimum baseline expertise in climate resilience policies.

Customer Relationships

- Initial engagement through the CoP.
- Long-term relationships expected with public authorities and other stakeholders.

Customers

- Policy-makers and planners.
- Regional and local authorities.
- Critical infrastructure managers.
- Risk modellers.
- Developers of resilience plans.
- EU regions and researchers focused on climate impact assessment.

Revenue Streams

- Customised functionality development services.
- Subscription-based access to advanced features.
- Training courses for users and stakeholders.
- Expert assessment services as add-ons (e.g. screening hazard-impact-resilience using the DSS, followed by detailed analyses).

Cost Structure

- DSS hosting and infrastructure.
- Ongoing user support.
- System maintenance and updates.

Figure 3 - Business Model Canvas (DSS)

While the Business Model Canvas outlines the planned commercial and operational structure for the DSS, implementing this strategy in practice may involve managing uncertainties and potential barriers. Therefore, a risk assessment (**Figure 4**) was conducted during the joint exploitation workshop, summarising potential challenges that could impact the DSS's sustainable uptake, adoption, and long-term impact. The assessment is presented as a risk matrix, with the x-axis representing "**Risk Severity**" (minor, moderate, significant, and severe), and the y-axis indicating "**Risk Probability**" (unlikely, possible, and very likely).

RISK MAPPING FOR ICARIA's JOINT EXPLOITATION

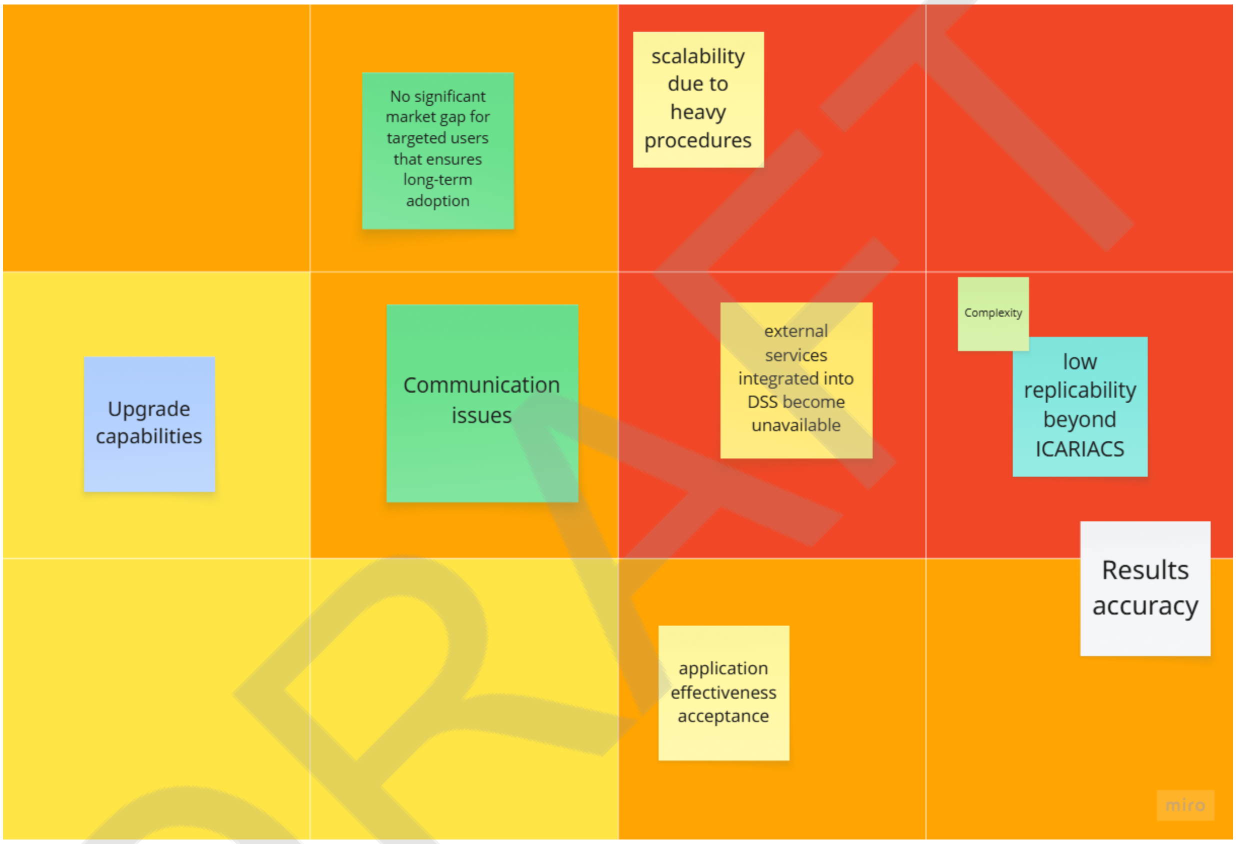

Figure 4 - Risk mapping for ICARIA's joint exploitation (through DSS)

This section provides a qualitative assessment of the key risks identified, highlighting their likelihood and potential impact, along with mitigation strategies. By examining these potential challenges, the goal is to ensure that the joint exploitation of the DSS is based on practical planning and prepared for issues that might arise during commercialisation, regional rollout, or wider adoption.

Risk	Likelihood	Impact
Upgrade capabilities	Minor but possible	Low
Communication issues among partners	Moderate but possible	Low
Pricing and affordability	Significant and possible	High
Lack of clear market gap to ensure long-term adoption	Moderate but very likely	Medium

Limited acceptance of DSS application effectiveness	Significant but unlikely	High
Unavailability of certain externals services integrated into the DSS	Significant but possible	High
Scalability challenges due to complex procedures	Significant and very likely	High
Shifts in policy away from climate change adaptation	Moderate but possible	Medium
Accuracy of results	Severe but unlikely	Very high
Low replicability of results beyond the ICARIA project	Severe but possible	Very high
Complexity of solutions limits the users' uptake	Severe but possible	Very high

Table 16 - Joint exploitation risks

The first risk related to **upgrade capabilities** concerns the potential difficulties in maintaining and enhancing the DSS beyond the project's lifetime. While currently considered a minor risk with low impact, it highlights the need for a modular, well-documented system design that supports ease of updates and reduces dependency on specific technical partners.

In the context of joint exploitation, **communication challenges** may arise around topics such as licensing terms, IPR considerations, responsibilities for tool maintenance, and the integration of the tools into the DSS. While these discussions have progressed constructively during the project, differing partner priorities or interpretations may lead to misalignment in the future. In the case that such needs arise, partners are open to formalising arrangements through agreements to ensure clarity and mutual understanding. Maintaining transparent communication and a shared commitment to collaboration will be key to mitigating this potential risk.

The lack of a clearly defined **market gap for the DSS** is one of the more strategic concerns, rated as moderately likely and of medium impact. This could potentially affect long-term adoption unless the value proposition is effectively tailored to specific needs. Further market validation with specific target groups, such as regional authorities or critical infrastructure planners, will help clarify positioning.

Limited acceptance of the DSS's application effectiveness, while considered unlikely, would have a high impact if it were to occur. To build trust, it is important to maintain transparency in the methodology, include the real-world use cases, and communicate scientific validation of results.

The sudden **unavailability of external services into the DSS** represents a tangible risk with potentially high impact. Mitigation requires designing the DSS with adaptable integration options, fallback mechanisms, and identifying backup sources early.

A major operational risk lies in **scalability challenges**, which were assessed as both significant and very likely. The complexity of some of the DSS components may hinder broader use. Simplifying the user experience, offering onboarding support, and modularising the tool to fit varying levels of user experience will be key to overcoming this.

A further strategic risk concerns the broader **policy environment**. There is a real possibility that policy priorities may temporarily move away from climate change (CC) adaptation, which could reduce attention, funding, or incentives for resilience measures and make the DSS seem less relevant. While this risk is largely outside the control of ICARIA partners, maintaining a clear focus on resilience, crisis management, and broader city or regional planning applications ensures continued relevance. By promoting the DSS not only as a CC-adaptation tool but also as a general resilience enhancement and planning support tool, uptake and adoption can be sustained even under shifting policy priorities.

While **the accuracy of results** was assessed as a low-likelihood risk, its potential impact is very high. Any questioning regarding reliability could undermine user trust. Regular testing and transparent reporting will help demonstrate robustness and increase confidence.

Potential **low replicability of the results beyond the ICARIA project** is another serious concern. To address this, methodologies should be standardised and well-documented, with efforts made to test the system in a range of use cases or regional contexts to support transferability.

Finally, the **complexity of ICARIA's solutions** may limit uptake, especially among non-expert users. This risk is both significant and possible, with a very high potential impact. Prioritising user-centred design, reducing barriers to entry, and offering practical training and support will help mitigate this challenge.

Overall, the risk assessment highlights a range of technical, operational, and strategic challenges that could impact the long-term sustainability and adoption of the DSS and its integrated tools. Addressing these risks through modular design, clear communication protocols, targeted market validation, and user-focused approaches will be essential. The ongoing commitment of partners to collaborations, transparency, and continuous improvement provides a strong foundation to mitigate these risks and support the successful joint exploitation of ICARIA's innovative solutions.

5. Horizon Results Booster

ICARIA project partners have leveraged the consulting services offered by the Horizon Results Booster, an initiative funded by the European Commission, focusing on the three KERs with the highest exploitation potential, namely DSS, RAF, and RAT. The full report with re recommendations from the Booster expert can be found in **ANNEX 3**. The process was conducted over the period from M27 until M31 of the project. Specifically, the Go2Market services were utilised through the following modules:

- **Module A:** Kick-off
- **Module B:** Key Exploitable Results (KERs) & Unique Value Proposition (UVP)
- **Module C:** Exploitation Strategy
- **Module F:** Reporting

Module A was mandatory for the ICARIA partners who have participated in this process, namely, DRAXIS, LNEC and NCSRD, and it focused on laying the foundations for the exploitation strategy. The module included two online meetings, during which the ground was set for understanding the Horizon Results Booster process. Partners received training on the key exploitation pillars and the Go2Market methodology, including its main concepts and workflow. A critical part of the module involved assessing, reviewing, and identifying the KERs of the project, ensuring a shared understanding of which results have the highest potential for future use, and commercialisation.

Module B followed, which built on the foundations of the exploitation strategy by focusing on defining the market and articulating the value proposition for each one of the 3 KERs. This module included two online meetings per participating partner, during which the discussion was structured around understanding the potential users and their needs. The market definition exercises addressed questions such as which tools the KERs aim to innovate, who uses these tools to complete specific tasks, and how these users can be classified under overarching market categories. Additionally, the value proposition component then examines the user experience in detail, including what customers are trying to achieve, the frustrations they encounter before, during, and after completing their tasks, and the outcomes and benefits they seek. Partners assessed how the KERs alleviate specific pain points and create tangible gains for users, ensuring that each KER's offering is clearly linked to customer needs and provides measurable value. This exercise was essential to refine each KER's positioning and to support future exploitation and commercialisation efforts.

Module C was the final Module that the consortium had applied for, before the final reporting (Module F). Module C focused on translating the insights from Module A and Module B into concrete exploitation plans for each KER. Two online meetings per KER were held again, during which partners systematically worked through a series of structured templates to define and refine the commercialisation and use strategy. Firstly, the "**Characterisation Table**" captured detailed information for each KER, including description, adoption models, early adopters, alternative solutions, UVPs, competitors, timing and IP strategy. Building on this, partners developed an "**Exploitation Roadmap**" outlining specific actions, assigned roles, key milestones, projected costs and revenues, and potential sources of financial coverage. Each KER was then analysed in terms of its "**Exploitation Route**", followed by a "**Risk Assessment & Priority Mapping**" exercise to identify potential challenges and risks affecting the uptake of the results. Finally, a "**Lean Canvas**" exercise - which can be found in Annex 2 - was produced for each KER, integrating the problem, solution, UVP, unfair advantage, customer segments, alternative solutions, key metrics, channels, early adopters, revenue streams and cost structure.

Module F represented the final reporting phase following the completion of the services. It included recommendations from the Booster expert regarding the KERs and the next step for their exploitation and commercialisation. This final report is included in Annex 3, for reference. This comprehensive approach ensured that each KER was fully assessed for feasibility, market fit and risk, producing a robust foundation for both scientific exploitation and eventual commercialisation. The process helped partners align priorities, clarify value propositions, and establish actionable steps to bring the KERs from project outputs to tangible results with real-world impact.

5.1 Decision Support System (DSS)

Module B: Unique Value Proposition & Key Exploitable Results (Go to market – B). This section includes for the DSS, the **"Market Definition Canvas**" and the **"Unique Value Proposition Canvas"** after having addressed the Booster Expert's comments and having included their suggestions for improvement.

5.1.1 Market Definition (DSS)

Production Description

The DSS is an integrated digital toolbox designed to support evidence-based decision making in climate adaptation. It combines geospatial visualisation, climate risk modelling, resilience assessment, and adaptation planning functionalities, enabling users to analyse potential impact, compare scenarios, and prioritise adaptation measures for critical infrastructure and climate-vulnerable regions.

Customer Segments

The DSS targets professional users who directly interact with the system to perform specific tasks. The **primary customer segment** consists of critical infrastructure professionals. Operational-level users, such as technicians, analysts, and engineers, utilise the DSS to monitor infrastructure conditions, collect and process hazard data, generate reports, and simulate the effects of extreme weather events on assets. Managerial-level users, including infrastructure managers and decision-makers, leverage the DSS to evaluate adaptation strategies through multi-criteria analysis and cost-benefit assessments, prioritise resilience investments, and integrate risk insights into organisation adaptation plans and policies.

A **second customer segment** is climate and disaster research professionals, including academics, policy analysts, and researchers. These users employ the DSS to conduct scenario-based analyses of potential climate futures, assess system-wide vulnerability and resilience trends, and combine climate, and infrastructure data to develop predictive models and inform policy or scientific publications.

Jobs to be Done

For critical infrastructure professionals, the DSS enables monitoring and assessment of risks, preparation of reports, and evaluation of adaptation strategies to support informed decision making. For researchers, it provided analytical capabilities to model climate impacts, test scenarios, and generate evidence to support scientific research or policy recommendations.

Complementary Tools

The DSS integrates with commonly used tools in the field, such as GIS software for spatial data analysis, climate data analysis, climate data portals for accessing historical and projected climate information, and asset management systems for monitoring infrastructure conditions. This integration allows professional users to have all information and datasets easily at hand, to ease the process of making informed decisions aimed at reducing climate risks and enhancing the resilience of critical infrastructure and vulnerable regions.

5.1.2 Value Proposition (DSS)

Customer Jobs

The ICARIA DSS supports professionals in improving resilience against climate-related disruptions by enabling them to apply validated ICARIA methodologies and workflows. Users can assess the impacts of climate risks, monitor resilience over time, evaluate adaptation options, and produce actionable insights to support strategic decision-making.

Gains

The platform allows users to combine multiple tools within a single, unified interface, eliminating the need for additional software or specialised skills. It enables rapid transformation of raw data into meaningful insights, supports effective communication through visual maps and reports, and facilitates evidence-based decision making for both operational and managerial levels.

Pains

Before using the DSS, professionals often face scattered tools, fragmented data, and difficulty quantifying and comparing adaptation and resilience metrics. During use, challenges can include slow system performance when processing large datasets and limited expertise in climate modelling or GIS. After use, communicating complex results effectively to decision makers can remain a challenge.

Gain Creators

The ICARIA DSS enhances decision making quality and builds stakeholder trust through a simple, all-in-one solution. It integrates climate, risk, and user data to quantify impacts, delivers resilience metrics, supports the comparison of adaptation options, and provides visualisation of multi-layer spatial data for clearer interpretation of results.

Products and Services

The ICARIA DSS offers a fully integrated toolkit, combining the following functionalities in one unified platform:

1. An interactive map viewer with scenario comparison.
2. Risk and impact assessment tools.
3. Resilience assessment functionalities.
4. Tools for comparison and prioritisation of climate adaptation measures.
5. A results viewer and reporting module for effective dissemination of insights.

Module C: Exploitation Strategy (Go to market - C). This section includes for the DSS, the **"Characterisation Table"**, the **"Exploitation Roadmap"**, after having addressed the Booster expert's comments and having included their suggestions for improvement, as well as the **"Use Options", "Risk Assessment & Priority Map"**, and the **"The Lean Canvas".**

5.1.3 Characterisation Table (DSS)

Characterisation Table (DSS)	
Description	The ICARIA Decision Support System (DSS) is a digital toolbox that integrates geospatial visualisation, climate risk modelling, resilience assessment, and

	adaptation planning tools into a single, integrated platform validated in real-world case studies. The main aim is to support evidence-based decision-making in the context of climate adaptation. It targets strategic infrastructure and assets vulnerable to extreme climate events, enabling stakeholders to analyse impacts, compare scenarios, and prioritise adaptation measures.
Target market/end users	1. **Professionals working with Critical Infrastructure (Primary Market)** This includes asset managers, CI technicians, engineers, and decision-makers responsible for transport networks, energy systems, water infrastructure, and public utilities. These users require operational tools to prepare analyses, develop adaptation options, and support strategic decision-making. 2. **Academic and Applied Research Organisations (Secondary Market)** Researchers and scientific institutes specialising in climate modelling, risk assessment, or resilience analysis use the DSS to test methodologies, run comparative scenarios, and refine climate-impact assessment practices. **Another segment consists of regional and local public** authorities (including ministries, civil protection agencies, and urban planning departments), who use the tool to support territorial risk management and policy implementation, generally through specialised consultancy firms.
End-users needs / problems	A major challenge faced by climate infrastructure managers and technicians is the lack of access to localised, timely, and actionable information necessary for assessing climate risks and planning effective adaptation strategies. The Decision Support System (DSS) addresses this need by providing accurate, up-to-date data and analytical tools that facilitate informed decision-making and strengthen the resilience of critical infrastructure and vulnerable regions.
Competitive advantages	The DSS offers a distinct competitive advantage by integrating multiple tools into a single, user-friendly interface that eliminates the need for additional software or specialized expertise, enabling users to rapidly transform complex data into actionable insights, and to communicate those insights effectively through visual maps and reports - a level of accessibility, efficiency, and clarity that surpasses current fragmented or highly technical solutions. This low barrier to entry encourages deeper user engagement and broader adoption.
Use model	The DSS will be put into use as a digital service platform, made available to potential adopters such as climate infrastructure managers, public authorities, and technical consultants, through direct provision, licensing agreements, and potential integration into institutional planning processes. The use model includes access to the platform via a web-based interface, supported by technical documentation and user support. Additionally, knowledge transfer will be facilitated through publications, standards development, and collaboration with stakeholders during and beyond the validation case studies. This ensures the DSS is not only adopted, but also effectively embedded in climate adaptation planning workflows.
Early Adopters	Early adopters of the ICARIA DSS are the same as the end users, meaning critical infrastructure managers and technicians. They will be reached through pilot results dissemination, targeted seminars & webinars, participation in climate adaptation events, and direct outreach via professional networks and existing collaborations.
Adopters' problems/needs	An adopter of the DSS often faces a complex and fragmented process when attempting to assess climate risks and plan adaptation strategies. The core

	problem lies in the difficulty of integrating diverse data sources, tools, and methodologies - especially when they lack the in-house expertise in GIS, climate modelling, or resilience assessment. The users struggle with disconnected tools, limited interoperability, and the challenge of transforming scientific data into actionable insights.
Alternative solution	Currently, adopters of the DSS are addressing the problem using a combination of disconnected tools and manual processes. They often rely on standalone GIS software (like QGIS or ArcGIS) for spatial data analysis, access climate data from external portals, and use separate systems for asset management and reporting. This fragmented approach requires significant technical expertise and coordination between different tools and teams, making it time-consuming and prone to inconsistencies.
Unique Value Proposition	The DSS simplifies complex workflows by integrating climate risk data, spatial analysis, resilience indices, and adaptation planning into a single platform. It significantly shortens processing time and reduces reliance on expert-level GIS or technical skills, making advanced climate risk assessment accessible to a broader range of users.
Competitors	While no direct competitors offer the same full functionality, indirect alternatives include REACHOUT Triple-A Toolkit, DISTENDER DSS, CLARITY Climate Services Information System, MEDiate DSS.
Timing	At the end of the ICARIA project, the DSS will be ready for release in terms of the functionalities foreseen in the project. Extensive testing with the key target group should begin right after the project ends to support future commercial rollout. For additional functionalities or customisations of the platform for specific use cases, new releases can be scheduled after the end of the project upon demand.
IP Strategy	No background (BG) intellectual property (IP) has been identified as relevant to the development of the DSS. For the foreground (FG), the intention is to leverage the project results by securing ownership over the developed software, primarily through copyright. This includes the source code, interface designs, and technical documentation. DRAXIS, as the main exploiter, will ensure clear authorship and access rights, supported by internal documentation and version control practices. Beyond the project, the DSS will be offered as a software-based service. Its protection will continue to rely on copyright, alongside regulated access through tailored licensing models (e.g., subscription). Depending on future developments, specific algorithms or methodologies may also be protected as trade secrets if they demonstrate unique value. Regular monitoring and well-defined usage terms will further safeguard the solution's integrity and sustainability. Overall, the components and modules used during the DSS development either fall under public domain or are properly licensed by their beneficiaries, ensuring compliance with third-party terms. DRAXIS will be fully aware of the intentions of the partners involved in the DSS and will obtain explicit authorisation before taking any further action.

Table 17 - Characterisation table (DSS)

5.1.4 Exploitation Roadmap (DSS)

Exploitation roadmap for ICARIA DSS	
Actions	1. **Intellectual Property Protection**: Secure IP rights (patents, copyrights etc.) for key innovations in the ICARIA DSS. 2. **Regulatory and Authorisations**: Obtain necessary approvals and ensure compliance with data, privacy, and environmental regulations. 3. **Stakeholder Engagement and Partnership Building**: Strengthen collaborations with key stakeholders and initiate dialogues with potential users. 4. **Market Entry Strategy**: Begin commercialisation efforts with pilot testing, marketing, and distribution strategies. 5. **User Training and Support Setup**: Develop training materials and establish a support framework for early adopters. 6. **Monitoring and Feedback Collection**: Implement a system for collecting feedback and tracking performance for ongoing improvements. **Software Maintenance & Optimisation**: Continuously monitor and optimise the system to ensure stable performance, fix bugs, and implement improvements based on user feedback and evolving requirements.
Roles	❖ DRAXIS – Main Role: Leads the overall exploitation roadmap, business model development, and market entry strategy. Actively involved in all actions to ensure successful deployment and uptake of the ICARIA DSS. **Responsible for all Actions** ❖ LNEC Provides technical input & testing support for the prototype and contributes to IPR protection, system validation, & optimisation. **Contributes to Actions: 1,5, 7** ❖ CETAQUA Provides technical input & testing support for the prototype and contributes to IPR protection, system validation, & optimisation. **Contributes to Actions:1,5, 7** ❖ CERTH Provides technical input & testing support for the prototype and contributes to IPR protection, system validation, & optimisation. **Contributes to Actions: 1, 5, 7** ❖ NCSRD Supports integration and maintenance activities, especially related to data and tool interoperability. Provides scientific input for resilience and climate modelling components. **Contributes to Actions: 1, 5, 7** ❖ AQUATEC Supports alignment with project goals and ensures coordination across partners. Contributes to user training, stakeholder engagement, and feedback processes. **Contributes to Actions: 3, 4, 5, 6**
Milestones	**Year 1 (after project end)** **Goal: Prepare for market readiness, test early traction, and solidify foundations.** 1. Finalise IP & Compliance Strategy (by month 6) o File at least 1 formal copyright registration for core DSS components

	◦ Complete a compliance checklist for GDPR, environmental, and data-handling regulations. 2. Stakeholder Engagement (by month 6) ◦ Engage with at least 3 external stakeholder organisations from the main target groups ◦ Host 1 co-creation/feedback workshops with these stakeholders 3. Awareness and Communication ◦ Publish 2 use-case blog posts or articles showcasing the DSS potential 4. User Feedback Collection ◦ Collect structured feedback from at least 5 early testers/users through surveys or pilot trials **Year 2 (after project's end)** **Goal: Begin pilot use, build support structure, and launch commercialisation strategy.** 1. Pilot Deployment ◦ Launch at least 2 pilot implementations with real end-users 2. Support & Training Infrastructure ◦ Develop a comprehensive training manual and a short tutorial video ◦ Deliver at least 1 online training session to pilot users 3. Market Entry Preparation ◦ Define pricing/package scenarios and validate them with potential clients 4. System Optimisation & Maintenance ◦ Fix 80% of bugs reported during pilot phase within 3 months of identification. ◦ Achieve and sustain ≥95% system uptime throughout the first 18 months
Costs	Aligning with the financial projections in the lean business plan, the DSS's early-phase costs reflect the platform finalisation, pilot deployment setup, consulting delivery, and marketing. For Year 1, total costs are estimated at €240,000, increasing to €300,000 in Year 2, and gradually rising to €430,000 by Year 5 to cover ongoing maintenance, optimisation, and staffing. These figures include IPR and legal costs, promotion and marketing activities and staff costs associated with consulting, support, and platform updates.
Revenue	Aligning with the financial projection in the lean business plan, the total revenue is projected as follows: ● Year 1 – €150,000, composed of SaaS licensing (€30,000), consulting/pilot services (€100,000), and DaaS (€20,000). ● Year 2 - €250,000 (SaaS €90K, consulting €90K, DaaS €40K) as pilots continue and some clients convert to subscriptions. ● Year 3 - €390,000 (SaaS €210K, consulting €120K DaaS €60K) reflecting moderate adoption. ● Year 4 - €520,000 (SaaS €330K, consulting €80K, DaaS €110K) ad SaaS adoption expands and consulting demand declines. Year 5 - €760,000 (SaaS €525K, consulting €40K, DaaS €160K) with full SaaS adoption and high-value DaaS upselling.
Other sources of coverage	Early-stage financial needs, such as deployment, stakeholder engagement, legal fees, and marketing, are estimated at €20,000. These can be covered through a combination of DRAXIS' own funds, national/regional climate-tech incentives, and EU-level funding programs. Timing for securing these

	resources is anticipated within 3-6 months post-project, with ongoing exploitation as pilots commence.

Table 18 - Exploitation Roadmap (DSS)

5.1.5 Risk Assessment Map (DSS)

Risk Assessment Map - Decision Support System							
	Description of Risks	Degree of criticality of the risk related to the final achievement of this KER	Probability of risk happening Please rate from 1 to 10 (1 low - 10 high)	Risk Grade	Potential intervention	Estimated Feasibility/Success of Intervention Please rate from 1 to 10 (1 low- 10 high)	Conclusion
	Partnership Risk Factors						
1	Key partners leaving the project before the successful deployment and uptake potential exploration	*5*	*5*	25	Maintain strong communication with partner organisations to stay informed about staffing changes. Encourage documentation of key inputs and decisions, and request early notice of any planned departures. Where possible, establish multiple points of contact to reduce dependency on single individuals.	*5*	Between Control & No Action
2	Key internal staff leaving their companies before the successful deployment and uptake potential exploration	*8*	*5*	40	Offer retention incentives and recognition to keep key individuals engaged until DSS testing is complete. In parallel, prepare a handover plan and train backups to ensure smooth transition if replacements are needed.	*7*	Control.

3	Disagreement on ownership rules with partners involved in the DSS	*10*	*5*	50	Resolve disagreements through structured dialogue, supported by legal or IP experts if needed, and document outcomes to ensure clarity and prevent future conflicts	*6*	Between Control & Action
	Technological Risk Factors						
6	Technology behind the solution is more complex to be deployed than planned	*6*	*3*	18	Break development into manageable sprints with clear milestones. Focus first on core DSS functions, and allocate buffer time for technical adjustments or simplifications if needed.	*6*	Control.
7	Significant dependency on other technologies/solutions, including the risk of technological obsolescence, which could affect the long-term functionality and interoperability of the DSS.	*4*	*3*	12	Ensure early integration testing and compatibility checks between the DSS and third-party technologies. Where possible, implement modular design to reduce interdependencies and enable the efficient replacement or upgrading of components in response to technological changes or obsolescence.	*3*	No Action'
8	Presence of defects that are too difficult to detect	*7*	*8*	56	Implement automated testing alongside manual QA, including stress and edge-case testing. Schedule routine code reviews and involve end-users in usability testing to catch hidden defects early.	*7*	Action!
	Market Risk Factors						

11	Competitors launch a rival product	*6*	*8*	48	Accelerate pilot deployments and gather real-world testimonials to build credibility. Highlight the DSS's unique features through targeted communication and continuously engage with stakeholders to reinforce its value before competitors gain ground.	*4*	No Action'
12	DSS fails to replace already existing and established solutions	*10*	*5*	50	Run tailored pilot programs with early adopters, focusing on integration with existing workflows. Use feedback to adapt the DSS and position it as a complementary upgrade rather than a full replacement, easing user transition.	*8*	Between Control & Action
13	Market penetration is slower than expected	*8*	*7*	56	Conduct a targeted barriers-to-adoption analysis to identify what's hindering uptake (e.g. technical complexity, awareness, cost). Based on findings, adjust outreach strategy, offer guided onboarding, and tailor value messaging to specific stakeholder needs.	*6*	Action!
	IPR/Legal Risk Factors						
16	Competitors replicate technology	*10*	*3*	30	Strengthen IP protection through copyrights or trade secrets and monitor the market to react quickly to imitation risks.	*3*	No Action'
	Financial/Management Risk Factors						

21	Lack of Financial Resources	*9*	*5*	45	Secure funding early and develop a lean financial plan covering the DSS's full lifecycle. Consider the utilisation of own resources if needed to cover the most basic needs	*8*	Control.
	Environmental/Regulation/Safety risks:						
26	Future changes in the regulation of such tools may make the DSS not compliant, and shifts in policy priorities may reduce its relevance	*8*	*5*	40	Monitor regulatory updates closely and adapt the DSS promptly to remain compliant. Additionally, promote the DSS not only as a climate change adaptation tool but also as a resilience enhancement and city/region planning tool to maintain its relevance despite policy shifts.	*5*	Between Control & No Action

Table 19 - Risk assessment & priority map (DSS)

Based on the Risk assessment & Priority Map for the DSS, the partnership-related risk factors indicate mostly low to moderate risk levels, with a generally high probability of successful intervention. The risk linked to partners leaving before completion presents a low-medium grade and falls between *Control and No Action*, suggesting that only routine monitoring is needed. In contrast, the risk of key internal staff leaving shows a higher grade, yet with high feasibility of mitigation, which positions it firmly under *Control.* The potential disagreement on ownership rules presents a medium-high risk and requires more attention; with intervention success rates as moderate, this factor falls between **Control and Action** and warrants proactive alignment with partners.

Technological risks are overall low to moderate. The complexity of deploying the technology returns a low-risk grade and a strong likelihood of resolving issues, thus remaining under *Control.* The dependency on external technologies indicates a very low risk level and limited need for intervention, justifying a *No Action* conclusion. Conversely, the presence of hard-to-detect defects constitutes one of the highest-graded risks across all categories. Despite a good feasibility of mitigation, this factor falls clearly under *Action,* and requires active efforts through testing and continuous quality assurance.

Market-related risks exhibit the highest variation. The risk of a competitor launching a rival solution has a relatively high grade but a low intervention feasibility, placing it under *No Action.* The potential failure of the DSS to replace established solutions shows a medium-high risk level, with strong mitigation potential, thus falling between *Control and Action*. Slow market penetration is ranked as a critical risk with good chances of successful intervention, making it another case requiring *Action* to ensure adoption and visibility.

IPR/Legal risks remain low, with the possibility of competitors replicating the technology rated as minimal and difficult to influence, resulting in *No Action*. Financial and management risks show a moderate-high grade related to resource limitations but also a high feasibility of overcoming these challenges, keeping this factor under *Control*.

Within the Environmental/Regulation/Safety risks, the potential for future regulatory changes that could render the DSS non-compliant represents a medium risk with a moderate likelihood of intervention success. In addition, there is a real risk that policy priorities may shift away from climate change adaptation, which could affect the relevance and uptake of the DSS. This places it between **Control and No Action**, implying that the risk does not require immediate corrective measures but must be observed closely to ensure timely adaptation to regulatory developments.

Figure 5 - Priority Map (DSS)

5.2 Resilience Assessment Framework (RAF)

Module B: Unique Value Proposition & Key Exploitable Results (Go to market – B). This section includes for the RAF, the **"Market Definition Canvas"** and the **"Unique Value Proposition Canvas"** after having addressed the Booster Expert's comments and having included their suggestions for improvement.

5.2.1 Market Definition (RAF)

Production Description

The Resilience Assessment Framework (RAF) is a structured methodology and digital tool designed to facilitate resilience assessment across diverse contexts and levels of maturity. It supports the development and implementation of Resilience Action Plans (RAPs) for regions, cities, and strategic urban sectors, enabling stakeholders to identify gaps, threats, and opportunities, and to prioritise interventions that strengthen resilience against climate-related and other systemic risks.

Customer Segments

RAF is targeted at professionals working in climate adaptation, urban planning, and resilience management. It is specifically designed for those who need to assess, plan, and monitor resilience at different scales, from city-wide strategies to sector-specific interventions.

Customer Subgroups

1. Policy makers, land-use planners, and strategic managers.
2. Urban services managers (water, wastewater, stormwater, energy, mobility, natural areas).

3. Consultants and insurance companies.
4. Academia, research institutions, and students focused on resilience, sustainability, and climate adaptation.

Jobs to be Done

The RAF enables users to:

- Conduct structured resilience diagnostics of regions, cities, and strategic urban sectors, identifying data gaps, opportunities, threats, strengths, and weaknesses.
- Develop tailored Resilience Action Plans (RAPs), supporting informed selection of resilience measures and strategies.
- Map climate adaptation needs and identify adaptation gaps.
- Monitor resilience progress over time at regional, city, or sectoral levels.
- Facilitate communication and coordination among stakeholders.
- Support insurance evaluations and risk-informed decision-making.

Complementary Tools

- GIS software for spatial analysis and visualisation of resilience-related data.
- Climate and hazard data portals to provide historical and projected environmental information.
- Asset management systems to track critical infrastructure, urban services, or regional assets.
- Data reporting and visualisation tools to support analysis dissemination and stakeholder engagement.

5.2.2 Value Proposition (RAF)

Customer Jobs

The RAF helps professionals carry out structured resilience assessments across regions, cities, and strategic urban services. It supports them in diagnosing resilience gaps, identifying strengths, weaknesses, threats, and opportunities, developing resilience enhancement plans, monitoring resilience progress over time, and communicating results clearly to diverse stakeholders.

Gains

The RAF increases understanding of regional, urban, and service-level resilience, enables alignment with internationally recognised climate and urban resilience frameworks, and provides a freely available and flexible tool that supports a stepwise, maturity-based assessment. It also helps justify resilience-related investments and provides evidence of progress over time.

Pains

Before using the RAF, organisations often struggle with the complexity of resilience assessments, requiring coordination across multiple stakeholders and disciplines. Many cities and metropolitan areas lack internal resilience expertise and find assessments overwhelming due to large data requirements, unclear results, and difficulty prioritising necessary actions, especially climate adaptation measures. Existing tools are often expensive, and limited funding pressures make careful investment prioritisation essential.

Gain Creators

The RAF generates value by offering a free, web-based tool that produces objective resilience maturity reports and enables benchmarking across services and geographical areas. It identifies resilience strengths and weaknesses, supports comparison of scenarios and solutions, and tracks evolution over time. It also informs and supports investment decisions by providing structured, evidence-based insights.

Pain Relievers

The RAF provides a structured, step-by-step assessment framework linked with a Resilience Action Plan template, making coordination and organisation of the assessment process easier. Its appealing visualisation features support communication across diverse stakeholders, while pre-defined answer options simplify the assessment process. Its comparison functionality helps users prioritise actions, particularly climate adaptation measures, and the free online availability removes financial barriers for cities and services.

Products and services

The RAF offers a comprehensive assessment framework organised into four resilience dimensions and seven services (water supply, wastewater, stormwater, solid waste, energy, mobility and natural areas), allowing different stakeholders to contribute to specific parts of the process. It included resilience metrics tailored to three maturity levels, enabling progressively deeper assessments. The RAFapp is a web-based tool that supports these assessments and provides clear visual representations of results on a 0-3 scale using a tree-structured layout.

Module C: Exploitation Strategy (Go to market - C). This section includes for the RAF, the **"Characterisation Table"**, the **"Exploitation Roadmap"**, after having addressed the Booster expert's comments and having included their suggestions for improvement, as well as the **"Use Options"**, **"Risk Assessment & Priority Map"**, and the **"The Lean Canvas".**

5.2.3 Characterisation Table (RAF)

RAF (Resilience Assessment Framework) and RAF App	
Description	The RAF (Resilience Assessment Framework) and its tool (RAF App) facilitate a structured resilience assessment for different contexts and levels of maturity in resilience. They contribute to the development and implementation of Resilience Action Plans (RAPs)
Target market/end users	**Target market:** Those interested in regional, urban, service and asset's resilience that need to plan, implement or support the development of a strategy to prepare the territory, service and assets for Climate Change events **Customers/end-users:** <u>Primary</u> 1. Policy makers and land use planner and managers 2. Urban services managers (e.g energy, water, wastewater) <u>Secondary</u> 3. Consultants and insurance companies 4. Academia, research and investigation organisations
End-users needs / problems	Users need to diagnose their resilience, plan for its improvement, monitor it or support those who do it. Namely, users need to: • perform a resilience diagnosis of regions, cities and strategic urban sectors • identify the resilience opportunities, threats, strengths and weaknesses • develop a plan for resilience enhancement, based on objective-driven assessment • raise awareness and emerge funding for resilience, by highlighting resilience development level

	• justify cost-effective investments for resilience, by evidencing resilience benefits • monitor the resilience progress, by comparing "as was" and "as is" assessments • communicate resilience with stakeholders, with a graphical interface • support data collection, contributors' joint work and resilience plans development • consult on their clients' resilience • implement research and development activities in resilience
Competitive advantages	• Association with a Resilience Action plan template, to structure resilience coordination • Structured framework to allow a step-by-step assessment for different resilience maturity levels • Freely available online tool with transparency in the way the tool calculates the results • Appealing visualisation facilitates communication with different groups, expertise, stakeholders • Comparison facility facilitates prioritising, namely of adaptation actions • Pre-defined answers for selection facilitate the assessment
Use model	Knowledge development and transfer and advanced consultancy services: - Independent usage of the freely available online tool - Training (1 week activity/course) - Capacity-building programmes for users through a joint training and hands-on capacitation programme (2 – 3 years programme) - Advanced consultancy (tailor made)
Early Adopters	1. Policy (city, regional) managers 2. Urban services managers
Adopters' problems/needs	Primary users need to diagnose their resilience, plan for its improvement, and monitor it. Namely, primary users need to: • perform a resilience diagnosis of regions, cities and strategic urban sectors • identify the resilience opportunities, threats, strengths and weaknesses • develop a plan for resilience enhancement, based on objective-driven assessment • raise awareness and emerge funding for resilience, by highlighting resilience development level • justify cost-effective investments for resilience, by evidencing resilience benefits • monitor the resilience progress, by comparing "as was" and "as is" assessments • communicate resilience with stakeholders, with a graphical interface
Alternative solution	• Resilience diagnosis is sometimes being performed for individual sectors or parts of the city/region • Stakeholders don't join efforts and are not aware of each other's resilience challenges • A plan for resilience does not exist, only scattered activities without a joint programme around them • Investments for resilience are decided piecemeal, as they are difficult to compare and their benefit is difficult to grasp

Unique Value Proposition	**Empower your resilience journey with our free online tool** Use the RAF and the RAF App to: • Increase the knowledge of the region, city, services' resilience • Align resilience strategy with internationally recognised urban resilience and climate change challenges (UN SDG) • Adopt a flexible framework • Follow the path of a stepwise approach • Justify cost-effective investments for resilience • Evidence resilience progress
Competitors	There are already many competitors in the deregulated market of urban resilience, from different levels (from supranational to local) and categories (from public bodies to SMEs). Major utilities companies (e.g. Veolia), multilateral organisations (e.g. ICLEI, OECD, Rockefeller Foundation, The World Bank Group, UN-Habitat) are the most direct competitors. Their strengths: their reputation, the fact that they offer world-wide services, their access to large funding Their weaknesses: assessments in a "black-box"(the user does not really grasp how he is being evaluated); usage of questions that are not scalable or comparable (for example, asking for the flooded area, instead of the *percentage* of the flooded area); assessments tailored to the national level and not easily cascading down; users have to pay for accessing the frameworks In order to differentiate from our competitors, the ICARIA RAF focuses on the niche of urban/regional resilience to cope with climate change focusing on water, based on adequate performance indicators and is freely available
Timing	The RAF and RAF App are expected to reach full usability by early 2026, following post-project refinements, piloting, and integration of testing feedback.
IP Strategy	The RAF and the RAF app's background was the RESCCUE project. The foreground is the ICARIA project. The RAF is Open access, but it is not Open Source. The RAF and RAF App are publicly and freely available (as they are distributed at no monetary cost to the end user) for private or for investigation and research purposes. They cannot be commercialised by third parties but can be used for commercial purposes (for consultancy, for example). Users have the right to use, share, and build upon the RAF App results. Users have to register and acknowledge RESCCUE and ICARIA projects, by citing the projects (Velasco et al., 2020) and (Brito et al., 2025). RAF App modification, remix, derivative work and reverse engineering are not permitted. LNEC has the legal rights to act upon any copyright infringement.

Table 20 - Characterisation Table (RAF)

5.2.4 Exploitation Roadmap (RAF)

Exploitation roadmap for RAF **(Resilience Assessment Framework) and RAF App**	
Actions	Actions to be executed 3-6 months after the end of the project: 1. **Survey** the interest of potential users within the partners' connections (e.g. cities, metropolitan areas, urban services, research organisations, consultants or software developers) 2. **Define the market entry strategy** based on the survey, to identify lines of action and priorities to establish a research, development and innovation Agenda for the following 3-4 years. These can translate into: RAF training (1 week activity/course), Capacitation for the RAF implementation in cities or metropolitan areas or specific urban services: water, wastewater, stormwater, natural areas (1-2-year programme); Specialised consultancy (on demand); Innovative research activities (2-4-year project) 3. **Stakeholder engagement** activities to engage potential users in the coming activities (e.g. webinars, conference presentations) **Partnership building**: Strengthen collaboration with key partners to implement the strategy.
Roles	LNEC (the Portuguese National Laboratory of Civil Engineering) is the responsible for all the exploitation roadmap activities Other ICARIA partners (e.g. DRAXIS, AIT, CETAQUA, UPC, DMKS, UNINA) can also support the survey implementation, market dissemination and training activities.
Milestones	2026: RAF training 2027: Submit a proposal for a Research project & launch a Capacitation programme 2028: Implement a Research project or Capacitation programme **KPI** (for the first 6M): number of people surveyed; number of countries surveyed; market entry strategy development; number of engagement activities implemented
Costs	Cost structure: • Expert personnel • Travelling and accommodation • Hardware for the App • Software maintenance This is a preliminary projection: • 2026: Survey: 2K€, RAF training: 4K€ (depends on the location. Travelling budget); dissemination of ICARIA results for raising awareness (2 K€) • 2027: Submit a proposal for a Research project (6K€), launch a Capacitation programme (3 K€) • 2028: Implement a Research project or Capacitation programme (40 K€), including Software and hardware upgrades
Revenue	Revenue structure, this is a preliminary projection: • 2026: RAF training: 10K€ (10 people, 1 K€), from academia, utilities and cities • 2028: 60 K€ from Capacitation programme: 150 K€, from utilities and cities

Other sources of coverage	2026-2027: Partners will contribute with their own funds for activities 1,2, 3 and 4; 2028: Research project: 60 K€ from project grants, Sponsoring for dissemination events

Table 21 - Exploitation roadmap (RAF)

5.2.5 Risk Assessment Map (RAF)

Risk Assessment Map - RAF (Resilience Assessment Framework) and RAF App							
	Description of Risks	Degree of criticality of the risk related to the final achievement of this Key Exploitable Result. Please rate from 1 to 10 (1 low- 10 high)	Probability of risk happening Please rate from 1 to 10 (1 low - 10 high)	Risk Grade	Potential intervention	Estimated Feasibility/Success of Intervention Please rate from 1 to 10 (1 low- 10 high)	Conclusion
	Technological Risk Factors						
6	Hardware / software obsolescence	*6*	*3*	18	Plan for funding in the 2nd or 3rd year after project ending	5	No Action'
7	More user-appealing technology arises	*4*	*7*	28	Position RAF as a layer that can be applied on top of, or alongside newer tools	5	No Action'
	Market Risk Factors						
11	Resilience is complex but still users prefer simpler approaches	*9*	*7*	63	Promote guidelines for stepwise approach; Disseminate	*6*	Action!

					advantages; promote training		
12	competitors may arise from EU-funded projects or supported by renowned international bodies	*8*	*7*	56	Keep the RAF App free to use; Disseminate advantages; promote training	*6*	Action!
13	Availability for 2-year programs is low	*8*	*9*	72	Promote training in advance	*6*	Action!
	Financial/Management Risk Factors						
21	Resources for 2027-2028 depend on very competitive success and awareness for the topic's relevance	*8*	*8*	64	Prepare submission project in advance, associate with robust partners; implement more training actions to provide income; disseminate to increase awareness	*6*	Action!

Table 22 - Risk assessment & priority map (RAF)

Based on the Risk Assessment & Priority Map for the RAF App, the Technological risk factors such as hardware or software obsolescence represent a moderate risk with a relatively low probability of occurrence. The recommendation is to monitor the technology landscape periodically; ***NO ACTION*** is required as the feasibility of managing obsolescence is low and can be controlled if it arises. Similarly, the emergence of more user-appealing technology poses a moderate risk with a higher likelihood. At this stage, it is advisable to track new technological developments, but NO ACTIVE intervention is necessary.

For the Market risk factors, the complexity of resilience assessment is high, yet users may still prefer simpler approaches, representing a high-risk grade with a high probability of occurrence. Potential interventions include promoting stepwise guidelines for using the RAF App, disseminating its advantages, providing targeted training sessions, and/or applying it through expert consultants on behalf of potential customers. The estimated feasibility and success of these interventions is moderate, placing the risk in the ***ACTION*** category. Likewise, potential competitors from EU-funded projects or internationally renowned organisations pose a significant market risk. Recommended actions include keeping the RAF App free to use, highlighting its unique advantages, and supporting uptake through training initiatives, which again places it in the ***ACTION*** category. Another market-related risk is the limited availability of the App for 2-year programs, which can hinder adoption. The proposed mitigation is to anticipate training needs in advance, promoting awareness and ensuring accessibility, classified as ***ACTION*** with moderate feasibility.

Finally, the Financial/Management risk factor is associated with the dependency of resources for 2027-2028 on competitive project success and awareness of the topic's relevance. This risk has a high probability, suggesting proactive mitigation measures. The feasibility of these interventions is moderate, placing this risk in the ***ACTION*** category.

Figure 6 - Priority Map (RAF)

5.3 Resilience Assessment Tool (RAT)

Module B: Unique Value Proposition & Key Exploitable Results (Go to market – B). This section includes for the RAT, the **"Market Definition Canvas**" and the **"Unique Value Proposition Canvas"** after having addressed the Booster Expert's comments and having included their suggestions for improvement.

5.3.1 Market Definition (RAT)

Product Description

The Resilience Assessment Tool (RAT) is a platform and framework designed to assist owners and operators of critical infrastructure in assessing and enhancing their resilience in alignment with the Critical Entities Resilience (CER) Directive. The tool integrates structured assessment methods with practical guidance to identify vulnerabilities, evaluate adaptation options, and support continuity planning across physical, digital, and governance domains.

Customer Segments

The primary users of the RAT are professionals responsible for resilience planning and risk management within critical infrastructure and public services. These include infrastructure owners and operators, local and regional authorities, government ministries, emergency responders, and academic experts in resilience and climate adaptation. The various users can be broadly grouped under the category of resilience and risk management stakeholders, encompassing infrastructure and urban planners, emergency preparedness officers, and policy makers.

Jobs to Be Done

The RAT enables users to:

- Support local and critical infrastructure climate adaptation plans.
- Link service continuity to potential solutions across physical, digital, and governance domains.
- Evaluate resilience gaps and identify actionable interventions to strengthen continuity.

Complementary Tools

The RAT is often used in conjunction with other resilience assessments frameworks and data sources to enhance analysis, including:

- ICARIA RAF for broader multi-level resilience evaluation.
- COSA resilience indicators for quantitative benchmarking.
- EC Resilience Dashboard for policy-level insights and monitoring.
- FEMA Resilience Assessment and Planning Tool for guidance on critical infrastructure preparedness.

5.3.2 Value Proposition (RAT)

Customer Jobs

The RAT supports planners, emergency managers, critical infrastructure owners and operators, and national or local authorities in assessing and enhancing resilience. Users can perform structured evaluations of critical assets, understand resilience capacities, and align operational continuity with broader climate adaptation and disaster risk reduction policies, particularly in the context of the CER Directive.

Gains

The RAT allows users to familiarise their workforce and decision-makers with the resilience of critical entities and infrastructure. It provides an in-depth understanding of the resilience capacity of assets and ensures alignment between critical entity operations and national or local resilience assessments.

Pains

Before using the RAT, users face challenges such as the lack of a mandated EC Directive or national law requiring resilience assessments, difficulty contextualising resilience within climate change adaptation or disaster risk reduction frameworks, and the time-consuming nature for performing comprehensive assessments.

Gain Creators

The RAT enhances resilience planning by assessing the capacities of critical entities to withstand extreme events and climate-related impacts. It is directly linked to the CER Directive and provides structured Resilience Assessment Reports through an accessible online platform, ensuring actionable insights are delivered efficiently.

Pain Relievers

The RAT simplifies the resilience assessment process by providing a methodology aligned with the CER Directive, easy-to-implement tools, and results that are directly available and easy to interpret for decision-making purposes.

Products and Services

The RAT offers a structured, capacity-building-based assessment platform that includes:
1. Resilience assessment of critical entities following a stepwise, capacity-focused methodology.
2. Identification and quantification of resilience for critical assets within the entity.
3. Integration and compliance with the requirements and specificities of the CER Directive.

Module C: Exploitation Strategy (Go to market - C). This section includes for the RAT, the **"Characterisation Table"**, the **"Exploitation Roadmap"**, after having addressed the Booster expert's comments and having included their suggestions for improvement, as well as the **"Use Options", "Risk Assessment & Priority Map"**, and the **"The Lean Canvas".**

5.3.3 Characterisation Table (RAT)

RAT (Resilience Assessment Tool)	
Description	The Resilience Assessment Tool (RAT) is a platform and framework designed to assist owners and operators of critical infrastructure in assessing and enhancing their resilience.
Target market/end users	**Target market:** Critical entities operators / owners, Emergency managers, financers **Customers/end-users:** *Primary* 1. Policy makers and land use planner and managers 2. Critical entities operators / owners *Secondary* 3. Consultants and insurance companies 4. Academia, research and investigation organisations 5. Civil protection agencies

End-users needs / problems	Users need to assess their resilience, plan for its enhancement, monitor it, or support those who do. Specifically, users should: • conduct a resilience assessment of critical entities and infrastructures • identify solutions and interventions to enhance resilience • justify cost-effective investments in resilience by evidencing resilience benefits • monitor resilience progress • communicate resilience with stakeholders through a graphical interface
Competitive advantages	• Directly linked to the provisions of Critical Entities Directive • A freely available online tool offers transparency in how it calculates results. • Appealing visualisation enhances communication with different groups, expertise, and stakeholders. • Very basic data needed to conduct the assessment • Pre-defined selection answers streamline the assessment.
Use model	Knowledge development and transfer and advanced consultancy services: - Independent usage of the freely available online tool - Training (1 week activity/course) - Capacitation for users through a joint training and hands-on capacitation programme (2 – 3 years programme) - Advanced consultancy (tailor made)
Early Adopters	Critical entities operators / owners
Adopters' problems/needs	Primary users need to assess their resilience, plan for its improvement, and monitor it. Specifically, primary users should: • conduct a resilience assessment of critical entities and infrastructures • identify solutions and interventions to enhance resilience
Alternative solution	Currently does not exist for CER. Many solutions exist for cities (MCR, FEMA) but not for critical entities.
Unique Value Proposition	**Empower your resilience journey with our free online tool.** Use the RAT app to: • Enhance your understanding of the critical entity resilience. Be compatible with CER based assessment.
Competitors	Essentially there is not any product to conduct assessment for critical entities resilience based on capacity assessment.
Timing	Early 2027: Refers to the expected time after project completion for full usability and maturity of the RAT in operational contexts.
IP Strategy	The tool is provided as an open service and is accessible to all organisations interested in using it. While it can be freely used, no transfer of ownership or open-source license is granted. Users are expected to acknowledge the ICARIA project when applying the tool.

Table 23 - Characterisation table (RAT)

5.3.4 Exploitation Roadmap (RAT)

Exploitation roadmap for KER: RAT (Resilience Assessment Tool)	
Actions	Actions to be executed 6 months after the end of the project: 1. **Explore** interest from potential users within the partners' connections (e.g. CI operators, fire corps) 2. **Define the market strategy** based on the survey to identify lines of action. Indicative: RAT training (1 day activity/course) including hands on practice Implementation in CI entities (1-2-year programme)

	Consultancy services (on demand) Leading new research activities (2-4-year project) 3. **Stakeholder engagement** activities to engage potential users in the coming activities (e.g. webinars, conference presentations) 4. **Partnership building**: Strengthen collaboration with key partners to implement the strategy.
Roles	NCSRD is responsible for hosting and updating the RAT.
Milestones	**2026: Actions 1,** **2027: Actions 2, 3 and 4** **2027:** Submit a proposal for a Research project & launch a Capacitation programme **2028:** Implement a Research project **KPI** (for the first 12M, **Activities 1, 2, 3**): number of people surveyed; number of countries surveyed; market entry strategy development; number of engagement activities implemented
Costs	Cost structure: • Expert personnel • Travelling and accommodation • Hardware for the App • Software hosting and maintenance This is a preliminary projection: • 2026: Survey: 2K€, RAT training: 2K€ (depends on the location. Travelling budget); dissemination of ICARIA results for raising awareness (2K€) • 2027: Submit a proposal for a Research project (6K€) • 2028: Implement a Research project (40K€), including Software and hardware upgrades.
Revenues	Revenue structure, this is a preliminary projection: • 2028: RAT training: 10K€ (5 people, 2 K€), from academia, utilities and CI organisations • 2029: 20K€ from training and consultancy
Other sources of coverage	2026-2027: Own funds for activities 1,2, 3 and 4. 2028: Research project: 40K€ from project grants, Sponsoring for dissemination events

Table 24 - Exploitation Roadmap (RAT)

5.3.5 Risk Assessment Map (RAT)

Risk Assessment Map - RAT (Resilience Assessment Tool) and RAT App							
	Description of Risks	Degree of criticality of the risk related to the final achievement of this Key Exploitable Result. Please rate from 1 to 10 (1 low- 10 high)	Probability of risk happening Please rate from 1 to 10 (1 low - 10 high)	Risk Grade	Potential intervention	Estimated Feasibility/Success of Intervention Please rate from 1 to 10 (1 low- 10 high)	Conclusion
	Partnership Risk Factors						
1	Key people/partners leaving before the successful deployment and uptake of the potential exploration	*8*	*4*	32	Most people in the development of RAT are permanent personnel	*1*	No Action'
	Technological Risk Factors						
6	Hardware / software obsolescence	*6*	*3*	18	Hardware is recently acquired, software is on house build and thus easily customisable	*4*	No Action'
	Market Risk Factors						

11	No legal necessity for CI resilience assessment	*10*	*10*	100	National laws requesting CI operators establish CI assessment and plan (outside the consortium - national government)	*9*	Action!
12	competitors may arise from EU-funded projects or supported by renowned international bodies	*8*	*7*	56	Highlight the RAT's unique features and being freely available; promote training; make users the RAT ambassadors (gather testimonials to build credibility)	*6*	Action!
13	More user-appealing technology arises	*4*	*7*	28	Highlight the RAT's unique features and being freely available	*6*	Control.
	IPR/Legal Risk Factors						
16	Improper use of RAT and RAT App (e.g. lack of acknowledgement, modification, commercialisation by others)	*8*	*2*	16	Follow the IPR terms; legal action	*5*	Between Control & No Action
	Financial/Management Risk Factors						
21	Resources for 2027-2028 depend on very competitive success and awareness for the topic's relevance	*8*	*8*	64	Prepare submission project in advance, associate with robust partners; implement more training actions to provide income; disseminate to increase awareness, study other sources of funding	*6*	Action!

Table 25 - Risks assessment and priority mapping (RAT)

Based on the Risk Assessment & Priority Map for the RAT tool, the Partnership risk factor related to key personnel or partners leaving before the successful deployment and uptake of the RAT represent a moderate risk with a relatively low probability of occurrence. Since most people involved in the RAT development are permanent personnel, no active intervention is required at this stage, and the risk is classified as NO ACTION.

For Technological risk factors, hardware or software obsolescence is a moderate concern with low likelihood. Given that the hardware has been recently acquired and the software is developed in-house and easily customisable, no immediate action is necessary, and the risk falls under *NO ACTION*.

Market risk factors present more critical challenges. The lack of a legal necessity for CI resilience assessment represents a very high-risk, with the highest probability of occurrence. Mitigation relies on aligning the RAT with national regulations requesting CI operators to establish assessment and planning procedures, placing the risk in the *ACTION* category with high feasibility. Competitors emerging from EU-funded projects or internationally recognised bodies pose a significant market risk. Recommended interventions include highlighting the RAT's unique features, maintaining it freely accessible, promoting training, and using early adopters as ambassadors through testimonials, which is also classified as *ACTION*. Additionally, the emergence of more user-appealing technology represents a moderate risk, with a higher probability; mitigation focuses on emphasising the RAT's distinctive features and free availability, which places it in the *CONTROL* category.

IPR and Legal risk factors relate to improper use of the RAT, including lack of acknowledgement, modification, or unauthorised commercialisation by others. This risk has a moderate grade with low probability. Recommended interventions include communication with to enforce IPR terms and potential legal action, placing it between *CONTROL* and *NO ACTION.*

Finally, Financial/Management risks are significant, as resources for 2027-2028 depend on competitive success and awareness of the topic's relevance. This factor carries a high-risk grade and probability, requiring proactive measures such as the exploitation of alternative funding sources. This risk is classified as *ACTION* with moderate feasibility.

Figure 7 - Priority Map (RAT)

6. Business Strategy & Sustainability Plan

6.1 Lean Business Plan

The ICARIA DSS represents a unique opportunity to provide an integrated, science-based platform for climate adaptation and resilience planning across Europe. It consolidates multiple analytical and modelling tools, including hazard modelling, impact assessment workflows, resilience assessment frameworks, and adaptation measure libraries, into a single, user-friendly environment. Unlike standalone tools, the DSS integrates outputs from several partners, ensuring that stakeholders can access harmonised and actionable insights for decision-making at regional, municipal, and infrastructure levels. Its design and functionality make it suitable for public authorities, municipalities, and critical infrastructure operators, allowing them to plan, evaluate, and implement climate adaptation strategies effectively.

The commercialisation pathway for the DSS has been designed to reflect the realities of public-sector adoption patterns and the complexity of climate-adaptation decision-making. Taking the platform directly to the market without prior engagement would not be realistic, particularly given the organisational, technical, and procedural constraints faced by regional and municipal authorities.

For this reason, the proposed go-to-market approach is built around a pilot-first strategy, inspired by the "mini trials" carried out within the ICARIA project. Pilots will allow potential clients to test the DSS in their own operational context, validate its relevance, and identify potential enhancements while contributing to a portion of the operational costs and benefiting from tailored technical support. This de-risks adoption for public authorities while demonstrating the tangible value of the DSS.

A key component of this strategy is that a successful pilot directly triggers the execution of a full-scale project, in which the client fully deploys the capabilities of the ICARIA DSS across their workflows. This includes broader integration with existing systems, customisation to local requirements, capacity-building activities, and long-term operational use.

This staged approach ensures that clients experience the platform's full potential in practice before transitioning into subscription-based access. It also enables progressive adaptation of the DSS to local needs, ultimately building a strong foundation for sustained adoption and long-term commercial scalability.

6.1.1 Market Sizing & Segmentation

The potential market for ICARIA DSS spans several key segments:

Total Addressable Market (TAM): The TAM for the ICARIA DSS includes all potential institutional users within the European climate adaptation ecosystem. This encompasses approximately 10,600 municipalities, more than 300 regional authorities, 27 national climate or civil protection agencies, around 150,000 operators of critical infrastructure in the energy, water, and transport sectors, and roughly 1,200 climate adaptation consultancies and academic users mapped by the Joint Research Centre. Based on realistic adoption rates and pricing for public-sector digital tools, the total market size can be estimated in the range of €800 million to €1 billion, reflecting a conservative but credible assessment of the potential demand for an integrated, multi-hazard DSS platform.

Serviceable Available Market (SAM): The SAM focuses on geographies where ICARIA has already established a presence, and where climate adaptation planning requirements are mature enough to support early adoption. The initial three years of commercial activity will concentrate on Spain, Greece, and Austria, leveraging the ICARIA project case studies to provide an immediate entry point. In the medium term, expansion is planned to France, Germany, and the Netherlands, where adaptation mandates and budgets are comparatively advanced. Across these six countries, approximately 4,000 municipalities and regional agencies have explicit climate adaptation responsibilities. Based on moderate pricing assumptions for SaaS subscriptions, pilot projects, and premium data services, the SAM is estimated at around €29 million, representing a realistic early target for ICARIA DSS deployment.

Serviceable Obtainable Market (SOM): The SOM represents an achievable adoption target in the first phase of market entry, accounting for real-world adoption constraints, organisational readiness, and public procurement timelines. In a moderate scenario, the DSS is expected to secure uptake by approximately 25 public authorities and 5 infrastructure operators during the first two years, supported by pilot project and consulting services. This corresponds to a revenue potential of €150,000 in Year 1 and €250,000 in Year 2, with cumulative revenue growing to €390,000 in Year 3 €520,000 in Year 4, and 760K in Year 5, as pilot participants transition into full SaaS subscriptions. This trajectory ensures a realistic and defensible estimate for initial commercialisation, with the break-even point in EBITDA achieved in Year 3 and cumulative cash turning positive shortly thereafter, demonstrating the financial viability of the pilot-first strategy.

6.1.2 Proposed Pricing Model for the ICARIA DSS

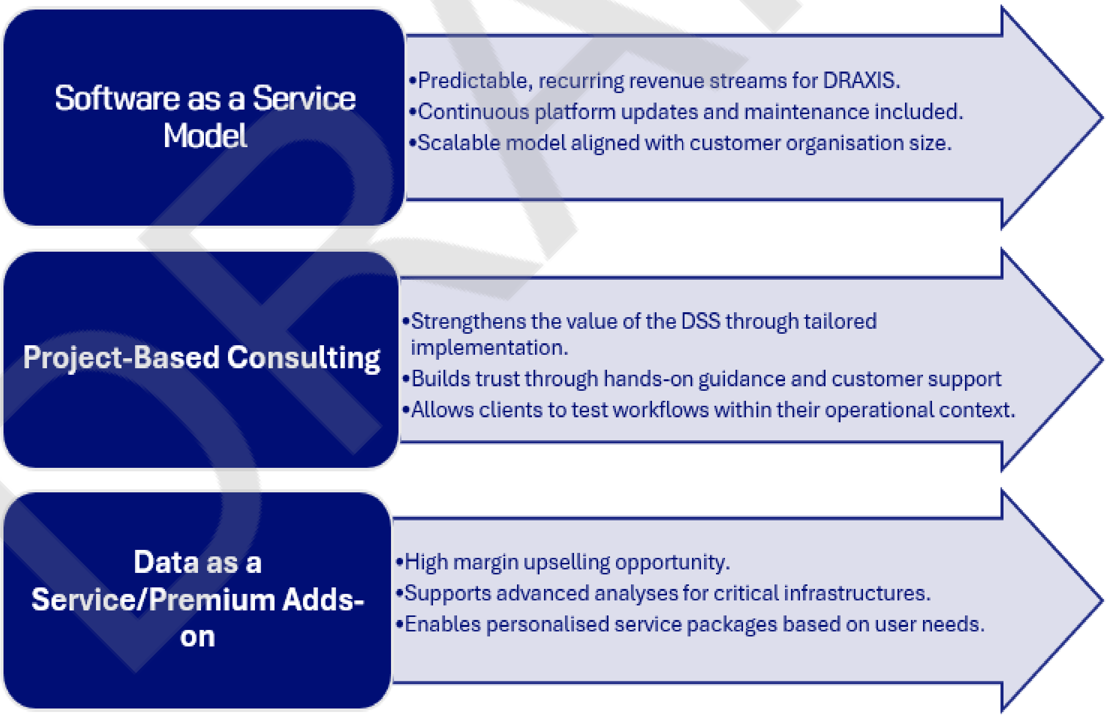

Figure 8 - DSS Pricing Model

A. Software as a Service (SaaS) Licensing

SaaS forms the backbone of the commercial model, providing continuous access to the DSS platform, including hazard models, impact workflows, resilience assessment tools, and adaptation measure libraries. The subscription ensures clients receive ongoing updates and allows DRAXIS to build recurring revenue. Positioning the DSS as a long-term service rather than a one-off product.
Proposed annual subscription tiers:

- **Small municipalities / local authorities:** €8,000 per year; Includes standard access to hazard models, resilience frameworks, adaptation measures, and basic technical support.
- **Medium regional authorities**: €20,000 per year; Provides full access to multi-hazard models, customisable workflows, extended technical support, and regional scenario analyses.
- **Large agencies / critical infrastructure operators:** €50,000 per year; Grants full platform access, high-resolution datasets, scenario analysis, priority technical support, and optional integration with existing infrastructure management systems.

This tiered approach reflects organisational scale, usage complexity, and aligns with public procurement practices, while ensuring predictable and scalable revenue.

B. Project-Based Consulting

Consulting services complement the SaaS model, especially during early adoption. Many clients may lack the expertise to fully exploit the advanced DSS functionalities. Consulting services accelerate adoption, provide training and onboarding, and support pilot implementations. Depending on the country, customer type, and demand, AQUATEC, as a consultancy firm, may also provide additional consultancy support.

- Pilot projects (6-12 months): 15,000/ project; average 8 projects.

The pilot-first approach allows clients to evaluate the DSS in their operational context, while early revenue is being generated and client relationships are strengthened. Successful pilots will naturally transition into SaaS subscriptions.

C. Data-as-a-Service (DaaS) / Premium Add-Ons

High-value datasets complement the platform for clients needing localised hazard data, detailed infrastructure vulnerability profiles, or high-resolution climate projection. These premium datasets represent a high-margin upselling opportunity.

- Localised hazard datasets (flood, heatwave, drought, wildfire): €5,000 per dataset per year.
- Infrastructure-specific vulnerability profiles: €10,000 per year.
- High-resolution climate projections: €15,000 per year.

These add-ons reduce internal modelling effort for clients and create opportunities for upselling, increasing overall platform value.

6.1.3 Revenue Model

The DSS's revenue model is structured around three pillars.

1. **Software as a Service (SaaS)** licensing forms the backbone of the commercial approach, offering recurring revenue while ensuring clients continuously benefit from updates of hazard data, modelling outputs, and analytical workflows. This positions the DSS as a long-term service rather than a one-off product, supporting retention and scaling.
2. **Project-based consulting** provides critical support during early adoption, enabling clients without technical expertise to use the DSS effectively. Consulting accelerates adoption, facilitates onboarding, and finances operations while pilot projects are executed.
3. Finally, **Data-as-a-Service (DaaS)** provided high-margin add-ons. Many clients require localised hazard datasets, infrastructure vulnerability profiles or high-resolution projections beyond freely available sources. Premium datasets reduce internal modelling effort for clients and create upselling opportunities, further differentiating the DSS in the market.

Revenue is expected to increase steadily as organisations participating in pilot projects transition into paying subscribers and the SaaS model gains traction. During the initial phase, consulting assignments linked to these pilots will generate essential income, while the gradual introduction of premium datasets and optional add-on services will further strengthen the revenue stream. Under a moderate adoption scenario, the DSS is projected to reach break-even by the third year. Beyond that point, profitability should grow as the platform expands into new regions and attract larger or more specialised clients with greater service needs.

Revenue Model with Sensitivity Scenarios

Stream	Base Case (Year 3)	Conservative (Year 3)	Aggressive (Year 3)
SaaS Licensing	€180K	€90K	€300K
Pilot Consulting	€120K	€75K	€225K
Premium Data (DaaS)	€50K	€15K	€150K
Total	€350K	€180K	€650K

Table 26 - Revenue with Sensitivity Scenarios

<u>Assuming:</u>
Base Case: 12 SaaS clients; 8 pilot projects; 6 premium data set subscriptions
Conservative: 6 SaaS clients; 5 pilot projects; 3 premium data set subscriptions
Aggressive: 20 SaaS clients; 15 pilot projects; 15 premium data set subscriptions

6.1.4 Go-to-Market Strategy

The Go-To-Market Strategy is structured around geographical proximity, maturity of climate adaptation policy, and existing ICARIA project relationships. This phased approach supports controlled scaling while ensuring quality of user onboarding and technical support.

<u>Strategic Rationale</u>

Phase 1 – Early Pilots (Year 1)

- Target municipalities, regional authorities, and critical infrastructure operators in Greece, Spain, and Austria.
- Co-fund pilot projects to demonstrate value and refine the platform.
- Provide consulting and training services to ensure adoption.

Phase 2 – Pilot Transition to SaaS (Year 2)

- Convert pilot participants into SaaS subscribers.
- Expand to neighbouring regions with growing adaptation mandates (Italy, Slovenia, Croatia).
- Continue consulting and offer tailored integration support.

Phase 3 – Scaling & Upselling (Year 3 and beyond)

- Enter northern EU markets (France, Germany, Netherlands).
- Offer premium data (DaaS) and advanced modules as upsell.
- Continue supporting complex adaptation cases.
- Focus on building a strong reference base and success stories to support broader uptake.

This phased approach ensures controlled growth, optimises client engagement, and aligns with public procurement patterns where demonstration and validation are key to adoption.

6.1.4.1 Financial Forecast

The financial projections reflect gradual adoption, pilot funding, and transition to SaaS, while maintaining operational sustainability.

Financial Overview:

- **Years 1-2:** Investment-intensive pilot execution phase; consulting revenue provides partial cost recovery, while SaaS and DaaS income remain limited.
- **Year 3:** Pilot participants begin converting to SaaS subscriptions, with DaaS uptake increasing; EBITDA turns positive.
- **Years 4-5:** Growth is driven by expanded SaaS subscriptions and DaaS premium services, while profitability and cash generation increase significantly.

	Y1	Y2	Y3	Y4	Y5
Revenue	**150K** (SaaS:30K Consulting:100K DaaS:20K)	**250K** (SaaS:120K Consulting:90K DaaS: 40K)	**390K** (SaaS:210K Consulting:120K DaaS:60K)	**520K** (SaaS:330K Consulting:80K DaaS:110K)	**760K** (SaaS:560K Consulting:40K DaaS:160K)
Costs	240K	300K	340K	380K	430K
EBITDA	-90K	-50K	+50K	140K	+330K
Cumulative Net Cash	-90K	-140k	-90K	+50K	+380K

Table 27 - Financial Projections

Explanation:

The financial projections reflect a gradual adoption strategy, combining pilot consulting projects with the transition to SaaS and premium datasets.

In **Year 1**, the company focuses on pilot execution, with partial cost recovery through consulting revenue. SaaS subscriptions are minimal, and DaaS revenue is modest. Total revenue of €150K is primarily driven by 7 pilot projects generating €100K in consulting revenue, 3 early SaaS clients generating €30K, and 2 datasets generating €20K in DaaS revenue. Costs include platform finalisation, pilot setup, personnel, and operational support, resulting in EBITDA of -€90K and cumulative cash of - €90K.

In **Year 2**, early SaaS adoption ramps up, alongside consulting and DaaS contributions. Revenue totals €250K, comprising 8 SaaS clients generating €120K, 6 pilot projects generating €90K, and 4 datasets generating €40K. Costs increase due to personnel scaling and ongoing pilot support, producing EBITDA of -50K and cumulative cash of -€140K.

By **Year 3**, moderate adoption drives significant revenue growth. Total revenue reaches €390K, with 12 SaaS clients generating €210K, 8 pilot projects generating €120K, and 5 datasets generating €60K. EBITDA turns positive at €50K, reflecting the transition to profitable operations, and cumulative cash improves to -€90K.

In **Year 4**, SaaS subscriptions expand further, pilot consulting diminishes, and DaaS upselling accelerates. Revenue totals €520K, including 20 SaaS clients generating €330K, 5 pilot projects generating €80K, and 9 datasets generating €110K. EBITDA grows to €140K, with cumulative cash turning positive at €50K, confirming the business is generating sustainable operating profits.

By **Year 5**, full adoption of SaaS and DaaS services drives total revenue to €760K, with 33 SaaS clients (15 small municipalities, 15 medium authorities, 3 large operators), generating €560K, 3 pilot projects generating €40K, and 12 datasets generating €160K. EBITDA rises to €330K, and cumulative cash reaches €380K, demonstrating the financial sustainability of the DSS platform.

This forecast illustrates a realistic pilot-first strategy, allowing municipalities, public authorities, and infrastructure operators to validate and adopt the DSS gradually before committing to subscriptions, while providing a transparent path to profitability through clear assumptions on client numbers, pilot projects, pricing tiers, and dataset uptake.

6.2 Business Schemes

To ensure the long-term sustainability and impact of the ICARIA DSS beyond the end of the project, a combination of commercial exploitation and targeted funding initiatives will be pursued. DRAXIS will lead the commercial exploitation of the DSS, generating revenue through subscriptions, consulting services, and add-on modules. In parallel, targeted funding schemes will be strategically leveraged to accelerate the platform's development, expand its functionality, and support broader deployment. European-level initiatives, including EIC Transition, EIC Accelerator, EIC Prizes, The InvestEU Programme, INTERREG Europe, EUREKA/Eurostars Funding, Cascading Grants/FSTP and others can provide financing for market entry, feature development, cross-border pilot projects, and integration of additional hazard modules or sector-specific resilience assessments.

This combination of commercial exploitation and strategic funding ensures that the ICARIA DSS remains financially sustainable while continuously evolving to meet the needs of its users. Revenue generated from early pilots and SaaS subscriptions can be reinvested to enhance platform capabilities, integrate additional hazard datasets, and maintain alignment with the latest climate science and policy requirements. By linking funding and commercial activity to tangible platform improvements and user adoption, ICARIA DSS establishes a reinforcing cycle that maximises both financial sustainability and impact in climate adaptation planning across Europe.

In addition, the ICARIA DSS demonstrates the tangible value of EU funding, showing that public investment has directly enabled the creation of a fully operational, science-based platform for climate adaptation and resilience planning. EU support made it possible to integrate multi-hazard modelling, impact assessment workflows, resilience frameworks, and adaptation measures into a single tool, ready for both commercial and practical deployment. Beyond the financial leverage, this investment generates broad societal and scientific returns: municipalities, regional authorities, and critical infrastructure operators gain actionable insights; researchers have access to validated datasets and methods; and evidence-based guidance informs climate adaptation policies. Early pilot projects funded by the initiative have helped offset operational costs while validating the platform's functionality, confirming that EU resources have been effectively transformed into a tangible, scalable tool with measurable impact across multiple levels.

6.3 Post-Project Data Management and Maintenance

Post-project data management for the ICARIA DSS and the related KERs has been planned to ensure continued accessibility, usability, and sustainability. Data generated within the project will be maintained on the DRAXIS server, with corresponding datasets hosted by the relevant contributing partners as appropriate. For KERs that are primarily methodological in nature, no ongoing maintenance costs are anticipated, as these materials do not require continuous data updates. However, for KERs that provide tangible datasets or rely on regularly updated hazard, exposure, or impact data, a modest maintenance cost will be incurred to ensure that updated datasets remain available and functional.

As expected, the datasets and the DSS platform will be actively maintained for an initial period of up to five years post-project. During this time, as long as users continue to engage with the platform, data integrity and accessibility will be ensured through regular updates, server maintenance, and technical support. Beyond this initial period, maintenance will be aligned with the commercial exploitation strategy: once the DSS transitions to a subscription-based model, all platform functionalities and associated datasets will continue to be maintained for paying users, guaranteeing long-term sustainability, while supporting the platform's operational and financial viability.

7. Lessons Learnt and Replicability Recommendations

7.1 Lessons Learnt (T4.2)

Between October and November 2025, the ICARIA project conducted its planned trial events in the Barcelona Metropolitan Area and the Salzburg Region case studies. These activities represented the core validation phase of WP4 and were carried out in close collaboration with the respective Communities of Practice (CoPs). A diverse group of stakeholders — including regional authorities, infrastructure operators, technical agencies, and practitioners — who actively participated in the exercises. The trials focused on testing the ICARIA DSS, which integrates the project's main exploitable results: the RAF, the RAT, the multi-hazard impact models, and the Portfolio of Adaptation Solutions. Participants explored the DSS functionalities in the context of realistic multi-hazard climate scenarios built for each case study region.

Overall, the main lessons learnt during trial events regarding usability and replicability were as follows:

- **High usefulness across stakeholder profiles:** Participants from both regions confirmed that the DSS provides relevant and actionable information for a wide variety of end-users, from strategic planners to infrastructure operators.

- **Interest in future adoption:** Many stakeholders expressed explicit interest in using or procuring the DSS-based services once they become fully operational, highlighting its value for climate adaptation planning.

- **Policy-oriented users favoured the RAF:** Regional and local administrations found the RAF particularly useful for assessing and designing resilience policies, as it provides structured metrics to analyse resilience gaps, progress, and priorities.

- **Operators valued RAT and impact modelling:** Infrastructure managers showed stronger interest in the RAT and the asset level hazard/impact assessment functionality.

- **Need for expert knowledge:** Participants highlighted that some DSS components require significant technical expertise. In particular, regarding data inputs for the impact assessment procedures, they recommended including clear references to reliable, non-expert-friendly data sources that could facilitate broader adoption, along with the provision of expert consultancy to support users where needed.

- **Strong performance in scenario comparison and climate data visualisation:** The ability to compare multiple adaptation or hazard scenarios, together with intuitive visualisation of climate projections and impact indicators, was identified as one of the key strengths of the DSS.

7.2 Replications Recommendations (T4.3)

This section outlines the preparatory work and planned activities under Task 4.3. The outcomes of these replication activities will be documented in D4.3, which will follow after the completion of this current deliverable.

The core focus of Task 4.3 is the assessment of the **transferability** of the Task 4.2 results, together with their validation through the **replication** of the ICARIA methodology via mini-trials across the CSs.

The replication activities specifically aim to evaluate: **i)** ***technical feasibility,*** **ii)** ***stakeholder interest,*** and **iii)** ***the cost of replicating the project's results in other European contexts***. The insights generated through this process support the consolidation of the asset-level modelling framework, facilitate the effective implementation of the mini-trials, and provide essential input for long-term sustainability and exploitation planning. To achieve these objectives, a two-layered assessment approach - **combining technical replicability analysis** with **a stakeholder-oriented adoption analysis** - has been developed. Accordingly, three complementary instruments have been applied:

1. **Structured Miro boards** for case-study-driven replication analysis;
2. **Expert questionnaires** evaluating the usability of the available models;
3. **Stakeholder questionnaire** evaluating adoption potential, perceived value and the interest in the follow-up activities.

<u>Structured Miro boards for case-study-driven replication analysis.</u>

The structured Miro boards provide a harmonised workspace where CSFs and scientific experts jointly document: the status of the risk/impact modelling process in trials; interdependencies, requirements, and constraints associated with the hazard, exposure/vulnerability, and impact assessments; the implementation of adaptation strategies/measures; and the relevant ICARIA tools tested in the context of Trial application. Building on the evidence developed during the trials, the same approach will be applied to the mini-trials to assess the replicability of the overall methodological approach.

Within the boards, each canvas represents an elementary brick behind the ICARIA asset-level modelling framework (with the exception of the canvas dedicated to testing the ICARIA tools). The canvases are organised according to their required inputs, processing steps, and expected outputs. This structure enables a detailed and transparent evaluation of the components that can be directly replicated, those requiring additional inputs and/or adjustments, and those that cannot be replicated without substantial adaptation. In addition to documenting requirements and constraints, the canvases also capture the expected outputs at each modelling stage. This allows CSFs to verify whether locally available data, modelling capacities, and contextual conditions can support the production of equivalent or comparable results in mini-trials, ensuring that consistency and reproducibility are systematically monitored across case studies.

<u>Expert questionnaires for assessing model transferability</u>
To complement the analysis performed using Miro boards, a structured expert questionnaire has been designed. This will collect detailed, model-specific information from the scientific teams involved in hazard, exposure/vulnerability, and impact assessment. The aim is to understand the technical and data-related conditions that could affect the replication of the available models in mini-trials.

The survey includes sections on: model general information (original development context, spatial/temporal scales, targeted hazard); technical transferability (sensitivity to context, calibration requirements, limiting factors, required adaptations); data prerequisites and barriers (availability, resolution, format, pre-processing needs, mandatory variables, licensing constraints); interoperability with other ICARIA components; implementation effort; expected timeline for redeployment; and resource needs associated with applying the model in a new context.

By standardising how modelling teams report these aspects, the questionnaire will provide comparable evidence across tools and disciplines, enabling the identification of which models will be readily applied in the mini-trials, which will require re-parameterisation or redesign, and which will not be transferable even with substantial adaptation. The results of this exercise will support the formulation of realistic replication strategies and contribute to the assessment of technical feasibility, cost drivers, and operational risks associated with replicating the ICARIA asset-level modelling framework in new European contexts.

<u>Stakeholder questionnaire for evaluating adoption potential and perceived value</u>

The stakeholder questionnaire has been designed using a structured user-centred approach to assess the potential applicability and usefulness of the overall ICARIA methodology across diverse implementation contexts. It focuses on the institutional/organisational context, operational needs related to climate risk assessment, prior experience, perceived value, and adoption conditions of stakeholders, infrastructure operators, and other end users who may benefit from the ICARIA tools.

The survey defines the profile of each respondent, including their governance level, mandates in climate risk management, and degree of technical or decision-making responsibility. It then collects information on local hazard priorities, frequency and regulatory framing of climate risk assessments, as well as sectoral areas of concern, enabling a better alignment between ICARIA outputs and real-world planning needs related to climate risks. A dedicated section investigates practices and tools already in use, including limitations related to data availability, multi-hazard integration, usability, and costs. This will help to identify gaps that ICARIA tools may fill and will highlight barriers that could hinder adoption.

A central component of the questionnaire relates to perceptions of the added value of the ICARIA core tools (RAF, RAT, Adaptation Measures Portfolio, and DSS Platform) - including multi-hazard analysis (considering the identification of compound events and related cascading effects), scenario-based risk mapping, and decision-support capabilities. Additional items evaluate the organisational conditions required for tool uptake — such as training needs, documentation, interface usability, system integration requirements, language availability, and resource constraints. The final section assesses stakeholders' interest to engage in follow up activities beyond the end of the project, as co-design, testing, validation, and dissemination activities, their willingness to provide data, when feasible, and also their willingness to pay in order to use the tools.

Together, these insights provide a comprehensive understanding of stakeholder expectations, constraints, and perceived benefits. They complement the technical replicability analysis by clarifying where ICARIA tools respond to concrete user needs, identifying barriers and enablers for uptake, and informing the development of realistic replication pathways for the mini-trials and beyond.

8. Conclusion

This deliverable brings together the key elements that define how the ICARIA results will continue to generate value beyond the project's conclusion. Through an integrated analysis of the market's dynamics, intellectual property considerations and the exploitation potential of each KER, the report provides a coherent roadmap for exploitation and long-term sustainability. While each KER progresses in its own way towards adoption, influenced by its ownership, maturity level, and target users, the project's central outcome is the DSS. This tool has emerged as the primary integrative KER, combining methodologies, datasets, modelling approaches, and other components developed across different work packages. Several of the project's other KERs can be hosted, and operationalised directly through the DSS, strengthening its position as the project's main market enabler, with a TRL of 7 expected by the end of the project.

The Horizon Results Booster services further enhanced this process by supporting the project's KERs with the highest exploitation potential, namely the DSS, RAF, and RAT. These services supported the refinement of value propositions, the articulation of market pathways, and the formulation of coherent exploitation strategies for each asset. While RAF and RAT retain their own individual exploitation pathways, their integration into the DSS significantly strengthens the overall offering and creates a unified, scalable product ecosystem.

Building on these strategic foundations, the post-project commercialisation approach focuses on a phased deployment that mirrors market realities. The consortium recognises that immediate commercial uptake can be challenging in the resilience and climate-risk domain; therefore, the early emphasis lies on targeted engagement of public authorities, municipalities, and infrastructure operators. This includes the implementation of pilot deployments, an approach inspired by the mini trials conducted during the project, which demonstrate the usability and relevance of the solutions in real settings. These pilots will serve as an essential bridge toward broader adoption and pave the way for the introduction of a SaaS-based commercial model of the DSS.

Lessons learnt (T4.2) from the trial events conducted in the Barcelona Metropolitan Area and the Salzburg Region show that the DSS provides relevant and actionable information for a wide variety of end-users, from strategic planners to infrastructure operators. Participants expressed interest in using or producing DSS-based services once fully operational. Policy-oriented users favoured the RAF for assessing and designing resilience policies, while infrastructure operators valued the RAT and asset-level impact assessment functionality. Participants in the trials also highlighted that some components require significant technical expertise and recommended including references to reliable, non-expert-friendly data sources, complemented by expert consultancy that could be provided by project partners. The DSS was recognised for its strong performance in scenario comparison and climate data visualisation.

Additionally, **Replication analysis (T4.3)** will indicate whether there is substantial potential for transferring the ICARIA methodology and tools to other contexts, both from a geographical and a climatic perspective. Building on the evidence developed during the trials, the structured Miro boards will be applied in the mini-trials to assess the replicability of the overall methodological approach. Within these boards, each canvas will represent an elementary brick of the ICARIA asset-level modelling framework, organised according to required inputs, processing steps, and expected outputs. This structure will enable a transparent evaluation of which components can be directly replicated, which require adjustments, and need substantial adaptation. The canvases will also capture expected outputs at each modelling stage, allowing potential new customers and CSFs to verify whether locally available data, modelling capacities, and contextual conditions can support the production of equivalent or comparable results. Expert and stakeholder questionnaires will further evaluate model transferability and adoption potential, providing essential input for long-term sustainability and exploitation planning across different European contexts.

Overall, the outcomes of the project show substantial potential for the exploitation and long-term sustainability, with the ICARIA DSS at the centre of the exploitation strategy. The market analysis indicates a sizable addressable market across European municipalities, regional authorities, and critical infrastructure operators, with initial commercial activity focused on Spain, Greece, and Austria as a natural consequence of the CoPs already built. The pilot-first approach demonstrated during the project allows early adopters to test the platform in real operational contexts, validating its functionality and the added value of the tools that are integrated in it. This staged deployment will facilitate the transition to subscription-based SaaS licensing, complemented by project-based consulting and high-value add-ons, creating a diversified revenue model. Together, these strategies ensure that the DSS is positioned for sustainable growth, scalable adoption, and long-term impact in supporting climate adaptation and resilience planning across Europe.

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ANNEX 1 – Data Management Statement

Dataset name	Format	Size	Owner and re-use conditions	Potential Utility within and outside ICARIA	Unique ID
Questionnaires on exploitation	Excel	158KB	ICARIA consortium	Conclusions drawn for the exploitation of the results	

Table 28 - Data used in preparation of ICARIA Deliverable 4.5

Dataset name	Format	Size	Owner and re-use conditions	Potential Utility within and outside ICARIA	Unique ID
Sustainability and Exploitation Plan	D4.5	3.6 MB	ICARIA Consortium	Exploitation and Sustainability of ICARIA's KERs	

Table 29 - Data produced in preparation of ICARIA Deliverable 4.5

ANNEX 2 – Horizon Results Booster Templates

This appendix presents the updated canvases and templates provided by the Booster expert during service implementation, reflecting the updates made by partners based on the expert's suggestions. These materials were completed by the three participating partners, namely **DRAXIS, LNEC, NCSRD**. More details can be found in **ANNEX 3**, where the full report of the Booster is available.

Decision Support System (DSS)

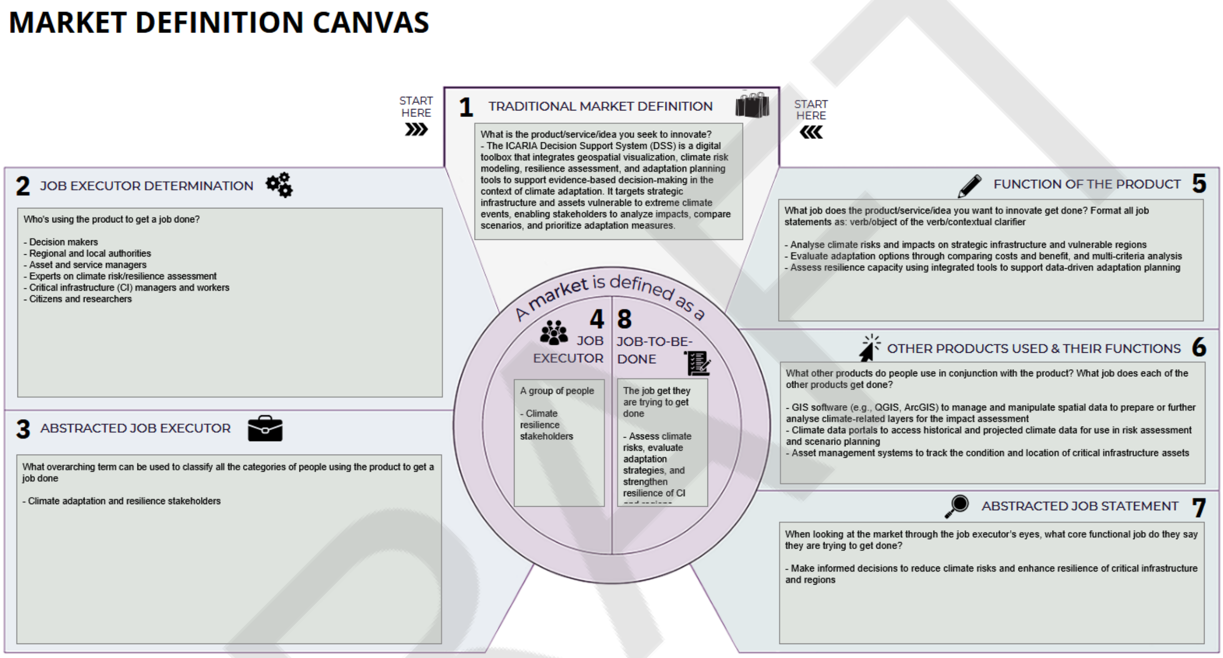


Figure 9 - Market Definition Canvas (DSS)

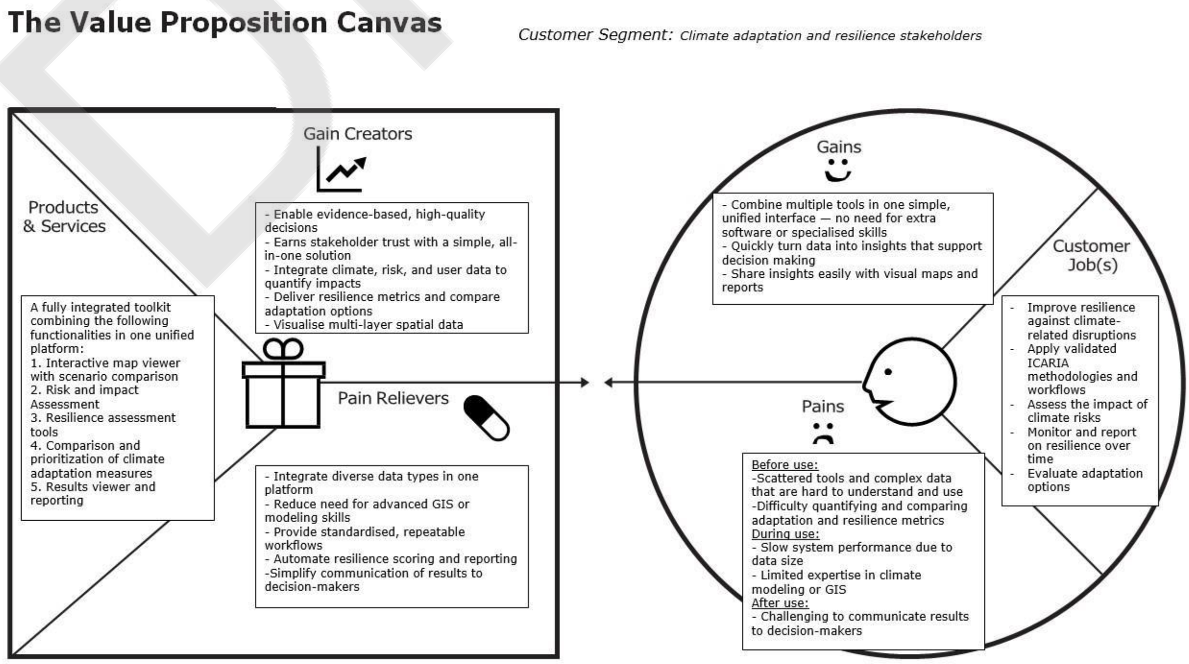


Figure 10 - Value Proposition Canvas (DSS)

DSS's Exploitation route			
Selected route		Implementing actor	Yes
DIRECT USE	Commercialisation: *deployment of a novel product/service (offered to the target markets)*	One partner[1]	X
		A group of partners[2]	
	Contract research (*new contracts signed by the research group with external clients*)	A partner	
		A group of partners	
	A new research project (*application to public funded research programmes*)	A partner	X
		A group of partners	
	Implementation of a new university – course (*Note that a training course is a service*)	A partner	
		A group of partners	
		A new partnership	
INDIRECT USE	Assignment of the IPR	A partner	
		A group of partners	
	Licensing of the IPR	A partner	
		A group of partners	
	Development of a new legislation/standard	A partner	
		A group of partners	
	Creation of a Spin - off	A partner	
		A group of partners	
		By assignment	
		By licensing	

Table 30 - Use Options (DSS)

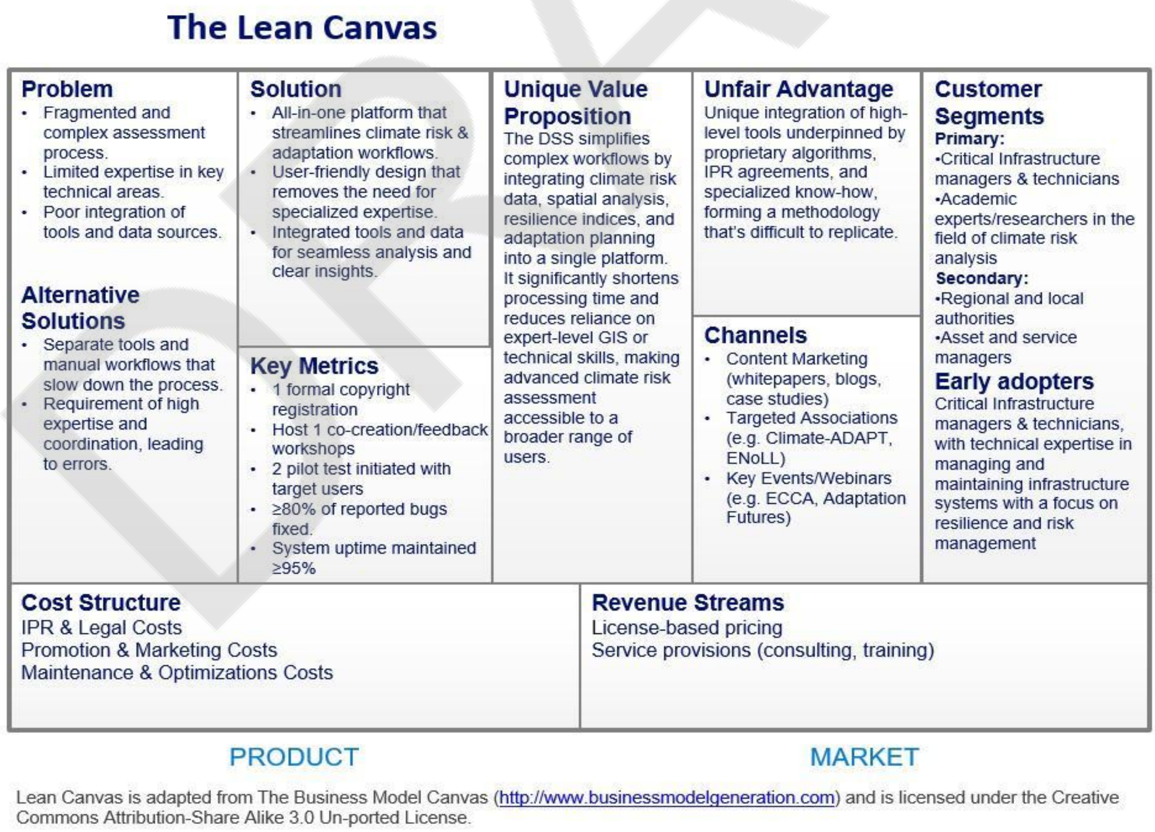


Figure 11 - Lean Canvas (DSS)

[1] Partners identifies the partners of the project receiving the ESS, not third parties that may be partner in the future.
[2] Provide the names of the partners

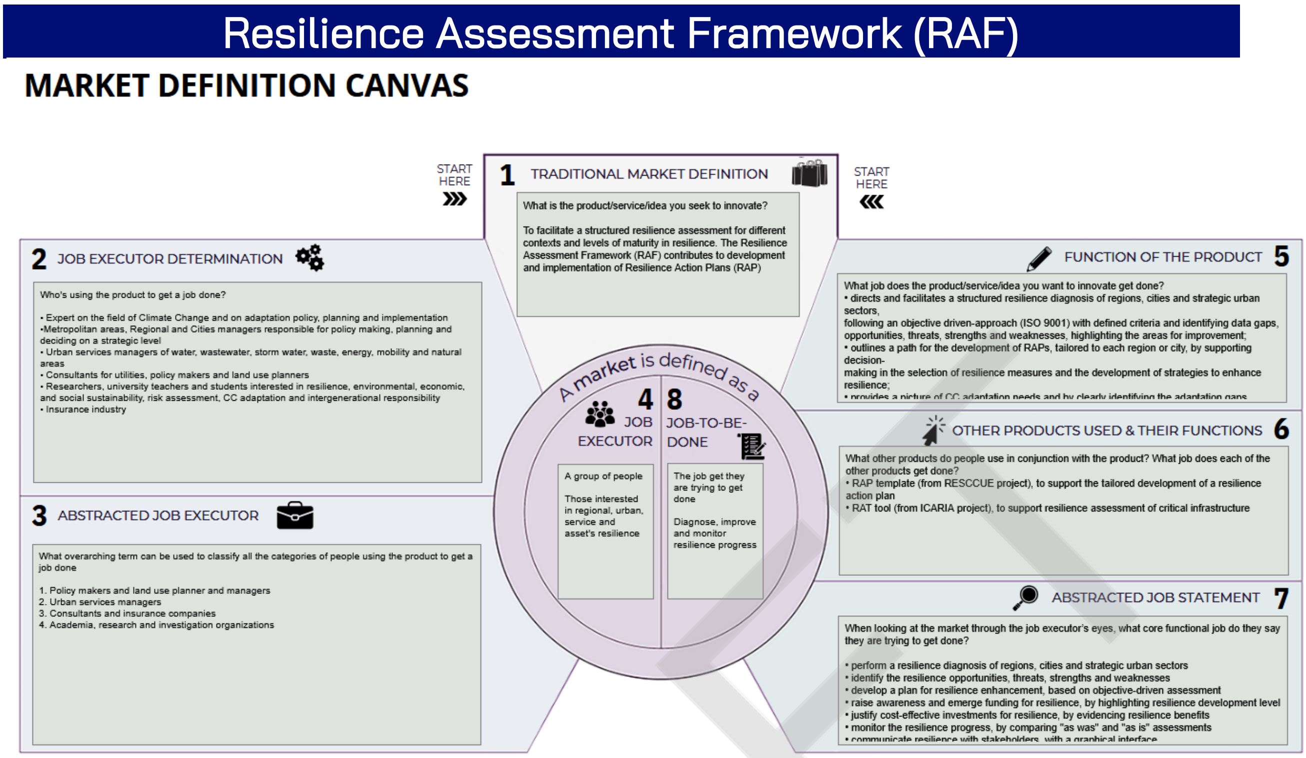


Figure 12 - Market Definition Canvas (RAF)

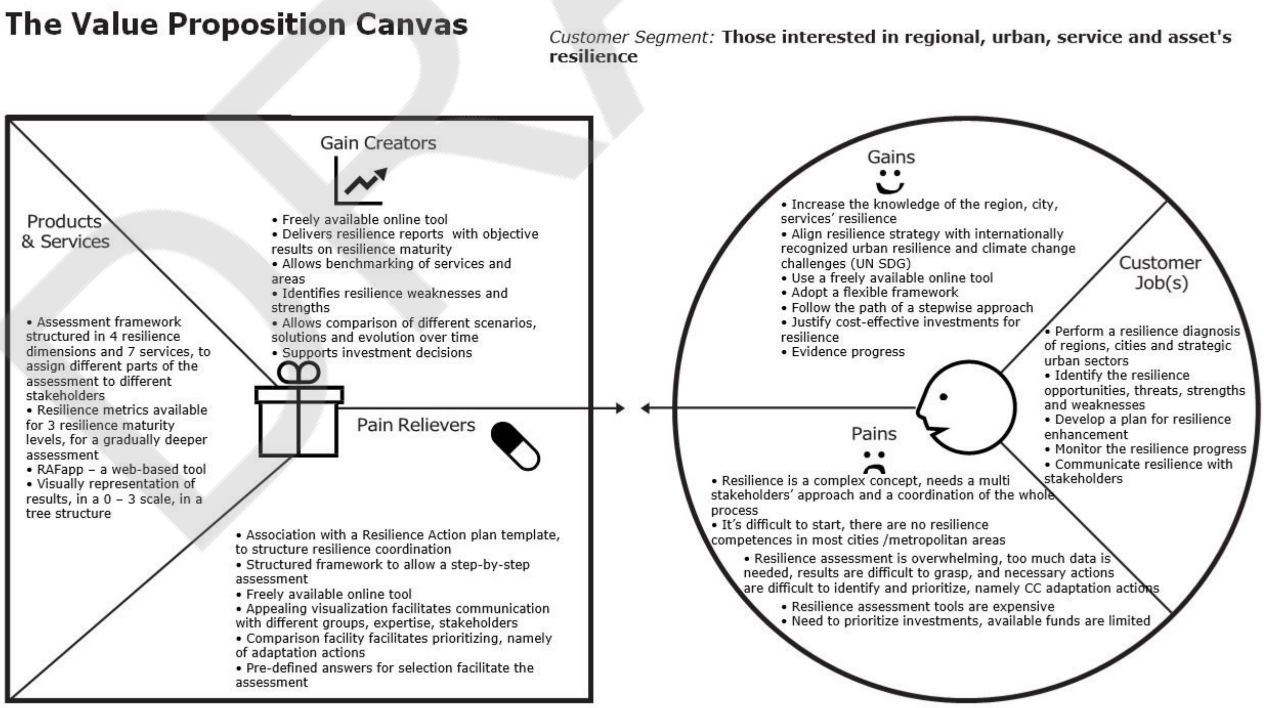


Figure 13 - Value Proposition Canvas (RAF)

RAF (Resilience Assessment Framework) and RAF App Exploitation route (how the KER will be further exploited)			
	Selected route	Implementing actor	Yes
DIRECT USE	Commercialisation: *deployment of a novel product/service (offered to the target markets)*	One partner[3]	
		A group of partners[4]	
	Contract research (*new contracts signed by the research group with external clients*)	A partner	x
		A group of partners	
	A new research project (*application to public funded research programmes*)	A partner	x
		A group of partners	
	Implementation of a new university – course (*Note that a training course is a service*)	A partner	x
		A group of partners	
		A new partnership	x
INDIRECT USE	Assignment of the IPR	A partner	
		A group of partners	
	Licensing of the IPR	A partner	
		A group of partners	
	Development of a new legislation/standard	A partner	
		A group of partners	
	Creation of a Spin - off	A partner	
		A group of partners	
		By assignment	
		By licensing	

Table 31 - Use Options (RAF)

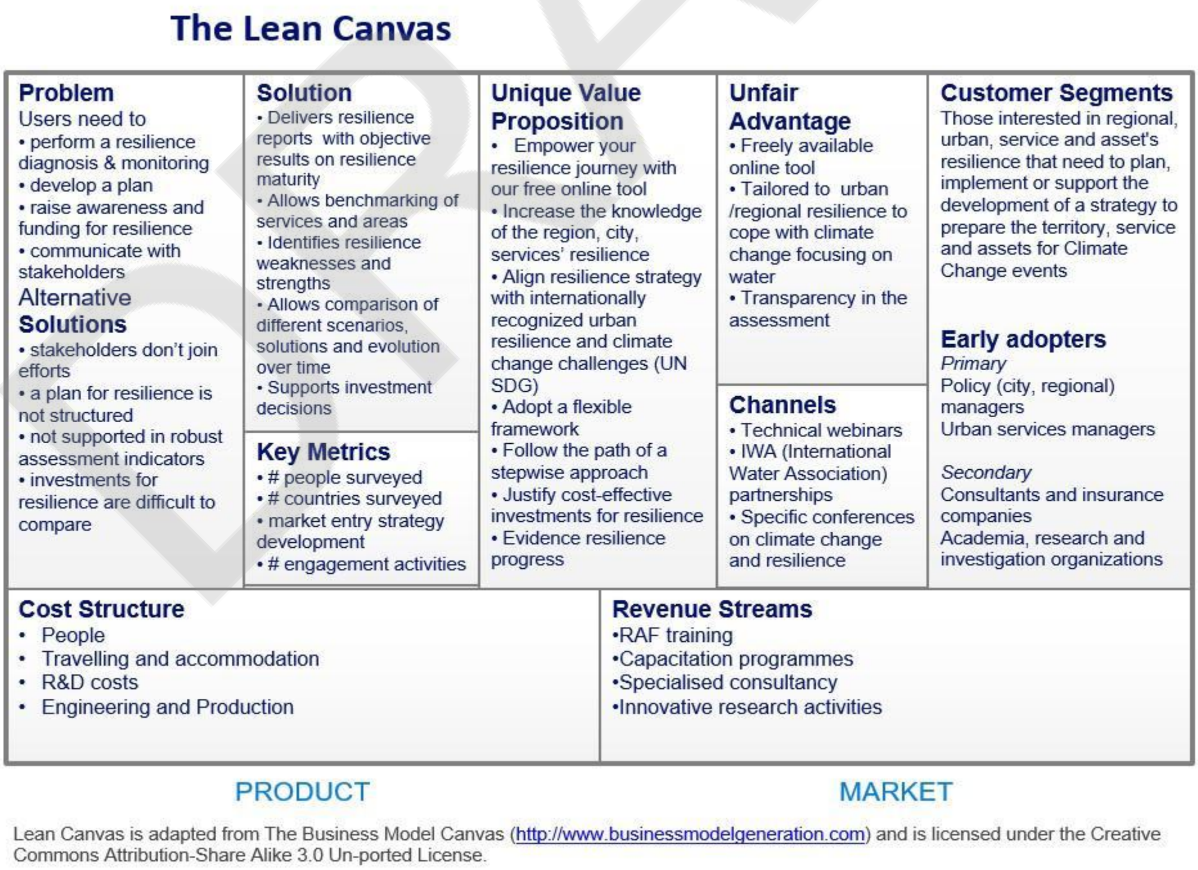


Figure 14 - Lean Canvas (RAF)

[3] Partners identifies the partners of the project receiving the ESS, not third parties that may be partner in the future.

[4] Provide the names of the partners

Resilience Assessment Tool (RAT)

MARKET DEFINITION CANVAS

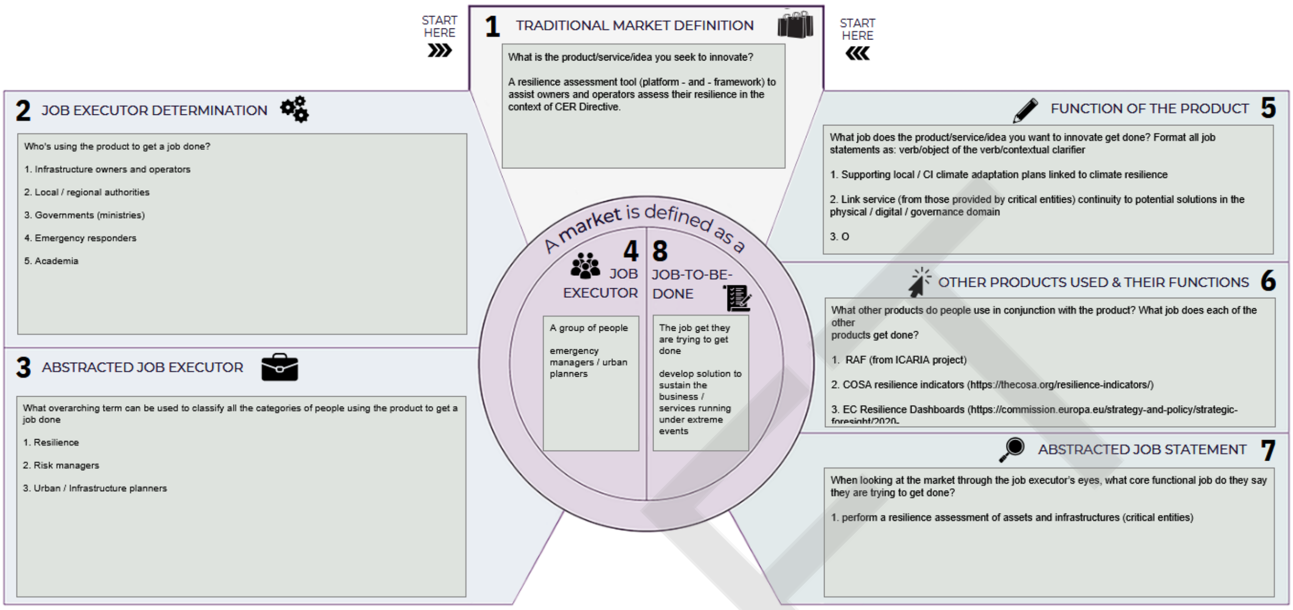


Figure 15 - Market Definition Canvas (RAT)

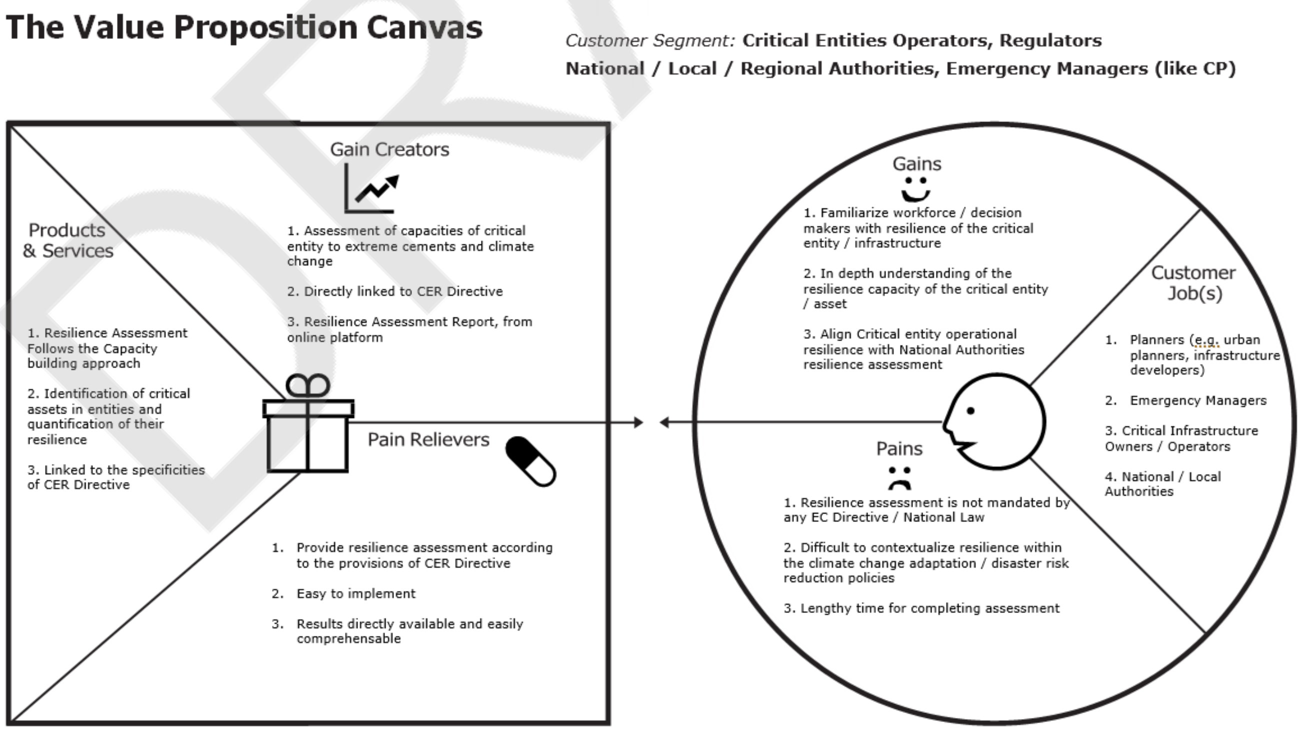


Figure 16 - Value Proposition Canvas (RAT)

RAT (Resilience Assessment Tool) Exploitation Route			
	Selected route	**Implementing actor**	**Yes**
DIRECT USE	Commercialisation: *deployment of a novel product/service (offered to the target markets)*	One partner[5]	
		A group of partners[6]	
	Contract research (*new contracts signed by the research group with external clients*)	A partner	x
		A group of partners	
	A new research project (*application to public funded research programmes*)	A partner	x
		A group of partners	
	Implementation of a new university – course (*Note that a training course is a service*)	A partner	x
		A group of partners	
		A new partnership	x
INDIRECT USE	Assignment of the IPR	A partner	
		A group of partners	
	Licensing of the IPR	A partner	
		A group of partners	
	Development of a new legislation/standard	A partner	
		A group of partners	
	Creation of a Spin- off	A partner	
		A group of partners	
		By assignment	
		By licensing	

Table 32 - Use Options (RAT)

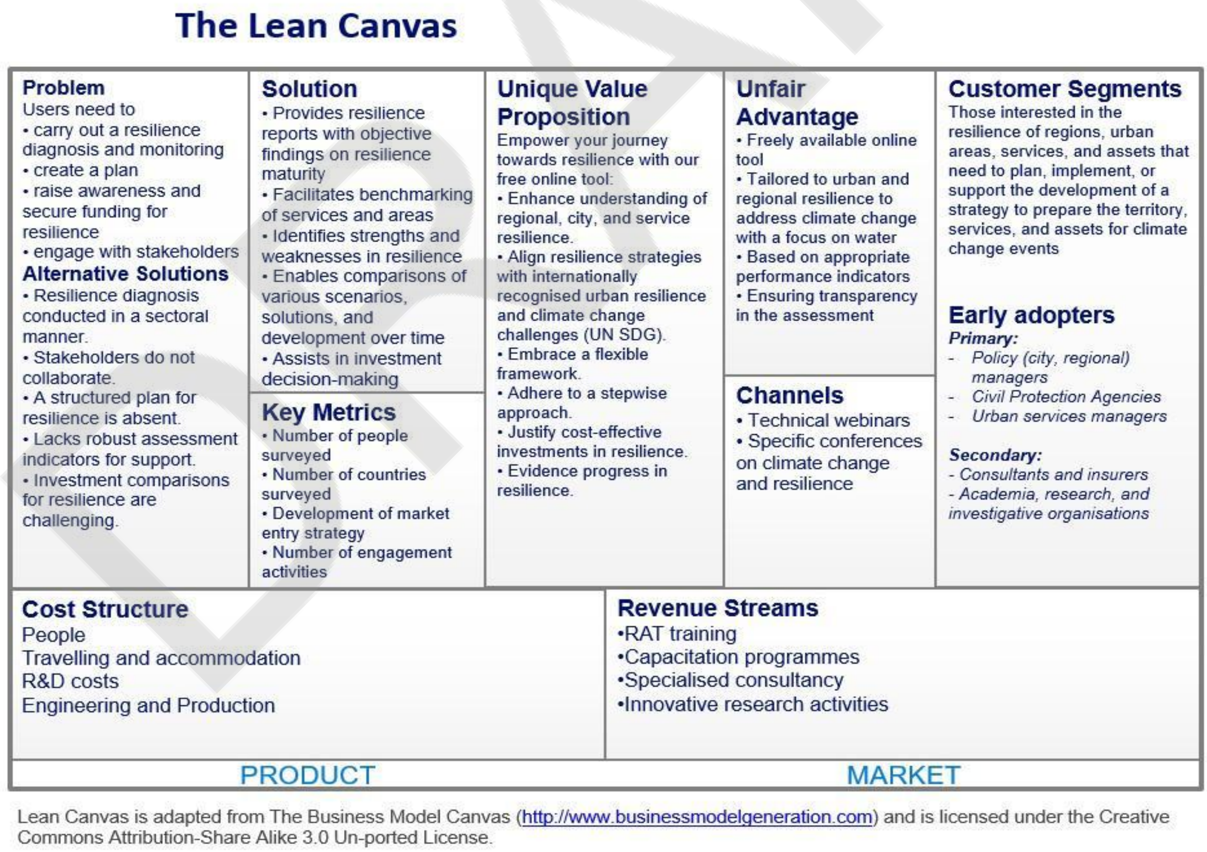


Figure 17 - Lean Canvas (RAT)

5 Partners identifies the partners of the project receiving the ESS, not third parties that may be partner in the future.
6 Provide the names of the partners

ANNEX 3 – Horizon Results Booster Final Report

This appendix presents the final report delivered by the Booster expert, including recommendations and suggestions for the three ICARIA tools: DSS, RAF, and RAT.

Go to Market (G2M) Service for

ICARIA Improving ClimAte Resilience of crItical Assets
Project(s) title and acronym
101093806

Participating organisation(s)
AQUATEC SOLUCIONES MEDIOAMBIENTALES, S.A.
CETAQUA, CENTRO TECNOLOGICO DEL AGUA, FUNDACION PRIVADA
FUNDACION PARA LA INVESTIGACION DEL CLIMA
"NATIONAL CENTER FOR SCIENTIFIC RESEARCH ""DEMOKRITOS"""
LABORATORIO NACIONAL DE ENGENHARIA CIVIL
DRAXIS ENVIRONMENTAL SA
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH

Provided by:
Manon van Leeuwen

1 List of Abbreviations

Abbreviation	Definition
DSS	Decision Support System
G2M	Go to market
RAF	Resilience Assessment Framework
RAT	Resilience Assessment Tool

2 The service

2.1 Executive Summary of the Service

This report summarises the process followed and the main outcomes of the Go to Market (G2M) service for the beneficiaries AQUATEC SOLUCIONES MEDIOAMBIENTALES, S.A.; CETAQUA, CENTRO TECNOLOGICO DEL AGUA, FUNDACION PRIVADA; FUNDACION PARA LA INVESTIGACION DEL CLIMA; "NATIONAL CENTER FOR SCIENTIFIC RESEARCH ""DEMOKRITOS"""; LABORATORIO NACIONAL DE ENGENHARIA CIVIL; DRAXIS ENVIRONMENTAL SA; and AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH involved in the ICARIA project.

It presents the different Modules and sessions carried out during the service delivery along with the agenda of each meeting and the related participants. It then introduces the terminology used, and the 8 main tools presented and exercised:

- Exploitation Intentions table
- Characterisation Table
- Market Definition Canvas
- Value Proposition Canvas
- Use Options
- Lean Canvas
- Risk Matrix and Risk Map
- Exploitation Roadmap

It includes also an overview of the overall methodology and approach used during the delivery (Annex 1) as well as general suggestions on financial and non-financial tools to be used along the go-to-market pathway (Annex 2 and Annex
3).

The Expert was appointed on 14th of February, and the following Modules were included in the G2M service:

- Module A: Kick-off (G2M-A)
- Module B: Unique Value Proposition & Key Exploitable Result(s) (G2M-B)
- Module C: Exploitation Strategy (G2M-C)

The Beneficiary/ies was/were contacted on the 19th of February 2025.

On the 6th of March 2025 an introductory call with the Beneficiary/ies was organised to discuss expectations, get a first insight on the state of the art, present the service and introduce preparatory activities, and agree on a first service delivery plan, based on the Modules activated within the G2M. On the same day, the Expert sent to the Beneficiary/ies all the information and the "Exploitation Intentions" table to be shared with Participants and filled before the delivery of the "Exploitation Pillars Training".

Drafts of the "Exploitation Intentions" tables filled in by Beneficiaries have been returned on 7th of March 2025.

The "Exploitation Pillars Training" took place on the 1st of April 2025 where the basic concepts of exploitation were introduced by the expert, with particular attention to the concepts of KERs, use/adoption of KERs and impact generation. During the session the main discussion was held on the "Exploitation Intentions" table.
During the training, participants and experts aligned on the definitive list of KERs to be supported during the service, which is:

- Decision Support System (DSS) as KER1

- Resilience Assessment Framework (RAF)as KER2
- Resilience Assessment Tool (RAT)as KER3

Finally, the expert introduced the main tools to be used during the next session: the Market Definition Canvas and Value Proposition Canvas. At the end of the training, the Expert agreed with participants to hold the UVP workshop on 28th of April 2025 for KER1, KER2 and KER3 and asked them to fill in the tools presented during the training in order to provide initial comments/suggestions before the UVP workshop(s).

During Module B, one Unique Value Proposition workshop, containing the 3 sessions, one for each KER, was organised and delivered according to the timing and agenda described in Section 2.2. Participants reviewed and completed the Market Definition Canvas and Value Proposition Canvas enabling them to better focus on target markets, identify early adopters and customers and clearly present the added value of their innovative solutions for the identified early adopters and customers. In the end, they were also able to create an effective statement expressing the Unique Value Proposition of the KERs. Some elements related to intellectual assets founded in the KERs were also discussed.

During Module C, 2 Exploitation Strategy Seminars were organised and delivered according to the timing and agenda described in Section 2.2. The expert focused on the detailed development of the Characterisation Table and the Exploitation Roadmap as the main pillars of the participants' exploitation strategies. This allowed to better focus on the definition of the most appropriate business/use model for the successful exploitation of their KERs, detail next steps to successfully exploit the KERs, including strategic governance, technical, commercial and financial aspects, identification of relevant stakeholders and potential business partners to interact with, an estimation of time to market, etc. Different exploitation risks were discussed to better identify factors that could hamper the exploitation of KERs. At the end of the ESS, experts suggested participants to summarise their use models using the Lean Canvas. At the end of the workshops the expert asked beneficiaries to send back their updated exploitation plans, based on the instructions and suggestions received during the workshops.

Anonymous feedback forms will be gathered from participants at the end of the G2M service.

The tools developed during the G2M service were filled in by the beneficiaries with feedback and suggestions from the Expert. The final version is the result of several iterations, brainstorms and discussions during the webinars and coaching sessions. The level of detail of the content presented in the present report reflects the level of maturity of the project when receiving the service.

As for the recommendations in Chapter 8, from the expert perspective, some quick remarks:

1. The most critical cross-cutting recommendation is the need to shift from internal strategic planning to external market validation. While the canvases and roadmaps are well-developed internally, they are largely based on hypotheses that must now be tested with real-world users and customers. The project partners have a clear understanding of what they have built; the immediate next step is to validate that it solves a real, urgent problem for which the market is willing to pay.
2. There is a different level of maturity with regards to the analysis for KER 1 (Decision Support System) and KER 2 (Resilience Assessment Framework) and the one related to KER 3 (Resilience Assessment Tool), even though further development is needed across all the KERs this is particularly relevant for KER 3 as the current level of detail reduces the effectiveness of the exploitation strategy for this particular KER.
3. The work done for the definition and characterisation of the KERs, their risk assessment and the exploitation roadmap, lay the groundworks for a solid sustainability approach for the

project and ensure thinking more longer term and wider take-up of results, then the mere use of the results internally by the partners.

4. The consortium should make sure that the process of revising the exploitable results, their related risks and the expectations of all partners is a continuous process, this will allow to keep tabs on any issues that might arise. They also need to be flexible, so as to allow to tap into changes in the economic, environmental, societal and legal context, which can affect the options or possibilities for exploitation of one or more KERs.

2.2 G2M trainings and workshops

2.2.1 G2M - Module A

Exploitation Pillars training held on 1st of April 2025

- **Agenda**

Ice breaking (10 min.)
Welcome, Presenting the webinar
Bridging results to the market (20 min.)
The role of D&E, general definitions
Reviewing Key Exploitable Results (30 - 50 min.)
Review of Exploitation intentions and final list of KERs
Break (10 min.)
Planning the next steps (30 - 40 min.)
Introducing the Market Definition Canvas and Value Proposition Canvas
Wrap-up – Q&A (15 min.)

- *Participants*

First name	Last name	Organisation
Agnese	Turchi	UNINA
Amanda	Tedeschi	UNINA
Alex	de la Cruz Coronas	AQUATEC
Guillem	Armengol i Selvas	CETAQUA
Denis	Halvik	AIT
Ioannis	Zarikos	NCSRD
Rita	Salgado Brito	LNEC
Artemis	Lavasa	DRAXIS
Eleni	Vafeiadou	DRAXIS

- *Post workshop support*

Support in fine-tuning available information and provision of final comments, pre and after the workshops The exploitation intentions table prepared and discussed during the workshop showed clear improvements in the definition of the final list of KERs to be supported:

- More clear understanding of the different KERs and how KER 2 and KER 3 are integrated into KER 1. - Better insight into the type of result and possible exploitation pathway connected to the 3 KERs.

Some elements related to the selected KERs need particular focus during the implementation of the next G2M Modules:

- Identify the use option and timing for exploitation for KER 1 & 2.

- Identify the competitive advantages for KER3 and finetune the ones for KER 1 & 2.
- Identification of the particular target markets and customer segments, with a focus on how the KERs cover their needs and solve the problem they are facing.
- Describing the KERs from the perspective and viewpoint of the potential user/customer.
- Identification of the competitive advantage/ Unique Value Proposition (UVP).

2.2.2 G2M – Module B

UVP workshop for KER1, 2, & 3 held on 28th of April 2025 ▪ *Agenda*

Introducing the day (10 min.)

Welcome, Presenting the webinar, insights on draft Market Definition Canvas and Value Proposition Canvas

KER 1: Working together: The Market Definition Canvas & The Value Proposition Canvas (60 min.)

Deepening the Market Definition Canvas, defining the right market & Deepening the Value Proposition Canvas, defining the right UVP.

KER 2: Working together: The Market Definition Canvas & The Value Proposition Canvas (60 min.)

Deepening the Market Definition Canvas, defining the right market & Deepening the Value Proposition Canvas, defining the right UVP **Break (10 min.)**

KER 3: Working together: The Market Definition Canvas & The Value Proposition Canvas (60 min.)

Deepening the Market Definition Canvas, defining the right market & Deepening the Value Proposition Canvas, defining the right UVP

Break (10 min.)

Presenting the UVP (15 – 30 min.)

Showcasing/updating the KER for the HRP

A quick look at IPR (15 – 30 min.)

Planning next steps (45 min.)

Use Option, the Lean Canvas, the Risk map, the Exploitation Roadmap **Wrap-up – Q&A (10 min.)**

▪ *Participants*

First name	Last name	Organisation
Alex	de la Cruz Coronas	AQUATEC
Guillem	Armengol i Selvas	CETAQUA
Sergio Joaquin	Baraibar Molina	CETAQUA
Artemis	Lavasa	DRAXIS
Eleni	Vafeiadou	DRAXIS
Ioakeim	Konstantinidis	DRAXIS
Robert	Monjo i Agut	FIC

▪ *Post workshop support*

Support in fine-tuning available information and provision of final comments, pre and after the workshops The tools prepared and discussed during the workshop showed clear improvements by beneficiaries:

- For KER 1 Decision Support System, in relation to the Market Canvas, the recommendations to focus more on the specific potential customer segments, i.e. those that will use the DSS for their jobs, and not on anyone who could potentially use the tool, have been addressed in the updated version of the Canvas. Focus should be a on a group of users or professionals who will actually use the tool to do their job, independent of the entity they belong to. In the same manner, the Lean Canvas has shown also a more focussed approach from the Market

Canvas filters through in the UVP Canvas, and better alignment with the pains – pain relievers and the gains – gain creators. Continuous cross-checking is recommended to make sure the description of the tool and the job it helps to get done covers the different aspects and does not create expectations among the users that are not fully aligned with what the tool has been designed for.

- For KER 2 Resilience Assessment Framework (RAF) also the focus needs to be more on those professionals/experts that will actually be the ones using the tool, with regards to the context, the fact that the
  tool is designed and piloted in public contexts generates implication for the type of early adopters. Although the RAF tool can be used by others as well, the approach used within the project makes it more adequate for a first adoption in public entities, such as public authorities, public bodies and/or public service companies. The Market Canvas and UPV canvas should reflect this well. Also, in the same manner as for KER 1 there should be full alignment between the pains-pain relievers and gains-gain creators.
- KER 3: Resilience Assessment Tool: this tool was not discussed during the session due to absence of the partner in charge. The Market and Value canvas were provided by email, and the recommendations for improvements are identified in section 4.3.

However, some elements still need further consideration in the next Modules or as actions envisaged:

- Identification of the right end users and the potential target and customer segments who will use the KERs professionally, ensure that the job to be done is properly defined and capabilities of the tool are aligned with the expectations created among end-users.
- Good and well-developed description of the product/service on which the KERs are based on the perspective of the adopter/customers, shying away from a technical description towards one focussing on actual needs and problems the KER will solve for each of the identified customer segments.
- A solid definition of the profile of each of the KERs for the HRP.
- Integration of the additional recommendations provided for KER1 and KER3. For KER 1 related to a proper identification of the target market and potential customers, for KER3 mainly with regards to the definition of the job executors and more details with regards to the job to be done.

2.2.3 G2M – Module C

Exploitation Strategy Seminar for KER 1 & KER 2 held on 21st of May 2025 ▪ *Agenda*

21th of May 2025 – Exploitation Strategy Seminar

Introducing the day (10 min.)
Welcome, Presenting the webinar, quick feedback on Characterisation Table, Exploitation Roadmap and the Risk matrix
Introducing exploitation routes (30 min.)
Discussing the use models for the exploitation plan
Working together: The Exploitation Roadmap (30 – 45 min.)
Defining the right roadmap towards exploitation
Break (10 min.)
Working together: The Risk map (30 – 45 min.)
Deepening the Risk matrix and the risk map, identification of exploitation risks

Summarising use models - the Lean Canvas (15 – 20 min.)
Using the Lean Canvas to present the exploitation strategies at a glance
Planning next steps (15 min.)
(optional - in case Module D follows): presenting the Business Plan template **Wrap-up – Q&A (15 min.)**

- *Participants*

First name	Last name	Organisation
Eleni	Vafeiadou	DRAXIS
Artemis	Lavasa	DRAXIS
Ioakeim	Konstantinidis	DRAXIS
Rita	Brito	LNEC
Alex	De la Cruz Coronas	AQUATEC

- *Post workshop support*

Support in fine-tuning available information and provision of final comments, pre and after the workshops The tools prepared and discussed during the workshop showed clear improvements by beneficiaries:

- For KER 1, focus was on finetuning the target market, including the end-users and their problems. If there is more than one target market, differentiate for the KER consider whether the problems/needs are different depending on the targeted user. With different target markets and end-users with different needs, consider if there are different use models for each target market, or one single use model applies to all. This included a clearer definition of the early adopters. Further improvements focussed on ensuring alignment with the different items, such as making sure that the competitive advantages and the identified features of the value proposition align, leading to a proper definition of the Unique Value Proposition. Furthermore, the IPR strategy was discussed and formal recommendations for an exploitation agreement were made. With regards to the Exploitation Roadmap the actions proposed should focus specifically on the kick starting of the market roll-out right after the project finalisation. The milestones and KPIs were to be more focussed. The risk analysis showed that some of the potential risks were not fully recognised and were to be included. Examples were given by the expert to help the project on its way. The Lean Canvas was in line with the former documents but needed updating to ensure the metrics align with the KPIs given in the exploitation roadmap.
- For KER 2, focus was as well on finetuning the target market and identify the different customer segments and clearly identify each, with the recommendation to focus in the first phases of exploitation on the primary target group, mainly those in the public sphere. The problems were analysed and overall, in line with the expectations, however further development and more details were discussed and considered relevant for inclusion in the characterisation of the KER. With regards to the early adopters, the improvements address the need to define these well and identify the appropriate means to reach them and identify in first instance the alternative solutions they use and then the ones used by the rest of the target groups. The competitive features are properly identified, and the need to prepare a proper value proposition statement discussed. Further improvements related to the competitor analysis and the need to define the individual strengths and weaknesses for each. For the exploitation roadmap focus was on making the content more concrete and address the participation and role of all partners in these activities.
- KER 3 was not addressed during the workshop and revised post-workshop.

However, some elements still need further consideration in the next Modules or as actions envisaged:

- For KER 1, ensuring the DSS addresses the real problems and needs of the target markets and end-users, and in particular the early adopters need to remain an objective of further action, with a continuous feedback loop as the DSS and its roll-out progress. With different target markets or end-users, the project should consider that in case the problems and needs are different, different exploitation pathways, use models and business models can be a good solution. Although the DSS itself is the same, the messages and models can vary. If more than one target market is considered the Lean Canvas should be revised and also make sure that if changes are made in the exploitation documents these are also properly reflected in the lean canvas. Also, the UPV should be "tested" with representatives of the early adopters and target markets. Last but not least the as the DSS leverages upon the other 2 KERs addressed in the service, it is important to specify the IPR aspects related to the integration. It is also recommended to sign an exploitation agreement which details the different use models and options considered and how each option affects the exploitation of the other 2 KERs.
- For KER 2 the focus should be on a more concrete and better definition of the early adopters and the different primary and secondary target markets, furthermore the specific needs and problems for each of these targets should be defined well and better differentiated. These should be based upon their actual problems with regards to climate resilience. The assumptions with regards to the early adopters and primary target groups with regards to the problems and needs and the features they would consider of added value of the KER are to be contracted and benchmarked with their representatives to ensure they are fully aligned. The use model needs to be further clarified and finetuned, as this is a key feature for a potential future business plan.
- KER 3 needs to be further developed, as its definition is in a slightly less mature state than the other 2 KERs. In particular the problems and needs of the target market, especially the primary market, should be properly defined and ensure that the identified problems are the "real" problems of these potential users. In this sense the definition and identification of the alternative solutions for each of the primary target groups should be defined and due attention paid to the potential different needs and problems and how these are solved by each of the groups currently. The use model needs to be further clarified and detailed as well, as this is the business for a go-to-market strategy in the exploitation phase. A robust competitor analysis needs to be performed based upon the analysis of the alternative solutions, and for each of the identified alternative solution with the provider (thus considered a competitor) the strengths and weaknesses need to be identified. Also an analysis of IPR needs to be performed and the implications, if any, for the exploitation of the KER are to be detailed.

3 MODULE A: Kick off (G2M-A)

3.1 Final list of KERs

KER1: Decision Support System (DSS): The ICARIA Decision Support System (DSS) has been conceptualised as a toolbox of detailed and holistic approaches provided through a user-friendly web-based platform to allow decision-makers to visualise impacts from single and compound hazards, and the most cost-effective adaptation scenarios.

KER2: Resilience Assessment Framework (RAF): Framework and web application that provide a holistic resilience diagnosis of the regions, cities and strategic urban sectors regarding climate change, following an objective-driven approach. It identifies data gaps and areas for resilience improvement, guides the development of an assessment tailored to each urban service, region or city, supports risk-informed decision-making

KER3: Resilience Assessment Tool (RAT): Performs a user-driven assessment of the resilience capabilities for anticipation, absorption, coping, restoration and adaptation of services of the analysed critical entities to the analysed climate hazards

3.2 KER1: Decision Support System (DSS) - Exploitation Intentions Table

KER name: Decision Support System (DSS)	Input from the Beneficiary (DRAXIS)
Description	*The ICARIA Decision Support System (DSS) has been conceptualised as a toolbox of detailed and holistic approaches provided through a user-friendly web-based platform to allow decisionmakers to visualise impacts from single and compound hazards, and the most cost-effective adaptation scenarios. The platform will enable stakeholders to compare different resilience and risk assessment scenarios in their region and assets of interest and evaluate the adequacy of different adaptation solutions utilising Cost-Benefit Analysis (CBA) and Multicriteria Analysis (MCA). In parallel, the DSS will incorporate the outcomes of the other main tangible results of ICARIA: the portfolio of adaptation solutions, the RAF and RAT applications.*
Target market/ end users	*-Regional authorities and other decision makers* *-Asset and service managers* *-Experts on climate risk/ resilience assessment* *-Citizens, general audience*
Competitive advantages	*Popular tools used for hazard modelling and visualisation of geospatial data (per A3) are very complex and typically used only by experts. ICARIA DSS, taking advantage of the project's own modelling framework and resilience assessment tools, allows users to extract value from complex hazard and impact modelling processes, while also considering adaptation measures and holistic resilience approaches. The DSS is designed to be used by experts who provide data and generate impact assessment scenarios based on their region and hazards of interest; by stakeholders who can evaluate the impact assessment results and compare different resilience strategies or decide the best adaptation solutions at a higher level; by the public as the DSS gives access to ICARIA's climate data and other spatial results through a user-friendly interactive map viewer.*
Use model	*The ICARIA DSS will be put to use primarily through the provision of a service model, offering access via a web-based platform. This will include direct industrial use and strategic partnerships, supported by contract research and targeted training sessions to ensure effective adoption and impact.*
Partners	*DRAXIS*

Timing	1-2 years
IP status	***Background IP**: No, **Foreground IP**: Software. **IP Beyond the Project**: Copyright*

3.3 KER2: Resilience Assessment Framework (RAF) - Exploitation Intentions Table

KER name: Resilience Assessment Framework (RAF)	**Input from the Beneficiary** (LNEC)
Description	*Framework and web application that provide a holistic resilience diagnosis of the regions, cities and strategic urban sectors regarding climate change, following an objective-driven approach. It identifies data gaps and areas for resilience improvement, guides the development of an assessment tailored to each urban service, region or city, supports risk informed decision-making, by comparing the contribution to resilience of different measures and strategies, monitors the progress of resilience over time and facilitates communication among stakeholders. Several urban services can be assessed: water, wastewater, storm water, waste, energy, mobility and natural areas.*
Target market/ end users	*Region, city and services managers; multilateral organisations (e.g. NGOs) scientific community (researchers, university professors and students); resilience officers; urban planners; consultancy companies.*
Competitive advantages	*The RAF App will be publicly and freely available after the project ends. In enables a step-by step assessment, providing a deeper assessment depending on the user's maturity. It provides an objective-driven overall resilience assessment and service specific assessments. The framework has a tree structure, and each question is graded in a 0-3 scale, so strengths and weaknesses are easy to perceive.*
Use model	-
Partners	*LNEC*
Timing	1-2 years
IP status	***Background IP**: Yes, the ICARIA RAF and RAF App were upgraded from the results of another project, the RESCCUE RAF and RAF App.* ***Foreground IP**: No* ***IP Beyond the project**: The RAF and RAF App are publicly and freely available, but users have to register and acknowledge RESCCUE and ICARIA projects.*

3.4 KER3: Resilience Assessment Tool (RAT) - Exploitation Intentions Table

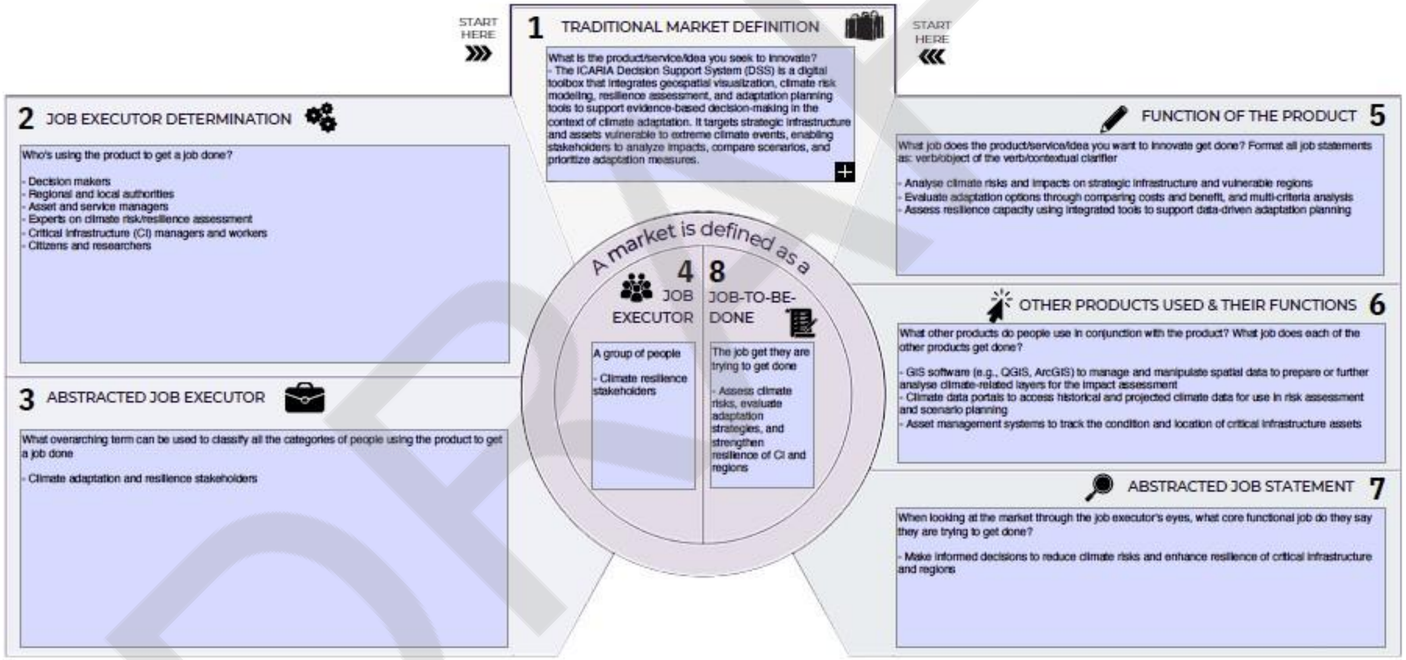
KER name: Resilience Assessment Tool (RAT)	**Input from the Beneficiary** (NCSRD)
Description	*Performs a user-driven assessment of the resilience capabilities for anticipation, absorption, coping, restoration and adaptation of services of the analysed critical entities to the analysed climate hazards.*
Target market/ end users	*Policy makers, city planners, civil protection, disaster managers, first/second responders.*

Competitive advantages	*Easiness and accuracy.*
Use model	-
Partners	*NCSR Demokritos*
Timing	1-2 years
IP status	*No IP*

4 MODULE B: Unique Value Proposition & Key Exploitable Result(s) (G2M-B)

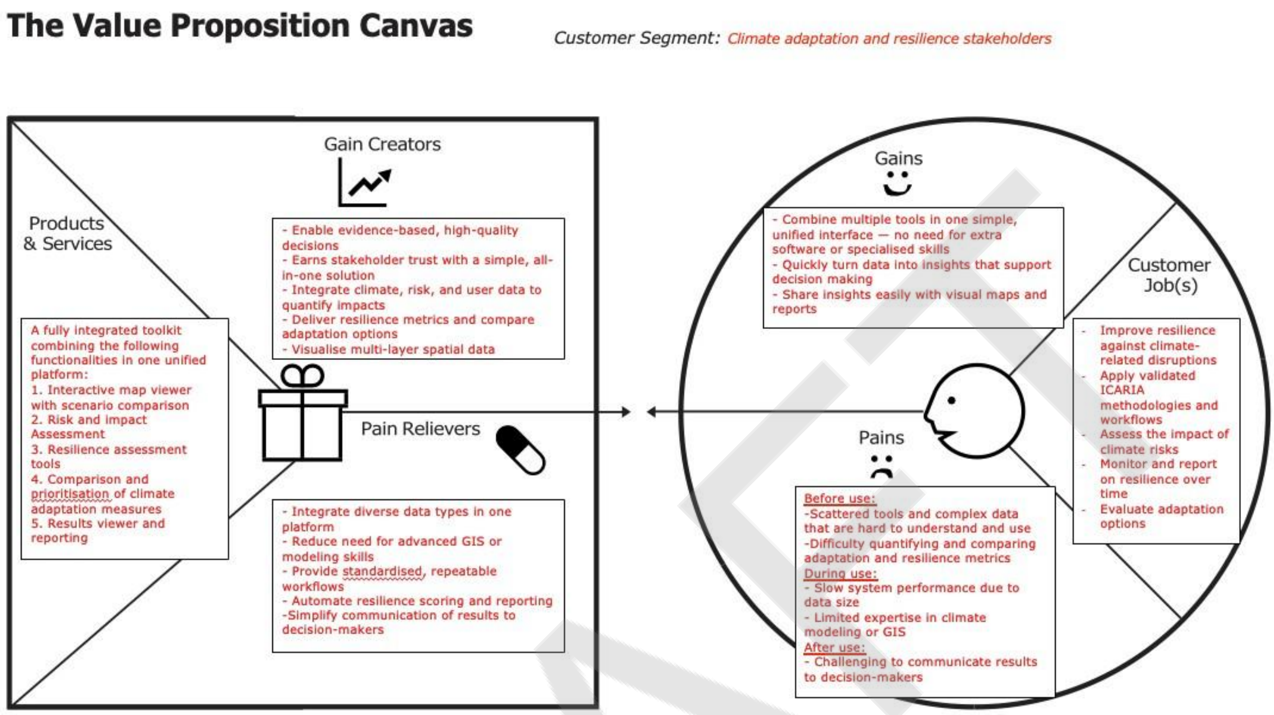
4.1 KER 1: Decision Support System (DSS)

4.1.1 Market Definition Canvas



EXPERT COMMENTS AND RECOMMENDATIONS: For KER 1 Decision Support System, in relation to the Market Canvas, focus is to be more on the specific potential customer segments, i.e. those that will use the DSS for their jobs, the current identification of the job executor remains to high level, as the jobs to be done for instance by critical infrastructure managers is very different from researchers. Additionally, the DSS should not focus on who can benefit from using the tool, but a group of professionals that will actually use it for a specific purpose. The inclusion of citizens in this matter should be disregarded. Two main customer segments for instance could be professionals working in critical infrastructure, depending on their functional level they can use the tool to prepare for decision-making (e.g. technicians preparing reports) or use it to make decisions (more managerial levels). A second subgroup could be researchers in the field of climate change, as they would use the tool for different purposes than the professionals related to critical infrastructures.

4.1.2 Value Proposition Canvas



EXPERT COMMENTS AND RECOMMENDATIONS: For the Lean Canvas, make sure that the more focussed approach from the Market Canvas filters through in the UVP Canvas, and ensure alignment with the pains – pain relievers and the gains – gain creators. Also make sure the description of the tool and the job it helps to get done covers the different aspects and does not create expectations among the users that are not fully aligned with what the tool has been designed for.

4.1.3 Related projects

SCORE Smart Control of the Climate Resilience in European Coastal Cities

The project develops a strategy via a network of 10 coastal city 'living labs' (CCLLs) to rapidly, equitably and sustainably enhance coastal city climate resilience. In addition to developing innovative platforms to promote business opportunities and financial sustainability of coastal cities, the project will provide prototype coastal city early-warning systems to enable smart, instant monitoring and control of climate resilience in European coastal cities.

https://cordis.europa.eu/project/id/101003534

MYRIAD-EU Multi-hazard and sYstemic framework for enhancing Risk-Informed mAnagement and Decision-making in the E.U

The project develops forward-looking disaster risk management pathways that assess trade-offs and synergies across sectors, hazards and scales. It inspires the introduction of a multi-risk, multi-sector, systemic approach to risk management. In addition to a web-based dashboard for navigating the framework, the project will also develop a laboratory of systemic multi-hazard risk assessment and management.

https://cordis.europa.eu/project/id/101003276

R2D2 Reliability, Resilience and Defense technology for the griD

R2D2 strategic goal is to improve the resilience and reliability of current EPES (Electrical Power and Energy Systems) against a growing number of threats and vulnerabilities that may affect such critical infrastructure, exposing weaknesses with harmful and damaging effects on different stakeholders and final customers.

https://cordis.europa.eu/project/id/101075714

MEDIATE Multi-hazard and risk informed system for Enhanced local and regional Disaster risk management

The project develops a decision-support system (DSS) for disaster risk management by considering multiple interacting natural hazards and cascading impacts using a novel resilient-informed and service-oriented approach that accounts for forecasted modifications in the hazard (e.g. climate change),

vulnerability/resilience (e.g. aging structures and populations) and exposure (e.g. population decrease/increase).
https://cordis.europa.eu/project/id/101074075

RESCCUE RESilience to cope with Climate Change in Urban arEas - a multisectorial approach focusing on water RESCCUE aims to deliver a framework enabling city resilience assessment, planning and management by integrating into software tools new knowledge related to the detailed water-centred modelling of strategic urban services performance into a comprehensive resilience platform. These tools will assess urban resilience from a multisectorial approach, for current and future climate change scenarios and including multiple hazards.
https://cordis.europa.eu/project/id/700174

CLARITY Integrated Climate Adaptation Service Tools for Improving Resilience Measure Efficiency
The project provides an operational eco-system of cloud based climate services to calculate and present the expected effects of CC-induced and -amplified hazards at the level of risk, vulnerability and impact functions. CLARITY offers whatIf decision support functions to investigate the effects of adaptation measures and risk reduction options in the specific project context, and allow the comparison of alternative strategies.
https://cordis.europa.eu/project/id/730355

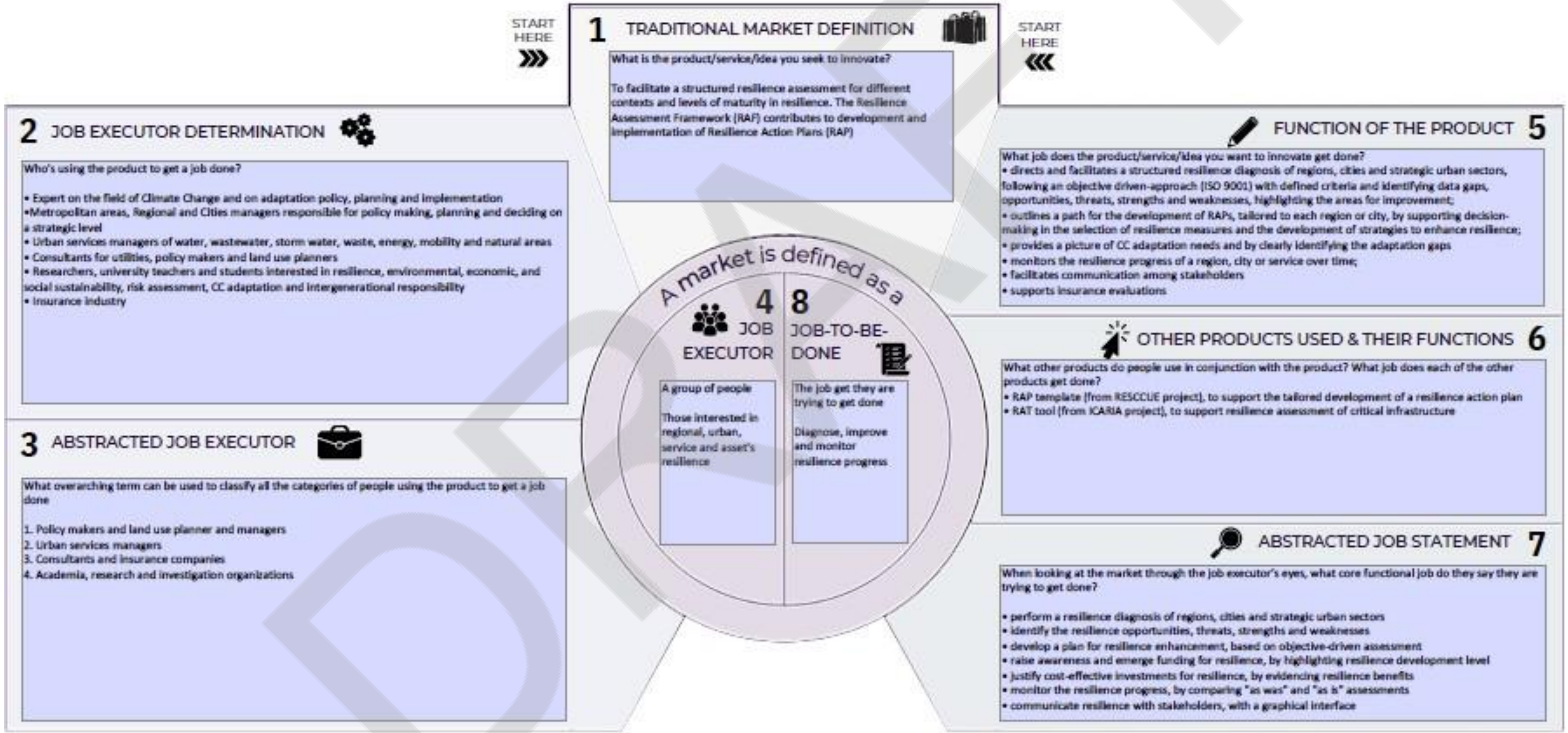
EU-CIRCLE A panEuropean framework for strengthening Critical Infrastructure resilience to climate change
EU-CIRCLE's scope is to derive an innovative framework for supporting the interconnected European Infrastructure's resilience to climate pressures, supported by an end-to-end modelling environment where new analyses can be added anywhere along the analysis workflow and multiple scientific disciplines can work together to understand interdependencies, validate results, and present findings in a unified manner providing an efficient "Best of Breeds" solution of integrating into a holistic resilience model existing modelling tools and data in a standardised fashion. https://cordis.europa.eu/project/id/653824

4.1.4 Related patents: The consortium does not indicate patents related to this KER.

4.1.5 Related standards: The consortium does not indicate patents related to this KER.

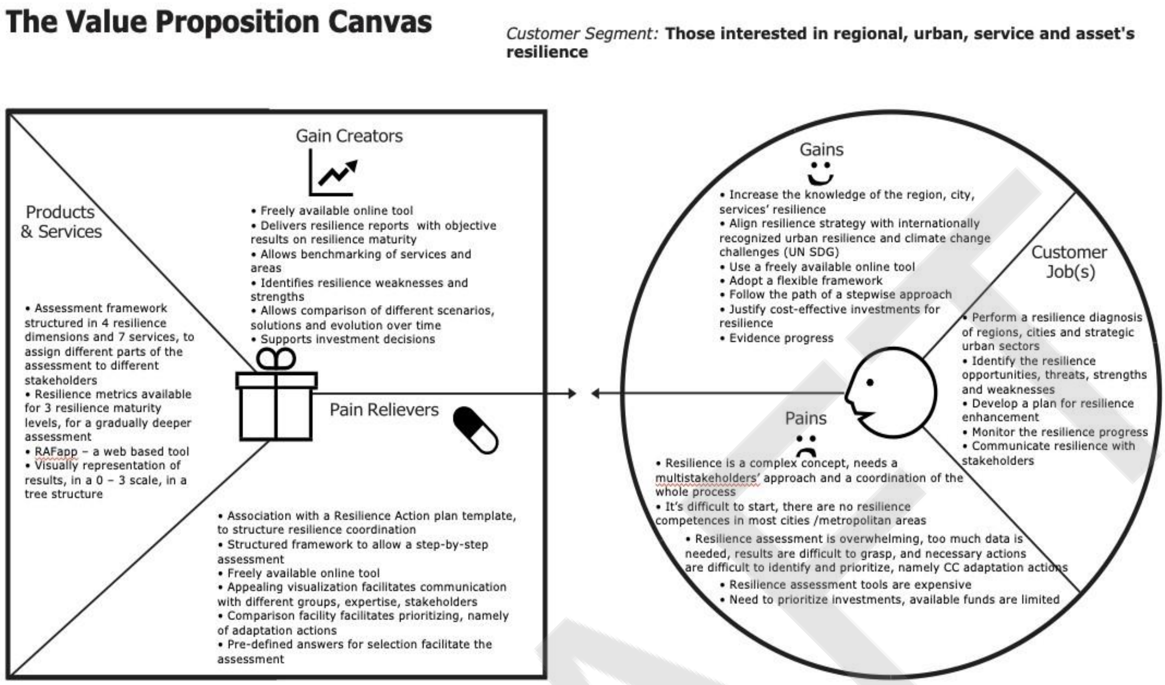
4.2 KER2: Resilience Assessment Framework (RAF)

4.2.1 Market Definition Canvas



EXPERT COMMENTS AND RECOMMENDATIONS: For KER 2 Resilience Assessment Framework (RAF) the latest version of the Canvas has identified a specific set of job executors that can constitute different customer segments and target markets in the future. The job to be done is also sufficiently clear and provides a good basis for the subsequent activities and full definition of the KER´s target markets and value proposition. For the future the consortium will need to identify well who would be the first adopters they would target. also the focus needs to be more on those professionals/experts that will actually be the ones using the tool, with regards to the context, the fact that the tool is designed and piloted Although the RAF tool can be used by others as well, the approach used within the project makes it more adequate for a first adoption in public entities, such as public authorities, public bodies and/or public service companies. The Market Canvas and UPV canvas should reflect this well.

4.2.2 Value Proposition Canvas



EXPERT COMMENTS AND RECOMMENDATIONS: The Value Proposition canvas is clear and with sufficient connections and alignments between eh different parts of the canvas. The recommendations are in line with the recommendations already given on the Market canvas, i.e. to continue to cross-check the alignment and matching as the work on exploitation progresses and also to focus on one single type of customer segment as early adopters before expanding into other segments. To avoid deluding efforts and resources.

4.2.3 Related projects

SCORE Smart Control of the Climate Resilience in European Coastal Cities
The project develops a strategy via a network of 10 coastal city 'living labs' (CCLLs) to rapidly, equitably and sustainably enhance coastal city climate resilience. In addition to developing innovative platforms to promote business opportunities and financial sustainability of coastal cities, the project will provide prototype coastal city early-warning systems to enable smart, instant monitoring and control of climate resilience in European coastal cities.
https://cordis.europa.eu/project/id/101003534

MYRIAD-EU Multi-hazard and sYstemic framework for enhancing Risk-Informed mAnagement and Decision-making in the E.U
The project develops forward-looking disaster risk management pathways that assess trade-offs and synergies across sectors, hazards and scales. It inspires the introduction of a multi-risk, multi-sector, systemic approach to risk management. In addition to a web-based dashboard for navigating the framework, the project will also develop a laboratory of systemic multi-hazard risk assessment and management.
https://cordis.europa.eu/project/id/101003276
R2D2 Reliability, Resilience and Defense technology for the grid

R2D2 strategic goal is to improve the resilience and reliability of current EPES (Electrical Power and Energy Systems) against a growing number of threats and vulnerabilities that may affect such critical infrastructure, exposing weaknesses with harmful and damaging effects on different stakeholders and final customers.
https://cordis.europa.eu/project/id/101075714

MEDIATE Multi-hazard and risk informed system for Enhanced local and regional Disaster risk management
The project develops a decision-support system (DSS) for disaster risk management by considering multiple interacting natural hazards and cascading impacts using a novel resilient-informed and service-oriented approach that accounts for forecasted modifications in the hazard (e.g. climate change),

vulnerability/resilience (e.g. aging structures and populations) and exposure (e.g. population decrease/increase).
https://cordis.europa.eu/project/id/101074075

RESCCUE RESilience to cope with Climate Change in Urban arEas - a multisectoral approach focusing on water RESCCUE aims to deliver a framework enabling city resilience assessment, planning and management by integrating into software tools new knowledge related to the detailed water-centred modelling of strategic urban services performance into a comprehensive resilience platform. These tools will assess urban resilience from a multisectoral approach, for current and future climate change scenarios and including multiple hazards.
https://cordis.europa.eu/project/id/700174

CLARITY Integrated Climate Adaptation Service Tools for Improving Resilience Measure Efficiency
The project provides an operational eco-system of cloud based climate services to calculate and present the expected effects of CC-induced and -amplified hazards at the level of risk, vulnerability and impact functions. CLARITY offers whatIf decision support functions to investigate the effects of adaptation measures and risk reduction options in the specific project context, and allow the comparison of alternative strategies.
https://cordis.europa.eu/project/id/730355

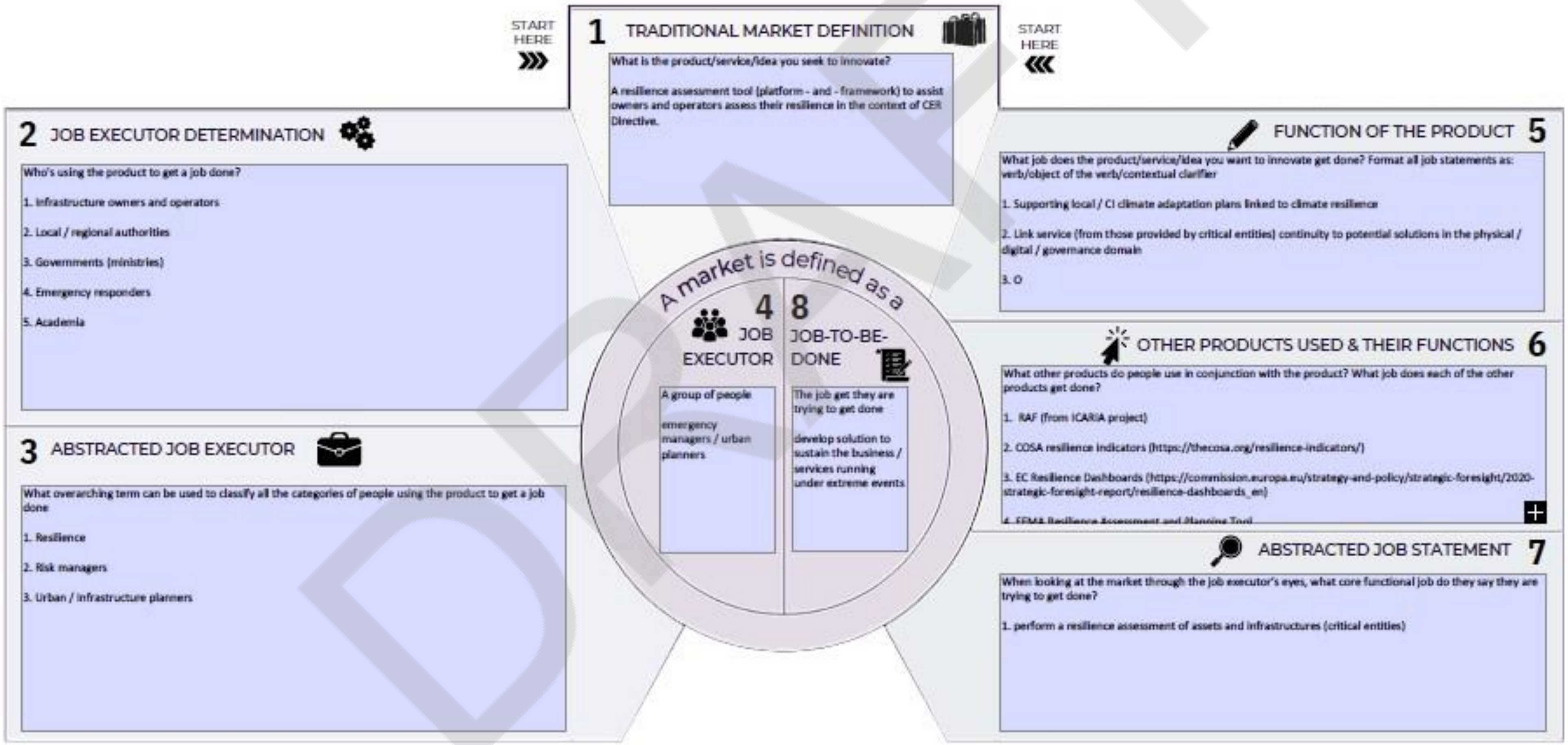
EU-CIRCLE A panEuropean framework for strengthening Critical Infrastructure resilience to climate change
EU-CIRCLE's scope is to derive an innovative framework for supporting the interconnected European Infrastructure's resilience to climate pressures, supported by an end-to-end modelling environment where new analyses can be added anywhere along the analysis workflow and multiple scientific disciplines can work together to understand interdependencies, validate results, and present findings in a unified manner providing an efficient "Best of Breeds" solution of integrating into a holistic resilience model existing modelling tools and data in a standardised fashion. https://cordis.europa.eu/project/id/653824

4.2.4 Related patents: The consortium does not indicate patents related to this KER.

4.2.5 Related standards: The consortium does not indicate patents related to this KER.

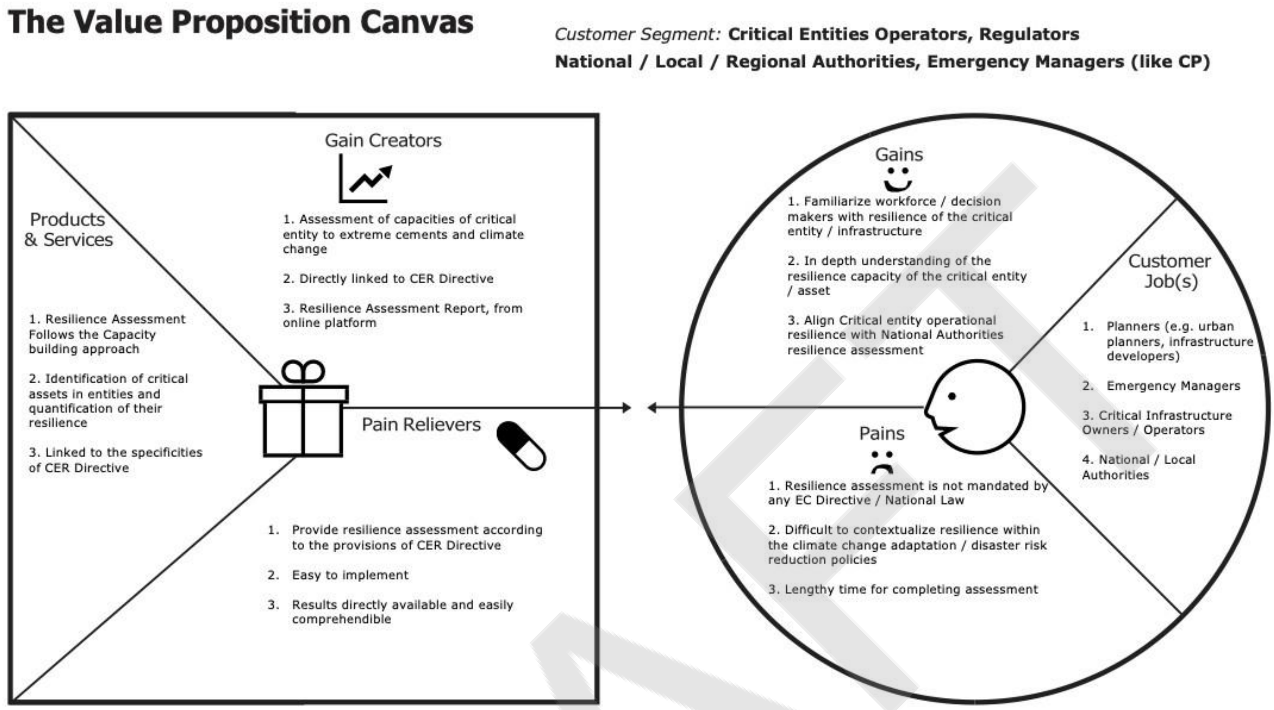
4.3 KER 3: Resilience Assessment Tool (RAT)

4.3.1 Market Definition Canvas



EXPERT COMMENTS AND RECOMMENDATIONS: For KER 3 Resilience Assessment Tool (RAT) the focus needs to be more on those professionals/experts that will actually be the ones using the tool, with regards to the context, the current identification of the abstracted job executor is high level, for instance it is unclear what is meant with "resilience" and what kind of job it entails. In the same manner as for KER 2, approach used within the project makes also this tool more adequate for a first adoption in public entities, such as public authorities and public bodies, and the urban planners and risk managers in these types of entities. The Canvas should overall be a bit more detailed and more to the point in the different definitions and descriptions, to convey a clearer message on what the KER is about, what job in particular it is developed for and for which groups it is the most useful for their job execution.

4.3.2 Value Proposition Canvas



EXPERT COMMENTS AND RECOMMENDATIONS: The Value Proposition Canvas is overall clear and there is sufficient alignment with the pains and pain relievers and the gains and the gain creators, however, as the KER will be defined in more detail as the work progresses, these should be continuously cross-checked to ensure that they adapt. Also with the different potential customer segments, focus should be on the early adopters and the canvas should reflect this. The customer jobs should be described as a job to performed and less as a type of customer than can potentially use the tool, the description of the product should then clearly match the customer job. By focussing on the early adopters only the pains and gains become also much more concrete.

4.3.3 Related projects

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The project develops a strategy via a network of 10 coastal city 'living labs' (CCLLs) to rapidly, equitably and sustainably enhance coastal city climate resilience. In addition to developing innovative platforms to promote business opportunities and financial sustainability of coastal cities, the project will provide prototype coastal city early-warning systems to enable smart, instant monitoring and control of climate resilience in European coastal cities.
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https://cordis.europa.eu/project/id/101075714

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https://cordis.europa.eu/project/id/101074075

RESCCUE RESilience to cope with Climate Change in Urban arEas - a multisectoral approach focusing on water RESCCUE aims to deliver a framework enabling city resilience assessment, planning and management by integrating into software tools new knowledge related to the detailed water-centred modelling of strategic urban services performance into a comprehensive resilience platform. These tools will assess urban resilience from a multisectoral approach, for current and future climate change scenarios and including multiple hazards.
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4.3.4 Related patents: The consortium does not indicate patents related to this KER.

4.3.5 Related standards: The consortium does not indicate patents related to this KER.

5 MODULE C: Exploitation Strategy (G2M-C)

5.1 KER 1: Decision Support System (DSS)

5.1.1 Characterisation table

KER name: Decision Support System (DSS)		
	Input from the Beneficiary	Comments/ suggestions for the discussion at the training
Description	The ICARIA Decision Support System (DSS) is a digital toolbox that integrates geospatial visualization, climate risk modelling, resilience assessment, and adaptation planning tools into a single, integrated platform validated in realworld case studies. The main aim is to support evidence-based decision-making in the context of climate adaptation. It targets strategic infrastructure and assets vulnerable to extreme climate events, enabling stakeholders to analyse impacts, compare scenarios, and prioritize adaptation measures.	*The text provided by the beneficiaries is quite consistent with that expected.*
Target market/end users	**Primary:** • Critical Infrastructure managers & technicians • Academic experts/researchers in the field of climate risk analysis **Secondary:** • Regional and local authorities, like: 1. Ministries of Environment 2. Urban Planning & Development Companies 3. Civil Protection Agencies • Asset and service managers, like: 1. Public Infrastructure Managers 2. Utility Service Providers 3. Resilience Consultants or Engineering Firms	*The text provided by the beneficiaries is quite consistent with that expected.* *It is important that upon finalising the exploitation plan and preparing the use of the KER a clear identification of the target market is provided, with its segmentation. It should include both a qualitative and quantitative description in terms of size and features. Please consider that geography matters in terms of the market that you want to serve.*

End-users needs / problems	A major challenge faced by climate infrastructure managers and technicians is the lack of access to localized, timely, and actionable information necessary for assessing climate risks and planning effective adaptation strategies. The Decision Support System (DSS) addresses this need by providing accurate, upto-date data and analytical tools that facilitate informed decision-making and strengthen the resilience of critical infrastructure and vulnerable regions.	*The text provided by the beneficiaries is quite consistent with that expected. If there is more than one target market, differentiate for the KER consider whether the problems/needs are different depending on the targeted user. Be reminded to make sure that the problems described are the actual problems. Identify and validate them together with your "customers" (problem/"customer" fit). Being able to solve problems is key to make sure results are used and that the envisaged impact is achieved*
Competitive advantages	The DSS offers a distinct competitive advantage by integrating multiple tools into a single, user-friendly interface that eliminates the need for additional software or specialized expertise, enabling users to rapidly transform complex data into actionable insights, and to communicate those insights effectively through visual maps and reports — a level of accessibility, efficiency, and clarity that surpasses current fragmented or highly technical solutions. This low barrier to entry encourages deeper user engagement and broader adoption.	*The text provided by the beneficiaries is quite consistent with that expected. Make sure that the competitive advantage and identified features of the value proposition align.*

Use model	The DSS will be put into use as a digital service platform, made available to potential adopters such as climate infrastructure managers, public authorities, and technical consultants, through direct provision, licensing agreements, and potential integration into institutional planning processes. The use model includes access to the platform via a web-based interface, supported by technical documentation and user support. Additionally, knowledge transfer will be facilitated through publications, standards development, and collaboration with stakeholders during and beyond the validation case studies. This ensures the DSS is not only adopted, but also effectively embedded in climate adaptation planning workflows.	*The text provided by the beneficiaries is quite consistent with that expected. With different target markets and end-users with different needs, consider if there are different use models for each target market, or one single use model applies to all. Keep an eye on the fact that the use model and target market, customers need to be consistent. In the case of licensing, consider that are several different types of licensing agreements that could be used.*
Early Adopters	Early adopters of the ICARIA DSS are the same as the end users, meaning critical infrastructure managers and technicians. They will be reached through pilot results dissemination, targeted seminars & webinars, participation in climate adaptation events, and direct outreach via professional networks and existing collaborations.	*The text provided by the beneficiaries is quite consistent with that expected. Bear in mind that, to develop the exploitation model, it is important to look at early adopters and how to go from early adopters to "early majority". Early adopters are the customers ready to "use" the "beta" version (13,5%). New initiatives fail because they are not able to reach early adopters.*
Adopters' problems/needs	An adopter of the DSS often faces a complex and fragmented process when attempting to assess climate risks and plan adaptation strategies. The core problem lies in the difficulty of integrating diverse data sources, tools, and methodologies — especially when they lack the in-house expertise in GIS, climate modelling, or resilience assessment. The users struggle with disconnected tools, limited interoperability, and the challenge of	*The text provided by the beneficiaries is quite consistent with that expected. Make sure that in case the early adopters and the targeted end-users are the same, the problems and needs are in line with the ones described in the problems and needs of the end-users.*

	transforming scientific data into actionable insights.	
Alternative solution	Currently, adopters of the DSS are addressing the problem using a combination of disconnected tools and manual processes. They often rely on standalone GIS software (like QGIS or ArcGIS) for spatial data analysis, access climate data from external portals, and use separate systems for asset management and reporting. This fragmented approach requires significant technical expertise and coordination between different tools and teams, making it time consuming and prone to inconsistencies.	*The text provided by the beneficiaries is quite consistent with that expected.* *Bear in mind, alternative solutions are important to benchmark the proposed innovation and to get a better insight on competition. Having a picture of the weaknesses and strengths of the alternative solutions, will help you to compare and to quantify the added value of your solution and to have insight on how the alternative solutions are delivered.*
Unique Value Proposition	The DSS simplifies complex workflows by integrating climate risk data, spatial analysis, resilience indices, and adaptation planning into a single platform. It significantly shortens processing time and reduces reliance on expert-level GIS or technical skills, making advanced climate risk assessment accessible to a broader range of users.	*The text provided by the beneficiaries is quite consistent with that expected.* *Double check that the UPV aligns with the competitive advantages as defined before. Keep in mind, that it is important that the UVP is validated and backed with facts and data. Check the UVP with early adopters and collect facts and data from the testing phase of your project to provide sound information on the magnitude of the value that your solution is offering.*

Competitors	The DSS is an innovative tool that consolidates functionalities previously spread across multiple separate tools. While no direct competitors offering the exact same combination of features were identified, several indirect alternatives exist. These can be grouped into four main categories, each with their own strengths and limitations compared to the ICARIA DSS: **1. ArcGIS (Esri)** Strengths: • Industry-standard GIS tool with extensive capabilities • Established reputation and wide adoption • Rich spatial analysis and mapping features Weaknesses: • Requires expert-level GIS knowledge • Expensive licensing and maintenance costs • Not tailored to climate adaptation workflows	*The text provided by the beneficiaries is quite consistent with that expected. Bear in minds that "Competitors" may be different if you envisage licensing as use model rather than directly providing a service or producing and selling a device.*

	• Lacks native support for resilience metrics, scenario comparison, and adaptation planning ICARIA Advantage: Tailored to climate adaptation, with built-in decision-support features and no need for GIS expertise. **2.** QGIS Strengths: • Open-source and cost-free • Flexible with extensive plugin support Weaknesses: • Requires manual data handling and technical configuration • Still demands a moderate to high level of GIS knowledge • Not optimised for non-experts or fast decision-making workflows ICARIA Advantage: More intuitive and accessible, designed for rapid assessments by users without GIS backgrounds. **3.** Copernicus & Other Climate Data Portals Strengths: • Provides high-quality, validated climate projections • Backed by authoritative institutions (e.g., ECMWF, EU) Weaknesses: • Primarily focused on raw data delivery • Requires external pre-processing and analysis • No integrated tools for adaptation planning or spatial decision support ICARIA Advantage: Automatically integrates relevant datasets into workflows, enabling users to directly analyse and act on data without external tools. **4.** Custom-Built Tools and Models Strengths:	

	• Tailored to specific institutional needs • May reflect unique regional or sectoral contexts Weaknesses: • Often limited in scope and scalability • Require ongoing internal resources for development and maintenance • Typically lack interoperability or broader applicability ICARIA Advantage: Scalable, validated, and aligned with EU climate policy. Reduces cost and complexity for institutions seeking a robust and ready-to-use solution.	

Timing	At the end of ICARIA, the DSS will be ready for release in terms of the functionalities foreseen in the project. Extensive testing with the key target group should begin right after the project ends to support future commercial rollout. For additional functionalities or customizations of the platform for specific use cases, new releases can be scheduled after the end of the project upon demand.	*The text provided by the beneficiaries is quite consistent with that expected. Nonetheless specifying the number of months will add clarity.* *Keep in mind that the issue refers to how long it will take, from the end of the project for the result to be fully usable*

IP Strategy	No background (BG) intellectual property (IP) has been identified as relevant to the development of the DSS. For the foreground (FG), the intention is to leverage the project results by securing ownership over the developed software, primarily through copyright. This includes the source code, interface designs, and technical documentation. DRAXIS, as the main exploiter, will ensure clear authorship and access rights, supported by internal documentation and version control practices. Beyond the project, the DSS will be offered as a software-based service or support tool. Its protection will continue to rely on copyright, alongside regulated access through tailored licensing models (e.g., subscription or open core). Depending on future developments, specific algorithms or methodologies may also be protected as trade secrets if they demonstrate unique value. Regular monitoring and well-defined usage terms will further safeguard the solution's integrity and sustainability. Overall, the components and modules used during the DSS development either fall under public domain or are properly licensed by their beneficiaries, ensuring compliance with third party terms. DRAXIS will be fully aware of the intentions of the partners involved in the DSS and will obtain explicit authorization before taking any further action.	*The text provided by the beneficiaries is quite consistent with that expected.* *As the DSS leverages upon the other 2 KERs addressed in the service, it is important to specify the IPR aspects related to the integration. It is also recommended to sign an exploitation agreement which details the different use models and options considered and how each option affects the exploitation of the other 2 KERs.*

5.1.2 Exploitation Roadmap

Exploitation roadmap for KER: Decision Support System (DSS)

Actions	1. **Intellectual Property Protection**: Secure IP rights (patents, copyrights etc.) for key innovations in the ICARIA DSS. 2. **Regulatory and Authorizations**: Obtain necessary approvals and ensure compliance with data, privacy, and environmental regulations. 3. **Stakeholder Engagement and Partnership Building**: Strengthen collaborations with key stakeholders and initiate dialogues with potential users. 4. **Market Entry Strategy**: Begin commercialization efforts with pilot testing, marketing, and distribution strategies. 5. **User Training and Support Setup**: Develop training materials and establish a support framework for early adopters. 6. **Monitoring and Feedback Collection**: Implement a system for collecting feedback and tracking performance for ongoing improvements. 7. **Software Maintenance & Optimization**: Continuously monitor and optimize the system to ensure stable performance, fix bugs, and implement improvements based on user feedback and evolving requirements.
Roles	- **DRAXIS – Main Responsible:** Leads the overall exploitation roadmap, business model development, and market entry strategy. Actively involved in all actions to ensure successful deployment and uptake of the ICARIA DSS. **Responsible for all Actions** - **LNEC:** Provides technical input and testing support for the prototype and contributes to IPR protection, system validation, and optimization. **Contributes to Actions: 1, 5, 7** - **CETAQUA:** Provides technical input and testing support for the prototype and contributes to IPR protection, system validation, and optimization. **Contributes to Actions: 1, 5, 7** - **CERTH:** Provides technical input and testing support for the prototype and contributes to IPR protection, system validation, and optimization. **Contributes to Actions: 1, 5, 7** - **NCSRD:** Supports integration and maintenance activities, especially related to data and tool interoperability. Provides scientific input for resilience and climate modelling components. **Contributes to Actions: 1, 5, 7** - **AQUATEC:** Supports alignment with project goals and ensures coordination across partners. Contributes to user training, stakeholder engagement, and feedback processes. **Contributes to Actions: 3, 4, 5, 6**

Milestones	**Year 1 (after project end)** **Goal: Prepare for market readiness, test early traction, and solidify foundations.** 1. Finalize IP & Compliance Strategy (by month 6) o File at least 1 formal copyright registration for core DSS components o Complete a compliance checklist for GDPR, environmental, and data-handling regulations. 2. Stakeholder Engagement (by month 6) o Engage with at least 3 external stakeholder organizations from the main target group o Host 1 co-creation/feedback workshops with these stakeholders 3. Awareness and Communication o Publish 2 use-case blog posts or articles showcasing the DSS potential 4. User Feedback Collection o Collect structured feedback from at least 5 early testers/users through surveys or pilot trials **Year 2 (after project end)** **Goal: Begin pilot use, build support structure, and launch commercialization strategy.**
	1. Pilot Deployment o Launch at least 2 pilot implementations with real end-users 2. Support & Training Infrastructure o Develop a comprehensive training manual and a short tutorial video o Deliver at least 1 online training sessions to pilot users 3. Market Entry Preparation o Define 3 pricing/package scenarios and validate them with potential clients 4. System Optimization & Maintenance o Fix 80% of bugs reported during pilot phase within 3 months of identification. o Achieve and sustain ≥95% system uptime throughout the first 18 months
Costs	IPR & Legal Costs Promotion & Marketing Costs Maintenance & Optimization Costs (including staff expenses) **Estimated total costs**: approximately €50,000, with the majority being handed out to the IPR costs & staff expenses. Please note that this is a preliminary estimate, as we are not yet at the stage of providing finalized figures.

Revenues	*Year 1 (Initial Adoption)* • ***Licensing Revenue***: *€50,000 – €100,000 (5–10 organizations at €10,000/year)* • ***Service Provision***: *€15,000 – €30,000 (consulting, training)* • ***Total Revenue***: *€65,000 – €130,000* • ***Expenses***: *€20,000* • ***Expected Profit***: *€45,000 – €110,000* *Year 3 (Scaling & Expansion)* • ***Licensing Revenue***: *€600,000 – €1,200,000 (50–100 organizations at €12,000/year)* • ***Service Provision***: *€50,000 – €100,000 (customization, training)* • ***Other Revenue***: *€50,000 – €100,000 (partnerships, shares buy-out)* • ***Total Revenue***: *€700,000 – €1,400,000* • ***Expenses***: *€30,000* • ***Expected Profit***: *€670,000 – €1,370,000* Please note that this is a preliminary projection, as we are not yet at the stage of providing finalized figures.
Other sources of coverage	*Resources needed to bridge the investment needed to increase TRL and ensure the result is used.* ***1. Financial Needs:*** ***Total for Initial Expenses***: *€20,000* 1. ***Purpose***: *Software deployment, stakeholder engagement, legal fees, marketing expenses, and other.* 2. ***Funding Sources:*** o ***Partners' Own Budget***: *DRAXIS will contribute its own funds.* o ***National/Regional Incentives***: *Apply for climate-tech incentives.* ***3. Timing:*** • ***Initial Funding***: *Secure within 3-6 months after project ends.* • ***Ongoing Funding***: *Explore other resources as pilot phase begins.* Please note that this is a preliminary thought, as we are not yet at the stage of providing finalized figures

5.1.3 Risk Map

	Description of Risks	Degree of criticality of the risk related to the final achievement of this Key Exploitable Result. Please rate from 1 to 10 (1 low- 10 high)	Probability of risk happening Please rate from 1 to 10 (1 low - 10 high)	Risk Grade	Potential intervention	Estimated Feasibility/Success of Intervention Please rate from 1 to 10 (1 low- 10 high)	Conclusion
	Partnership Risk Factors						
1	Key people/partners leaving their companies before the successful deployment and uptake potential exploration	*8*	*5*	40	Offer retention incentives and recognition to keep key individuals engaged until DSS testing is complete. In parallel, prepare a handover plan and train backups to ensure smooth transition if replacements are needed.	*7*	Control.
	Technological Risk Factors						
2	Technology behind the solution is more complex to be deployed than planned	*6*	*3*	18	Break development into manageable sprints with clear milestones. Focus first on core DSS functions and allocate buffer time for technical adjustments or simplifications if needed.	*6*	Control.

3	Significant dependency on other technologies/solutions	*4*	*3*	12	Ensure early integration testing and compatibility checks between the DSS and third-party technologies. Where possible, implement modular design to reduce interdependencies and allow flexibility in replacing or upgrading components.	*3*	No Action'
4	Presence of defects that are too difficult to detect	*7*	*8*	56	Implement automated testing alongside manual QA, including stress and edge-case testing. Schedule routine code reviews and involve end-users in usability testing to catch hidden defects early.	*7*	Action!
	Market Risk Factors						
5	Competitors launch a rival product	*6*	*8*	48	Accelerate pilot deployments and gather real-world testimonials to build credibility. Highlight the DSS's unique features through targeted communication and continuously engage with stakeholders to reinforce its value before competitors gain ground.	*4*	No Action'
6	DSS fails to replace already existing and established solutions	*10*	*5*	50	Run tailored pilot programs with early adopters, focusing on integration with existing workflows. Use feedback to adapt the DSS and position it as a complementary upgrade rather than a full replacement, easing user transition.	*8*	Between Control & Action
7	Market penetration is slower than expected	*8*	*7*	56	Conduct a targeted barriers-to-adoption analysis to identify what's hindering uptake (e.g. technical complexity, awareness, cost). Based on findings, adjust outreach strategy, offer guided onboarding, and tailor value messaging to specific stakeholder needs.	*6*	Action!

	IPR/Legal Risk Factors						
8	Competitors replicate technology	*10*	*3*	30	Strengthen IP protection through copyrights or trade secrets and monitor the market to react quickly to imitation risks.	*3*	No Action'
	Financial/Management Risk Factors						
9	Lack of Financial Resources	*9*	*5*	45	Secure funding early and develop a lean financial plan covering the DSS's full lifecycle.	*8*	Control.
	Environmental/Regulation/Safety risks:						
10	Future changes in the regulation of such tools may make the DSS not compliant	*8*	*5*	40	Monitor regulatory updates closely and adapt the DSS promptly to remain compliant.	*5*	Between Control & No Action

EXPERT COMMENTS AND RECOMMENDATIONS

The Partnership risk factors and the Financial/Management Risk factors represent a low-risk grade and a high probability of success of the intervention (Control). It is thus advisable to keep an eye on the risks and track them on a regular basis to spot swiftly any changes that might affect the risk grade or the probability of success of the planned intervention measure. The same applies to one of the Technological Risk factors.

One of the Market Risk factors and the Environmental/Regulation/Safety represent a medium risk grade in combination with a medium to high success for the intervention, in this situation the same recommendation applies as for the risks under “Control”, nonetheless with a higher priority for resolution.

One of the Market Risk factors and one of the Technological Risk factors have a medium risk grade and medium to high probability of success when it comes to the intervention measures, all are found in the Warning area. It is recommended that the consortium analysis which intervention measures can be implemented already (constituting a prevention measure) within the available resources and time.

The remaining risks present a low-risk grade in combination with a low probability of success of the action and therefore require no action.

The consortium should monitor the risk analysis on a regular basis to identify possible changes in the risks (in particular likelihood and impact) and if needed adapt the contingency measures, and if emerging, additional risks are to be included.

5.1.4 Lean Canvas

Problem
- Fragmented and complex assessment process.
- Limited expertise in key technical areas.
- Poor integration of tools and data sources.

Alternative Solutions
- Separate tools and manual workflows that slow down the process.
- Requirement of high expertise and coordination, leading to errors.

Solution
- All-in-one platform that streamlines climate risk & adaptation workflows.
- User-friendly design that removes the need for specialized expertise.
- Integrated tools and data for seamless analysis and clear insights.

Key Metrics
- 1 formal copyright registration
- Host 1 co-creation/feedback workshops
- 2 pilot test initiated with target users
- ≥80% of reported bugs fixed.
- System uptime maintained ≥95%

Unique Value Proposition
The DSS simplifies complex workflows by integrating climate risk data, spatial analysis, resilience indices, and adaptation planning into a single platform. It significantly shortens processing time and reduces reliance on expert-level GIS or technical skills, making advanced climate risk assessment accessible to a broader range of users.

Unfair Advantage
Unique integration of high-level tools underpinned by proprietary algorithms, IPR agreements, and specialized know-how, forming a methodology that's difficult to replicate.

Channels
- Content Marketing (whitepapers, blogs, case studies)
- Targeted Associations (e.g. Climate-ADAPT, ENoLL)
- Key Events/Webinars (e.g. ECCA, Adaptation Futures)

Customer Segments
Primary:
•Critical Infrastructure managers & technicians
•Academic experts/researchers in the field of climate risk analysis
Secondary:
•Regional and local authorities
•Asset and service managers

Early adopters
Critical Infrastructure managers & technicians, with technical expertise in managing and maintaining infrastructure systems with a focus on resilience and risk management

Cost Structure
IPR & Legal Costs
Promotion & Marketing Costs
Maintenance & Optimizations Costs

Revenue Streams
License-based pricing
Service provisions (consulting, training)

PRODUCT | MARKET

DRAFT

5.2 KER 2: Resilience Assessment Framework (RAF)

5.2.1 Characterisation table

KER name: RAF (Resilience Assessment Framework)		
	Input from the Beneficiary	Comments/ suggestions for the discussion at the training
Description	The RAF (Resilience Assessment Framework) and its tool (RAF App) facilitate a structured resilience assessment for different contexts and levels of maturity in resilience. They contribute to the development and implementation of Resilience Action Plans (RAPs)	*The text provided by the beneficiaries is quite consistent with that expected.*
Target market/end users	**Target market:** Those interested in regional, urban, service and asset's resilience that need to plan, implement or support the development of a strategy to prepare the territory, service and assets for Climate Change events. **Customers/end-users:** Primary 1. Policy makers and land use planner and managers 2. Urban services managers (e.g. energy, water, wastewater) Secondary 3. Consultants and insurance companies 4. Academia, research and research organizations	*The text provided by the beneficiaries is quite consistent with that expected.* *It is important that upon finalising the exploitation plan and preparing the use of the KER a clear identification of the target market is provided, with its segmentation. It should include both a qualitative and quantitative description in terms of size and features. Please consider that geography matters in terms of the market that you want to serve.*

End-users needs / problems	Users need to diagnose their resilience, plan for its improvement, monitor it or support those who do it. Namely, users need to: • perform a resilience diagnosis of regions, cities and strategic urban sectors • identify the resilience opportunities, threats, strengths and weaknesses • develop a plan for resilience enhancement, based on objective-driven assessment • raise awareness and emerge funding for resilience, by highlighting resilience development level • justify cost-effective investments for resilience, by evidencing resilience benefits • monitor the resilience progress, by comparing "as was" and "as is" assessments • communicate resilience with stakeholders, with a graphical interface • support data collection, contributors' joint work and resilience plans development • consult on their clients' resilience • implement research and development activities in resilience	*The text provided by the beneficiaries is quite consistent with that expected. However, the description is more geared towards what the users need to do, than what the problem is they need to solve. Also, as there is more than one primary target market, differentiate for the KER consider whether the problems/needs are different depending on the targeted user. Be reminded to make sure that the problems described are the actual problems. Identify and validate them together with your "customers" ("problem/customer" fit). Being able to solve problems is key to make sure results are used and that the envisaged impact is achieved.*

Competitive advantages	• Association with a Resilience Action plan template, to structure resilience coordination • Structured framework to allow a step-by step assessment for different resilience maturity levels • Freely available online tool with transparency in the way the tool calculates the results • Appealing visualization facilitates communication with different groups, expertise, stakeholders • Comparison facility facilitates prioritizing, namely of adaptation actions • Pre-defined answers for selection facilitate the assessment	*The text provided by the beneficiaries is quite consistent with that expected.* *Make sure that the competitive advantage* *and identified features of the value proposition align.*
Use model	Knowledge development and transfer and advanced consultancy services: - Independent usage of the freely available online tool - Training (1 week activity/course) - Capacitation for users through a joint training and hands-on capacitation programme (2 – 3 years programme) Advanced consultancy (tailor made)	*The text provided by the beneficiaries is quite consistent with that expected.* *The text provides an initial approach to the use model but needs to clarify what is understood as knowledge development and transfer, and the type of use model it entails. The use model is a service model but should be better defined and customised to each of the target markets, in particular the primary ones.* *With different target markets and end-users with different needs, consider if there are different use models for each target market, or one single use model applies to all. Keep an eye on the fact that the use model and target market, customers need to be consistent. In the case of licensing, consider that are several different types of licensing agreements that could be used.*
Early Adopters	1. Policy (city, regional) managers 2. Urban services managers	*The text provided by the beneficiaries is quite consistent with that expected. Nonetheless, due attention is to be paid to the roles and functions of these adopters to ensure their needs and problems are sufficiently common*

		to be able to address them as one single customer segment. *Bear in mind that, to develop the exploitation model, it is important to look at early adopters and how to go from early adopters to "early majority". Early adopters are the customers ready to "use" the "beta" version (13,5%). New initiatives fail because they are not able to reach early adopters.*
Adopters' problems/needs	Primary users need to diagnose their resilience, plan for its improvement, and monitor it. Namely, primary users need to: • perform a resilience diagnosis of regions, cities and strategic urban sectors • identify the resilience opportunities, threats, strengths and weaknesses • develop a plan for resilience enhancement, based on objective-driven assessment • raise awareness and emerge funding for resilience, by highlighting resilience development level • justify cost-effective investments for resilience, by evidencing resilience benefits • monitor the resilience progress, by comparing "as was" and "as is" assessments • communicate resilience with stakeholders, with a graphical interface	*The text provided by the beneficiaries is quite consistent with that expected.* *Make sure that in case the early adopters and the targeted end-users are the same, the problems and needs are in line with the ones described in the problems and needs of the end-users.* *Also make sure that the problems and needs for the 2 types of early adopters if needed are defined slightly different.*

Alternative solution	• Resilience diagnosis is sometimes being performed for individual sectors or parts of the city/region • Stakeholders don't join efforts and are not aware of each other's' resilience challenges • A plan for resilience does not exist, only scattered activities without a joint programme around them • Investments for resilience are decided piecemeal, as they are difficult to compare and their benefit is difficult to grasp	*The text provided by the beneficiaries highlights more the gaps in the current solutions than the alternative solution which the early adopters are currently using to solve the identified problems. The analysis should focus more on what knowledge or tools they currently use to assess their resilience. Bear in mind, alternative solutions are important to benchmark the proposed innovation and to get a better insight on competition. Having a picture of the weaknesses and strengths of the alternative solutions, will help you to compare and to quantify the added value of your solution and to have insight on how the alternative solutions are delivered.*
Unique Value Proposition	**Empower your resilience journey with our free online tool** Use the RAF and the RAF App to: • Increase the knowledge of the region, city, services' resilience Align resilience strategy with internationally recognized urban resilience. and climate change challenges (UN SDG). • Adopt a flexible framework. • Follow the path of a stepwise approach. • Justify cost-effective investments for resilience. • Evidence resilience progress.	*The text provided by the beneficiaries is quite consistent with that expected. Double check that the UPV aligns with the competitive advantages as defined before. Keep in mind, that it is important that the UVP is validated and backed with facts and data. Check the UVP with early adopters and collect facts and data from the testing phase of your project to provide sound information on the magnitude of the value that your solution is offering.*

Competitors	There are already many competitors in the deregulated market of urban resilience, from different levels (from supranational to local) and categories (from public bodies to SMEs). Major utilities companies (e.g. Veolia), multilateral organisations (e.g. ICLEI, OECD, Rockefeller Foundation, The World Bank Group, UN-Habitat) are the most direct competitors. Their strengths: their reputation, the fact that they offer world-wide services, their access to large funding Their weaknesses: assessments in a "blackbox"(the user does not really grasp how he is being evaluated); usage of questions that are not scalable or comparable (for example, asking for the flooded area, instead of the *percentage* of the flooded area); assessments tailored to the national level and not easily cascading down; user have to pay for accessing the frameworks In order to differentiate from our competitors, the ICARIA RAF focuses on the niche of urban/regional resilience to cope with climate change focusing on water, based on adequate performance indicators and is freely available	*The text provided by the beneficiaries is quite consistent with that expected. Nonetheless, the strengths and weaknesses of the competitors on individual level should have been analysed, and in particular focus on those that offer the alternative solution that users are using currently to solve their problems.* *Bear in minds that "Competitors" may be different if you envisage licensing as use model rather than directly providing a service or producing and selling a device.*
Timing	Early 2026	*The text provided by the beneficiaries is quite consistent with that expected. Keep in mind that the issue refers to how long it will take, from the end of the project for the result to be fully usable*

IP Strategy	The RAF and the RAF app's background was the RESCCUE project. The foreground is the ICARIA project. The RAF is Open access, but it is not Open Source. The RAF and RAF App are publicly and freely available (as they are distributed at no monetary cost to the end user) for private or for investigation and research purposes. They cannot be commercialised by third parties but can be used for commercial purposes (for consultancy, for example). Users have the right to use, share, and build upon the RAF App results. Users have to register and acknowledge RESCCUE and ICARIA projects, by citing the projects (Velasco, M., Russo, B., Monjo, R., Paradinas, C., Djordjević, S., Evans, B., Martínez-Gomariz, E., Guerrero-Hidalga, M., Cardoso, M.A., Brito, R.S., Pacheco, D. Increased Urban resilience to climate change - key outputs from the RESCCUE Project. *Sustainability* 2020, 12 (23), 9881. 25 pp. https://doi.org/10.3390/su12239881) (Russo, B., de la Cruz, A., Leonne, M., Evans, B., Brito, R.S., Havlik, D., Bügelmayer-Blaschek, M., Pacheco, D., Sfetsos, A. (2023). Improving climate resilience of critical assets. The ICARIA project. MDPI Publishing. *Sustainability* 2023, 15, 14090. 0. https://doi.org/10.3390/su151914090). RAF App modification, remix, derivative work and reverse engineering are not permitted. LNEC has the legal rights to act upon any copyright infringement.	*The text provided by the beneficiaries is quite consistent with that expected. As the KER includes both the framework and the app, it is important to specify the IPR aspects related to both and with regards to their connection and integration. It is recommended to sign an exploitation agreement which considers and how each of the 2 sides of the KER affects the exploitation long term.*

5.2.2 Exploitation Roadmap

Actions	Actions to be executed 3-6 months after the end of the project: 1. **Survey** the interest of potential users within the partners' connections (e.g. cities, metropolitan areas, urban services, research organizations, consultants or software developers) 2. **Define the market entry strategy** based on the survey, to identify lines of action and priorities to establish a research, development and innovation Agenda for the following 3-4 years. These can translate into: RAF training (1 week activity/course), Capacitation for the RAF implementation in cities or metropolitan areas or specific urban services: water, wastewater, stormwater, natural areas (1-2-year programme); Specialised consultancy (on demand); Innovative research activities (2-4-year project) 3. **Stakeholder engagement** activities to engage potential users in the coming activities (e.g. webinars, conference presentations) **Partnership building**: Strengthen collaboration with key partners to implement the strategy.
Roles	LNEC (the Portuguese National Laboratory of Civil Engineering) is the responsible for all the exploitation roadmap activities Other ICARIA partners (e.g. DRAXIS, AIT, CETAQUA, UPC, DMKS, UNINA) can also support the survey implementation, market dissemination and training activities.
Milestones	2026: **Activities 1, 2, 3 and 4** & RAF training 2027: Submit a proposal for a Research project & launch a Capacitation programme 2028: Implement a Research project or Capacitation programme **KPI** (for the first 6M, **Activities 1, 2, 3**): number of people surveyed; number of countries surveyed; market entry strategy development; number of engagement activities implemented.
Costs	Cost structure: • Expert personnel • Travelling and accommodation • Hardware for the App • Software maintenance This is a preliminary projection: • 2026: Survey: 2 k€, RAF training: 4 k€ (depends on the location. Travelling budget?); dissemination of ICARIA results for raising awareness (2 k€) • 2027: Submit a proposal for a Research project (6 k€), launch a Capacitation programme (3 k€) • 2028: Implement a Research project or Capacitation programme (40 k€), including Software and hardware upgrades
Revenues	Revenue structure, this is a preliminary projection: • 2026: RAF training: 10 k€ (10 people, 1 k€), from academia, utilities and cities • 2028: 60 k€ from Capacitation programme: 150 k€, from utilities and cities
Other sources of coverage	2026-2027: Partners will contribute with their own funds for activities 1,2, 3 and 4. 2028: Research project: 60 k€ from project grants, Sponsoring for dissemination events

5.2.3 Risk Map

	Description of Risks	Degree of criticality of the risk related to the final achievement of this Key Exploitable Result. Please rate from 1 to 10 (1 low- 10 high)	Probability of risk happening Please rate from 1 to 10 (1 low - 10 high)	Risk Grade	Potential intervention	Estimated Feasibility/ Success of Intervention Please rate from 1 to 10 (1 low- 10 high)	Conclusion
	Partnership Risk Factors						
1	Key people/partners leaving their companies before the successful deployment and uptake of the potential exploration	8	4	32	Ensure flexibility in people's competences. Prepare a backup replacement to ensure smooth transition.	8	Control.
	Technological Risk Factors						
2	Hardware / software obsolescence	6	3	18	Plan for funding in the 2nd or 3rd year after project ending	5	Between Control & No Action
	Market Risk Factors						

3	Resilience is complex but still users prefer simpler approaches	*9*	*7*	63	Promote guidelines for stepwise approach; Highlight the RAF's unique features; offer guided onboarding; promote training; provide an helpdesk, FAQ section and supportive videos	*8*	Action!
4	competitors may arise from EU-funded projects or supported by renowned international bodies	*8*	*7*	56	Highlight the RAF's unique features and being freely available; promote training; make users the RAF ambassadors (gather testimonials to build credibility)	*6*	Action!
5	Availability for 2-year programs is low	*8*	*9*	72	Promote training in advance; increase users' support, prepare solutions for dropouts	*6*	Action!
6	More user-appealing technology arises	*4*	*7*	28	Highlight the RAF's unique features and being freely available	*6*	Control.
	IPR/Legal Risk Factors						
7	Improper use of RAF and RAF App (e.g. lack of acknowledgement, modification, commercialisation by others)	*8*	*2*	16	Communicate with the infractor to follow the IPR terms; legal action	*5*	Between Control & No Action
	Financial/Management Risk Factors						
8	Resources for 2027-2028 depend on very competitive success and awareness for the topic's relevance	*8*	*8*	64	Prepare submission project in advance, associate with robust partners; implement more training actions to provide income; disseminate to increase awareness, study other sources of funding	*6*	Action!

EXPERT COMMENTS AND RECOMMENDATIONS

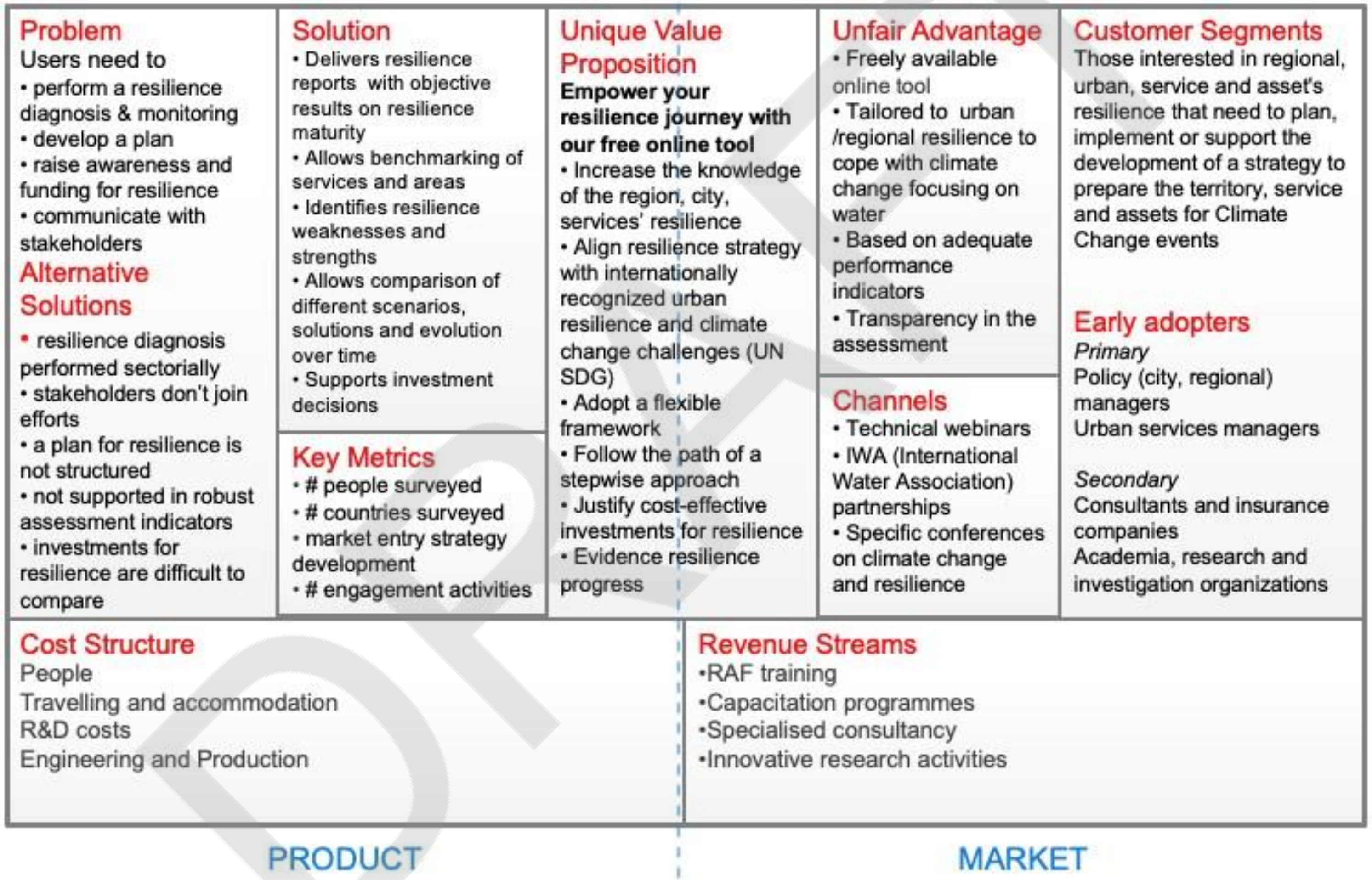
Three out of the four Market risk factors present a medium to high-risk grade and a medium to high success of the intervention, and are located in the Action area, for these risks it is recommended to apply the envisaged contingency measures already whenever possible with a low effort and resources, but that action is needed immediately if the risk occurs. The same applies to the Financial/Management risk factor.

The Partnership risk factors represent a low-risk grade and a high probability of success of the intervention (Control). It is thus advisable to keep an eye on the risks and track them on a regular basis to spot swiftly any changes that might affect the risk grade or the probability of success of the planned intervention measure. The same applies to one of the Market Risk factors.

The Technological Risk factors and the IPR/Legal risk factors have a low to medium risk grade and medium probability of success when it comes to the intervention measures, all are found on the border between No Action and Control, these risks should be simply monitored and control until their situation changes and action would need.

The consortium should monitor the risk analysis on a regular basis to identify possible changes in the risks (likelihood and impact) and if needed adapt the contingency measures, and if emerging, additional risks are to be included.

5.2.4 Lean Canvas



5.3 KER 3: RAT (Resilience Assessment Tool)

5.3.1 Characterisation table

KER name: RAT (Resilience Assessment Tool)		
	Input from the Beneficiary	Comments/ suggestions for the discussion at the training
Description	Performs a user-driven assessment of the resilience capabilities for anticipation, absorption, coping, restoration and adaptation of services of the analysed critical entities to the analysed climate hazards.	*The text provided by the beneficiaries is quite consistent with that expected.*
Target market/end users	**Target market:** Critical entities operators / owners, Emergency managers, financers **Customers/end-users:** Primary 1. Policy makers and land use planner and managers. 2. Critical entities operators / owners. Secondary 3. Consultants and insurance companies. 4. Academia, research and investigation organizations. 5. Civil protection agencies.	*The text provided by the beneficiaries is quite consistent with that expected.* *It is important that upon finalising the exploitation plan and preparing the use of the KER a clear identification of the target market is provided, with its segmentation. It should include both a qualitative and quantitative description in terms of size and features. Please consider that geography matters in terms of the market that you want to serve.*
End-users needs / problems	Users need to assess their resilience, plan for its enhancement, monitor it, or support those who do. Specifically, users should: • conduct a resilience assessment of critical entities and infrastructures, • identify solutions and interventions to enhance resilience, • justify cost-effective investments in resilience by evidencing resilience benefits, • monitor resilience progress, • communicate resilience with stakeholders through a graphical interface.	*The text provided by the beneficiaries is quite consistent with that expected. However, the description is more geared towards what the users need to do, than what the problem is they need to solve. Also, as there is more than one primary target market, differentiate for the KER consider whether the problems/needs are different depending on the targeted user.* *Be reminded to make sure that the problems described are the actual problems. Identify and validate them together with your "customers" ("problem/customer" fit). Being able to solve problems is key to make sure*

		results are used and that the envisaged impact is achieved.
Competitive advantages	• Directly linked to the provisions of Critical Entities Directive • A freely available online tool offers transparency in how it calculates results. • Appealing visualisation enhances communication with different groups, expertise, and stakeholders. • Very basic data needed to conduct the assessment • Pre-defined selection answers streamline the assessment.	*The text provided by the beneficiaries is quite consistent with that expected.* *Make sure that the competitive advantage* *and identified features of the value proposition align.*

Use model	Knowledge development and transfer and advanced consultancy services: - Independent usage of the freely available online tool - Training (1 week activity/course) - Capacitation for users through a joint training and hands-on capacitation programme (2 – 3 years programme) Advanced consultancy (tailor made)	*The text provided by the beneficiaries is quite consistent with that expected.* *The text provides an initial approach to the use model but needs to clarify what is understood as knowledge development and transfer, and the type of use model it entails. The use model is a service model but should be better defined and customised to each of the target markets, in particular the primary ones.* *With different target markets and end-users with different needs, consider if there are different use models for each target market, or one single use model applies to all. Keep an eye on the fact that the use model and target market, customers need to be consistent. In the case of licensing, consider that are several different types of licensing agreements that could be used.*
Early Adopters	Critical entities operators / owners	*The text provided by the beneficiaries is quite consistent with that expected.* *Bear in mind that, to develop the exploitation model, it is important to look at early adopters and how to go from early adopters to "early majority". Early adopters are the customers ready to "use" the "beta" version (13,5%). New initiatives fail because they are not able to reach early adopters.*
Adopters' problems/needs	Primary users need to assess their resilience, plan for its improvement, and monitor it. Specifically, primary users should: • conduct a resilience assessment of critical entities and infrastructures. • identify solutions and interventions to enhance resilience.	*The text provided addresses all primary users identified before, but focus should be only on the ones identified as early adopters.* *Make sure that the problems and needs are in line with the ones described in the problems and needs of the end-users.* *Also make sure that the problems and needs for the 2 types of early adopters if needed are defined slightly different.*

Alternative solution	Presently does not exist for CER Many solutions exists for cities (MCR, FEMA) but nor for critical entities.	*The text provided does not explain how the identified early adopters are solving the problems they face in the assessment of resilience capabilities. For other primary and secondary target groups the alternative solutions should have been identified. Bear in mind, alternative solutions are important to benchmark the proposed innovation and to get a better insight on competition. Having a picture of the weaknesses and strengths of the alternative solutions, will help you to compare and to quantify the added value of your solution and to have insight on how the alternative solutions are delivered.*
Unique Value Proposition	**Empower your resilience journey with our free online tool.** Use the RAT app to: • Enhance your understanding of the critical entity resilience. • Be compatible with CER based assessment	*The text provided by the beneficiaries is quite consistent with that expected. Double check that the UPV aligns with the competitive advantages as defined before. Keep in mind, that it is important that the UVP is validated and backed with facts and data. Check the UVP with early adopters and collect facts and data from the testing phase of your project to provide sound information on the magnitude of the value that your solution is offering.*

Competitors	Essentially there is not any product to conduct assessment for critical entities resilience based on capacity assessment.	*Although there is not directly a product that offers the same as the RAT, the competitors are those that offer the alternative solutions which any of the target groups/users use to solve the problems.* *Each the strengths and weaknesses of the competitors on individual level should have been analysed, and in particular focus on those that offer the alternative solution that users are using currently to solve their problems.* *Bear in mind that "Competitors" may be different if you envisage licensing as use model rather than directly providing a service or producing and selling a device.*
Timing	Early 2027	*The text provided by the beneficiaries is quite consistent with that expected. Keep in mind that the issue refers to how long it will take, from the end of the project for the result to be fully usable*
IP Strategy	It will be defined later on.	*The beneficiaries do not provide the information. Bear in mind that IPR issues might apply to the tool, in particular when based upon prior and pre-existing knowledge.*

5.3.2 Exploitation Roadmap

Actions	Actions to be executed 6 months after the end of the project: 1. **Explore** interest from potential users within the partners' connections (e.g. CI operators, fire corps). 2. **Define the market strategy** based on the survey to identify lines of action. Indicative: o RAT training (1 day activity/course) including hands on practice o Implementation in CI entities (1-2-year programme) o Consultancy services (on demand) o Leading new research activities (2-4-year project) 3. **Stakeholder engagement** activities to engage potential users in the coming activities (e.g. webinars, conference presentations) 4. **Partnership building**: Strengthen collaboration with key partners to implement the strategy.
Roles	NCSRD is responsible for hosting and updating the RAT

Milestones	2026: **Actions 1,** **2027 : Actions 2, 3 and 4** 2027: Submit a proposal for a Research project & launch a Capacitation programme 2028: Implement a Research project **KPI** (for the first 12M, **Activities 1, 2, 3**): number of people surveyed; number of countries surveyed; market entry strategy development; number of engagement activities implemented
Costs	Cost structure: • Expert personnel • Travelling and accommodation • Hardware for the App • Software hosting and maintenance This is a preliminary projection: • 2026: Survey: 2 K€, RAT training: 2 K€ (depends on the location. Travelling budget); dissemination of ICARIA results for raising awareness (2 K€) • 2027: Submit a proposal for a Research project (6 K€) • 2028: Implement a Research project (40 K€), including Software and hardware upgrades
Revenues	Revenue structure, this is a preliminary projection: • 2028: RAT training: 10 K€ (5 people, 2 K€), from academia, utilities and CI organizations • 2029: 20 K€ from training and consultancy
Other sources of coverage	2026-2027: Own funds for activities 1,2, 3 and 4. 2028: Research project: 40 K€ from project grants, Sponsoring for dissemination events

5.3.3 Risk Map

	Description of Risks	Degree of criticality of the risk related to the final achievement of this Key Exploitable Result. Please rate from 1 to 10 (1 low- 10 high)	Probability of risk happening Please rate from 1 to 10 (1 low - 10 high)	Risk Grade	Potential intervention	Estimated Feasibility/ Success of Intervention Please rate from 1 to 10 (1 low- 10 high)	Conclusion
	Partnership Risk Factors						
1	Key people/partners leaving before the successful deployment and uptake of the potential exploration	*8*	*4*	32	Most people in the development of RAT are permanent personnel	*1*	No Action'
	Technological Risk Factors						
2	Hardware / software obsolescence	*6*	*3*	18	Hardware is recently acquired; software is in-house build and thus easily customizable	*4*	No Action'
	Market Risk Factors						

3	No legal necessity for CI resilience assessment	*10*	*10*	100	National laws requesting CI operators establish CI assessment and plan (outside the consortium - national government)	*9*	Action!
4	competitors may arise from EU-funded projects or supported by renowned international bodies	*8*	*7*	56	Highlight the RAT's unique features and being freely available; promote training; make users the RAT ambassadors (gather testimonials to build credibility)	*6*	Action!
5	More user-appealing technology arises	*4*	*7*	28	Highlight the RAT's unique features and being freely available	*6*	Control.
	IPR/Legal Risk Factors						
6	Improper use of RAT and RAT App (e.g. lack of acknowledgement, modification, commercialisation by others)	*8*	*2*	16	Communicate with the infractor to follow the IPR terms; legal action	*5*	Between Control & No Action
	Financial/Management Risk Factors						
7	Resources for 2027-2028 depend on very competitive success and awareness for the topic's relevance	*8*	*8*	64	Prepare submission project in advance, associate with robust partners; implement more training actions to provide income; disseminate to increase awareness, study other sources of funding	*6*	Action!

EXPERT COMMENTS AND RECOMMENDATIONS

Two out of the three Market risk factors present a medium to high-risk grade and a medium to high success of the intervention, and are located in the Action area, for these risks it is recommended to apply the envisaged contingency measures already whenever possible with a low effort and resources, but that action is needed immediately if the risk occurs. The same applies to the Financial/Management risk factor.

One of the Market Risk Factors represent a low to medium risk grade and a medium probability of success of the intervention (Control). It is thus advisable to keep an eye on the risks and track them on a regular basis to spot swiftly any changes that might affect the risk grade or the probability of success of the planned intervention measure. The IPR/legal risk factor shows a low-risk grade in combination with a medium success for the intervention, in this situation the same recommendation applies as for the risks under "Control".

The Partnership risk factors, and the Technological Risk factors present a low-risk grade in combination with a low probability of success of the action and therefore require no action.

The consortium should monitor the risk analysis on a regular basis to identify possible changes in the risks (in particular likelihood and impact) and if needed adapt the contingency measures, and if emerging, additional risks are to be included.

5.3.4 Lean Canvas

Problem
Users need to
• carry out a resilience diagnosis and monitoring
• create a plan
• raise awareness and secure funding for resilience
• engage with stakeholders

Alternative Solutions
• Resilience diagnosis conducted in a sectoral manner.
• Stakeholders do not collaborate.
• A structured plan for resilience is absent.
• Lacks robust assessment indicators for support.
• Investment comparisons for resilience are challenging.

Solution
• Provides resilience reports with objective findings on resilience maturity
• Facilitates benchmarking of services and areas
• Identifies strengths and weaknesses in resilience
• Enables comparisons of various scenarios, solutions, and development over time
• Assists in investment decision-making

Key Metrics
• Number of people surveyed
• Number of countries surveyed
• Development of market entry strategy
• Number of engagement activities

Unique Value Proposition
Empower your journey towards resilience with our free online tool:
• Enhance understanding of regional, city, and service resilience.
• Align resilience strategies with internationally recognised urban resilience and climate change challenges (UN SDG).
• Embrace a flexible framework.
• Adhere to a stepwise approach.
• Justify cost-effective investments in resilience.
• Evidence progress in resilience.

Unfair Advantage
• Freely available online tool
• Tailored to urban and regional resilience to address climate change with a focus on water
• Based on appropriate performance indicators
• Ensuring transparency in the assessment

Channels
• Technical webinars
• Specific conferences on climate change and resilience

Customer Segments
Those interested in the resilience of regions, urban areas, services, and assets that need to plan, implement, or support the development of a strategy to prepare the territory, services, and assets for climate change events

Early adopters
Primary:
- *Policy (city, regional) managers*
- *Civil Protection Agencies*
- *Urban services managers*

Secondary:
- *Consultants and insurers*
- *Academia, research, and investigative organisations*

Cost Structure
People
Travelling and accommodation
R&D costs
Engineering and Production

Revenue Streams
•RAT training
•Capacitation programmes
•Specialised consultancy
•Innovative research activities

PRODUCT | MARKET

6 Final recommendations by the Expert

KER1: ICARIA Decision Support System	
Issues	Assessment and Recommendations
Maturity of the KER	The technological maturity of the DSS is high, with sufficient validation through real world cases. The DSS is foreseen to be ready for release at the end of the project, with a prototype that has been validated and close to being a complete tool. Significant progress has been made to lay the foundations for commercial exploitation, A use model based on a digital service platform with licensing and consulting revenue streams has been defined as a first step from planning to actual exploitation.
Market definition	Progress in defining their target market. The target market has been identified for both the primary and secondary user groups, also the early adopters have been defined. There is clarity with regards to the competitors and their strengths and weaknesses. The development of the DSS is well-aligned with the increasing demand for tools that support climate resilience and adaptation. The segmentation of the target market should become more granular and defined further per target group and based upon the specific job-to-be-done and ensure and validate with the users that the tool covers their actual problems and needs. As the project and work progress, further research to estimate the market size should be conducted, and the assumptions regarding the financial projects to be tested.
Unique Value Proposition definition	A clear Unique Value Proposition (UVP) has been articulated, focusing on providing an integrated, user-friendly solution that reduces the need for specialized expertise. It is properly aligned with the competitive functionalisation and features identified. The UVP, while well-defined, has not yet to be validated with the market; the expert explicitly recommends it be "tested" with representatives of the early adopters.
IPR/Intellectual assets management	A clear IPR strategy has been established, with the foreground IP to be protected by copyright. A critical governance and IPR risk remain unresolved: the expert strongly recommends signing an exploitation agreement to manage the integration of the other two KERs, which is essential for clarifying ownership and exploitation rights among partners.
Use/business model	A use model based on a digital service platform with licensing and consulting revenue streams has been defined. The business model is well-defined conceptually. The current model mentions licensing, but the consortium should consider the "several different types of licensing agreements that could be used and determine which is most appropriate for each target segment, and if necessary, consider different use

	and business models for the different segments, as a single use model may not be optimal for all users.
Exploitation Risks	The risks most critical to the exploitation are identified, with sufficiently robust contingency measures. The analysis should be considered as the baseline and continuous monitoring should be applied, to ensure that any additional risks are included and that any potential changes in the likelihood and impact of the risk are identified as they occur. It is recommended to include the monitor and updating of the analysis as an integral part of the exploitation pathway.
Planning of next steps	The roadmap should be revised to transform the strategic actions into a more granular, tactical plan detailing the immediate next steps required to secure the first users and generate early revenue.
	The exploitation roadmap is comprehensive and provides a solid foundation for the post project phase, with sufficiently detailed activities and roles and responsibilities for partners. It includes initial, multi-year projections for both costs and revenues. The commercial strategy, as noted above, has not been validated with the market, making any revenue projections highly speculative.
Further support	The consortium could consider to request support for the development of the business plan which supports them in further advancing on the exploitation strategy and define a concrete pathway for the KER to roll-out into market, The business plan allows to drill deeper into the specific aspects related to the Decision Support System and contribute to generate a more detailed and solid pathway towards actual exploitation.

KER2: ICARIA RAF (Resilience Assessment Framework)	
Issues	Assessment and Recommendations
Maturity of the KER	The Resilience Assessment Framework (RAF) and its accompanying RAF App demonstrate a very high level of technological maturity, being an upgrade based on the results of a previous project, RESCCUE. The current status indicates that the KER is ready for deployment, although additional testing and validation activities might be necessary. The potential value of the KER is clear, but the strategy to commercialize the services around it is still in development. The publication of the RAF app as a publicly and freely available tool requires a robust strategy to convert users of a free tool into customers for paid services, which is a significant (commercial) challenge. As such a more focused market entry, initially targeting public entities like public authorities and public service companies, is considered most suitable.

Market definition	The market has been clearly defined, with primary target customers identified as policy makers and urban service managers, and secondary markets including consultants and research organizations. A strong initial competitor analysis has been performed, identifying the main competitors and summarising strengths and weaknesses. The strengths and weaknesses of competitors should be analysed on an individual level, particularly for those competitors who offer the alternative solutions currently used by the target market. For the initial phase of exploitation, the focus should be on "public entities, such as public authorities, public bodies and/or public service companies. The user problems and needs should be re-defined to align and defined as per differentiated target groups, expressing more the actual problems, than what they need to do. The assumptions regarding the real problems and needs should be validated with the early adopters in first instance and then with the rest of the target groups.
Unique Value Proposition definition	The Unique Value Proposition is strong, leveraging the tool's status as a freely available online resource that offers transparency, appealing visualization, and a structured, step by-step assessment process. The expert confirms the Value Proposition canvas is clear and well-aligned. The UVP is built upon tangible benefits for the user. he UVP should be validated and backed with facts and data. The consortium should check the UVP with the identified early adopters (policy managers and urban service managers) and collect data from the project's testing phase to provide sound information on the value the RAF offers. The UVP messaging should initially be sharpened to address the specific problems of public entities, which have been identified as the most adequate first adopters.
IPR/Intellectual assets management	The IP strategy is very clear: the RAF is open access but not open source, cannot be commercialized by third parties, and requires acknowledgment when used. This provides a clear legal framework. Still, the IPR strategy must clarify the ownership of the tool, the
	specific usage rights for third parties, and the chosen protection mechanism (e.g., specific open-source or creative commons licenses).
Use/business model	A service-based use model has been established, focusing on offering "Knowledge development and transfer and advanced consultancy services" such as training courses, capacitation programs, and tailor-made consultancy. the use model for services like "knowledge development and transfer" needs to be clarified and better defined. The business model, which relies on generating revenue from services around a free tool, is inherently more difficult to present as a strong investment case compared to a direct product sales or SaaS model. The consortium should reflect if there are different use models for each target market, or one single use model applies to all". A single service offering may not be suitable for all identified customers.

	To avoid diluting efforts and resources, the business model should initially be focused on the primary target group, and the early adopters in particular. The service offerings should be tailored specifically to the problems and needs of this core group before expanding to secondary markets.
Exploitation Risks	The risks most critical to the exploitation are identified, with sufficiently robust contingency measures. The analysis should be considered as the baseline and continuous monitoring should be applied, to ensure that any additional risks are included and that any potential changes in the likelihood and impact of the risk are identified as they occur. It is recommended to include the monitor and updating of the analysis as an integral part of the exploitation pathway.
Planning of next steps	The viability of this business model depends entirely on the market's willingness to pay for support services related to a free tool. The exploitation roadmap plans a post-project "Survey (of) the interest of potential users" which will then be used to "Define the market entry strategy". It is critical to execute this survey to validate the demand for the proposed paid services and refine the business model based on real market feedback.
Further support	The consortium could consider to request support for the development of the business plan which supports them in further advancing on the exploitation strategy and define a concrete pathway for the KER to roll-out into market, The business plan allows to drill deeper into the specific aspects related to the Decision Support System and contribute to generate a more detailed and solid pathway towards actual exploitation.

KER3: ICARIA RAT (Resilience Assessment Tool)	
Issues	Assessment and Recommendations
Maturity of the KER	As per provided description and content, the KER seems to be in a slightly less mature state than the other 2 KERs, a conclusion that is reflected across its technological, commercial, and investment readiness. The technological readiness suggests a stable foundation, as the noting that the software is in-house build and thus easily customizable". This suggests that the core technical components are in place and considered controllable by the development team. The commercial readiness of the RAT is at a low level. The foundational market research and strategic planning are still underdeveloped and require improvements.

	The investment readiness is also low, with legal and business model gaps that would prevent consideration by external investors.
Market definition	The beneficiaries have completed an initial identification of their target market, which have been further segmented this into primary customers. Nonetheless, further work is needed on the customer definition which requires more refinement and focus. The development of the RAT is well-aligned with the significant market trend of increased regulatory requirements for critical infrastructure.
	The description of user needs currently focuses more on the tasks users perform rather than the actual problems they need to solve. It is crucial to redefine these needs from a problem-centric perspective and then validate them with potential customers to ensure a proper problem/customer fit. The description of "Adopters' problems/needs" should be refined to focus solely on the problems faced by the identified early adopters, not all primary users. It is essential to engage with these early adopters to validate the assumptions made about their problems, needs, and the value the RAT could provide to them. The competitor analysis is not robust enough. A robust competitor analysis is recommended based on the "alternative solutions" that potential users are currently using to solve their problems.
Unique Value Proposition definition	The UVP is supported by a clear list of competitive advantages and an initial UPV has been articulated. It is important that the "UVP is validated and backed with facts and data. Check the UVP with early adopters and collect facts and data from the testing phase of your project". The current UVP must be tested with real users to confirm it is compelling and addresses their actual problems. It is advisable to continuously double check that the UPV aligns with the competitive advantages as defined before and to ensure the canvas is updated as the definition of the KER progresses.
IPR/Intellectual assets management	The consortium does not define the IPR Strategy: even though IPR issues might apply". The lack of a clear IP position is a critical point in defining a solid exploitation pathway and the implications for different partners and the related business model.

Use/business model	The use model "needs to be further clarified and detailed". Without a validated market and a clear plan for revenue generation, a credible business plan cannot be established. The initial go-to-market efforts should focus on a more specific segment: "public entities, such as public authorities and public bodies, and the urban planners and risk managers in this type of entities". The model is based on the assumption that users will pay for support services related to a free tool. This assumption has not been proven yet and therefore it is necessary to validate the market's willingness to pay for these services, which can only be done after completing the recommended market research to understand the real problems and needs of the target market.
Exploitation Risks	The risks most critical to the exploitation are identified, with sufficiently robust contingency measures. The analysis should be considered as the baseline and continuous monitoring should be applied, to ensure that any additional risks are included and that any potential changes in the likelihood and impact of the risk are identified as they occur. It is recommended to include the monitor and updating of the analysis as an integral part of the exploitation pathway.
Planning of next steps	The exploitation roadmap is very preliminary, with the main action being to "Explore interest from potential users" via a survey, indicating that basic market demand has not yet been established.
Further support	The consortium could consider to request support for the development of the business plan which supports them in further advancing on the exploitation strategy and define a concrete pathway for the KER to roll-out into market, The business plan allows to drill deeper into the specific aspects related to the Decision Support System and contribute to generate a more detailed and solid pathway towards actual exploitation.

7 Annex A: Memorandum of Understanding (MoU)

1. Valorisation and exploitation of … (please refer to the specific KER)

1.1 Agreement between partner, partner, partner ……

1.2 The following Memorandum of Understanding is made on the dd/mm/yyyy by and between

- **Partner a**, VAT …, registered in …, hereinafter referred to as …
- **Partner** b, VAT …, registered in …, hereinafter referred to as …
- **Partner** c, VAT …, registered in …, hereinafter referred to as …
- ………

Individually referred to as a "Party" or collectively as the "Parties".

1.3 Background of the Agreement

During the (name of the project) project's life the KER was developed… *(clearly describe the KER)*

As per consortium agreement of the Project signed by the Parties, (number of Section): Results, … Results are owned by the Party that generates them.

BOOSTER

Partner a, b, c, x, y and z contributed to the generation of the KER. Each one contributed in the following way:

- Partner a, …
- Partner b, …
- Partner c, …
- Partners x, …
- Partner y, …
- Partner z, …

Upon successful conclusion of the project activities, Parties agreed to jointly define the best way to exploit and valorise the KER.

Partners a, b, c, … expressed the willingness to further valorise and exploit the above-mentioned KER, securing the needed resources, while partners x, y, and z agreed to give to partners a, b, c, … the full right to exploit declaring to have nothing to claim.

Given the uniqueness and further impact potential of KER/s above mentioned, all Parties through this agreement aim to define clear roles and modalities to exploit the programme beyond the grant received from the European Commission.

1.4 Purpose of the Agreement

The agreement is therefore aimed at clarifying and regulating

A. Scope and objectives of KER
B. Use of the brand *(example)*
C. Use of the data collected via the platform *(example)*
D. Use of the DB (software) *(example)*
E. Procedures and Roles of the Parties *(example)*

2. Scope and objectives of KER ……

The Parties agree that KER is … (KER description)
The KER is built around… and it is implemented through:

A. A network(s)-based outreach approach; *(example)*
B. …;
C. …;
D. ….

3. Use of the brand ….

…

4. Use of the data collected

…The registered data are the property of each of the Parties, who can use them for other activities in respect of GDPR and only for non-competing purposes with the current agreement (to be finetuned by partners legal offices).

5. Use of the ….

5.1 Procedures and Roles of the Parties

All Parties shall appoint 1 person within their respective organisation as the first and foremost contact point for ensuring swift and clear communication between the Parties and for implementation of the exploitation plan for this KER as approved by [name of the project] and annexed to this MoU.

The initial persons responsible for being the contact point are:

- Partner a: Name, email address, telephone number
- Partner b: Name, email address, telephone number
- Partner ...

All partners will be informed of changes in the contact points in a timely fashion, not exceeding 5 working days from the moment the appointment from the organisation.

Partners a, b, c, ... who expressed the willingness to further valorise and exploit the KER will proactively look for potential business development opportunities. Each time one of the Parties is clearly informed by a potential customer, the Party must inform the other Parties' relevant contact points and receive organisational approval (X out of X) to proceed.

It is the responsibility of each Party to ensure the contact points of the other Parties are informed using, if necessary, more than one communication channel (*e.g., email, WhatsApp, phone, etc*). It is the responsibility of the other Parties to ensure the approval to proceed (or denial thereof) is communicated back to the Party in a timely fashion, not exceeding 1 working week (5 working days) from the moment the latter's communication has reached them.

5.2 Dedicated KER management (in the case of a horizontal governance set-up – to be finetuned according to the governance set up chosen by the concerned partners, before the end of the project))

The Party in charge of any new contract will inform all partners about the client, the scope of the contract and foreseen role for each partner (if possible and to different degrees). In order to progress with a new programme, partners must agree on its relevance and viability. Parties have 5 working days to register non-agreement, otherwise the proposal will be considered suitable.

When the contract is finalised, agreed by all Parties and service sold to the client, the Party in charge will act as main contract manager and coordinator, responsible and liable for the smooth implementation of the envisaged activities throughout all phases.
The partner who secures the contract should also perform a "client financial check" and all Parties will be paid promptly upon payment from the client according to the payment schedules agreed upon.

The Party will be the interface between the client and the Parties and will also be responsible for proposing the allocation of resources among partners.

5.3 Promotion and marketing

Parties a, b, c, ... who expressed the willingness to further valorise and exploit the KER will ensure the proper outreach, using their networks and contacts (social media, newsletters, websites) to promote the KER toward the target markets and early adopters initially identified in the exploitation plan annexed to this MoU.

The most suitable party to deliver the communication activities will be decided on the basis of the scope of the contract and the main target audience.

Cost of marketing and sales activities will be split among partners according to the provisions of the exploitation plan for the current KER.

5.4 To summarise:

Activity	*Party responsible*	*Cost split between parties (%)*
Programme management and coordination	*Party who secured a contract*	
KER and methodology management	*...*	
Innovation and IPR management		
KER update		
Outreach and communication	*...*	

6. Intellectual Property Rights and NDA

The Parties acknowledge that nothing in this Agreement shall affect any pre-existing (background) and future (foreground) ownership of any intellectual property rights.

Dedicated NDA will be developed and signed between Parties and customers every time needed.

7. Miscellaneous

In the event of further participation in call for proposals covering actions that fall in the scope of this Agreement, the parties mutually recognize a first right of information and best effort to bid together.

This Agreement is at-will and may be modified by mutual consent of all the Parties. This Agreement shall become effective upon signature by the authorised officials and will remain in effect until modified or terminated by any one of the Party by mutual consent. In the absence of mutual agreement by the Parties this Agreement shall remain in force for twenty-four months.

Any dispute that might arise concerning this Agreement shall be settled amicably.

8. Date & Signatures

FOR [please insert name of participant or potential or current partner]

Partner a: Name, Position

Partner b: Name, Position

Partner c: Name, Position

8 Annex B- The Lean Startup methodology

To contribute to the sustainability plan and to dissemination activities, it is important to further focus on the problems the novel solution is addressing, who are the ones who feel this problem the most (the users of the solution, the target group of dissemination activities, your "customers"), the unique value proposition (what makes the novel solution much better than current ones, the pivot for messages to be used for the messages to be delivered during dissemination) and to identify how to reach customers/users out (use mode and distribution channels). It is also important to identify the costs of providing our target groups with the novel solution how to monitor progresses and how to cover costs incurred (sustainability).

The Lean Canvas is a tool that can help in these crucial activities. The Lean Canvas is an adaptation of Business Model Canvas by Alexander Osterwalder which Ash Maurya[7] created in the Lean Startup spirit (Fast, Concise and Effective startup). It focuses on problems, solutions, key metrics and competitive advantages.

Among the different type of canvas, the lean business model canvas, by Ash Maurya, is the most suited for R&D projects. It is a powerful tool to be used by consortia to further develop the characterization of their KERs, prepare the materials to be discussed at meetings and draft the exploitation/business plan for a KER.

8.1 How to approach the use model

The use model or "business model" is the plan for the creation of impact (successful delivery of a solution), identifying, the intended "customer" base, the result (product/service), sources of revenue and details of financing. It describes the way in which "value" can be extracted from an exploitable R&D result and impact generated.

When working on the "use" model it is important to focus on the following elements:

<table>
<tr><td colspan="2">Your objective
• Why am I doing this thing?
• Which are my goals? (Best and worst scenario)
• Am I really better/different?</td></tr>
<tr><td>Global market
• Competitors
• Incumbents
• Investors (geography matters)
• Level of investment</td><td>Local market
• Competitors
• Incumbents
• Investors
• Peculiarities</td></tr>
<tr><td colspan="2">6-12-18 months plan
• Product roadmap
• Cashflow
• Valuation target
• KPIs
• Next step</td></tr>
</table>

[7] For more information about this canvas, please refer to the blogpost explaining Lean Canvas and the ideas behind it on his website: http://www.ashmaurya.com/2012/02/why-lean-canvas/

Every "customer" has a problem, every problem has a solution

When working on the use model, it is crucial to start from the problem not from the solution. New initiatives (including spin-offs) fail because their offer (a product, a service, a license) is not designed for the intended users, "customers". Every "customer" has a problem; every problem has a solution. Vice versa, not every solution has a problem, not every problem has a customer. Brainstorm and identify the problem (forget the solution) focus on the problem, identify a common definition.

Early Adopters

To develop the exploitation model, it is important to look at early adopters and how to go from early adopters to "early majority". Innovators are the ones that "use" the "alfa" version (2,5%, often the industrial partner in an R&D project); early adopters are the customers ready to "use" the "beta" version (13,5%). Next step is to reach the "early majority" (34%). New initiatives fail before reaching out the early majority and this is connected with the capability to reach early adopters.

Identify the "customers", who will pay, focus on the riskier ones and describe them in the most specific way. Why that customer has that problem is the way to select the assumptions (how they deal with the problem, what are they looking for). Focus on the most important one, the one that, if not validated, will make everything fall down. UVP

The Unique Value Proposition, or Unique Selling Proposition (USP), is a clear statement describing the benefits of the novel offer, how you solve your customer's needs and what distinguishes you from the competition. It is clearly related to the customers' needs and how their problems are solved so far.

In defining the UVP you do not want a "point of parity" when your features are similar to the ones of the competitors". What counts are the points of difference, what you do, that the others do not and that matters to the customers. You do not want to be better than your competitors, you want to be better for your customers. Do not imitate/mirror competitors. Keep in mind customers, not competitors.

8.2 The Lean Canvas

For preparing the Exploitation Plan (your business plan) of a R&D result and define the use mode, it is useful to work with the Lean Canvas. The Lean Canvas is an adaptation of Business Model Canvas by Alexander Osterwalder which Ash Maurya[8] created in the Lean Startup spirit (Fast, Concise and Effective startup). Lean focuses on problems, solutions, key metrics and competitive advantages.

The canvas is a good tool to focus on the exploitation model and start collecting information for the exploitation plan. Among the different type of canvas, the lean business model canvas, by Ash Maurya, is the most suited for R&D projects. It is a powerful tool to be used by the partners to further develop the characterization of their KERs, prepare the materials to be discussed at consortium meetings and draft the exploitation/business plan for a KER.

The lean canvas helps to fine-tune and develop the exploitation strategy for a KER having in mind four questions:

[8] For more information about this canvas, please refer to the blogpost explaining Lean Canvas and the ideas behind it on his website: http://www.ashmaurya.com/2012/02/why-lean-canvas/

1) Who is my "customer"?

2) What is "her/his" problem? How to fill out a Lean Canvas

3) How does "She/he" solve the problem now?

4) Is our solution more efficient than the current one?

The end goal of the lean canvas is that an unknowing third-party will be able to review the information provided and understand what the KER and its use is about. They will understand the problem in focus, the customer groups that you target, the solution you provide, how it differentiates from competitors, how you intend to create value, etc. The lean canvas is very important for an effective implementation of dissemination actions. Due to this, it is very important to avoid the use of highly technical language, abbreviations etc. They can result in third parties not understanding the nature of your KER.

Below a description of the main steps to draft the canvas.

1) **PROBLEM** - find 3 main problems you are addressing.

Explain: ***What*** is the problem and ***why*** is it a problem.
Additionally, attempt to add numbers or quantifiable measures that will clearly highlight the scale of the problem. Describe EXISTING ALTERNATIVES - Find out how they are solving the problem now (today's alternatives)

2) **CUSTOMER SEGMENT** - identify who has the problem, define target customers (do not confuse with users).

Be clear on explaining the geographic location of your customers, the industry in which they are operating in, as well as connecting them to the problem in question.
EARLY ADOPTERS - find a small niche that is having the biggest problem, the ones that suffer the most (early adopters).
These will be the first customers of your solution; Be sure to find as much information about these as possible. Explain the geographic location, connect them to the problem, explain exactly why these will be the first adopters, clarify your current connection to them etc.

3) **UNIQUE VALUE PROPOSITION**

Define your UVP based on the today's alternative, what makes your product/service more efficient for your customers, a single and compelling sentence that makes everybody understand why you are far better (your features need to be compelling to the customers' needs, otherwise are irrelevant to clients).
Ensure that you clearly define how you differentiate from alternative solutions, and why the customer will come to you; Explain the ***uniqueness*** of your solution.
Provide facts and data, explaining the performance of your product compared to alternative solutions (efficiency increase of 20%, decreased energy consumption of 10%, 30% fewer development costs etc.).

4) **SOLUTION** – outline the main features of your solution.

When your features are similar of the ones of the competitors, this is an equality. What matters are the points of difference! What you do, that the others do not do and are what matters to the clients.
Be sure to explain the format of your solution (is it a machine, an equipment, a software, a service, a process, etc.), what it does, and how it does it.

5) **CHANNELS** – How will you reach your customers?

Be sure to investigate whether the chosen channels are suitable for your choice of customers and consider whether they will be enough to establish the needed reputation on the market.

6) KEY METRICS

key activities you will measure to track the success (e.g. units sold, users registered, retaining users, paying customers, number of complaints …)

7) UNFAIR ADVANTAGE – what is it that gives you an advantage in front of the competition? Something that can't be easily copied or bought.

This could be IPR, being first movers on new technology that takes years to develop etc. Be sure to explain, *why* the listed points provide you with an advantage. It can be difficult for third-parties to understand if they do not have a wide array of knowledge regarding your industry.

8) COST STRUCTURE

which will be the main costs when the solution is ready for the market (e.g. customer acquisition costs, distribution costs, hosting, people etc). As with revenues, estimate the total costs issued after 6 months and 3 years along with the estimated cost of each "cost-entity". This will connect your revenues to your costs.

9) REVENUE STREAMS

Which will be the main revenue streams when the solution is ready for the market. Explain how each of them will generate revenue and how much you expect to generate from each stream.
Estimate revenues for seed stage after 6 months and after 3 years. Quantify amounts and prices by detailing, for example, the expected amount of services provided and paid, amount of licenses sold at which prices etc.

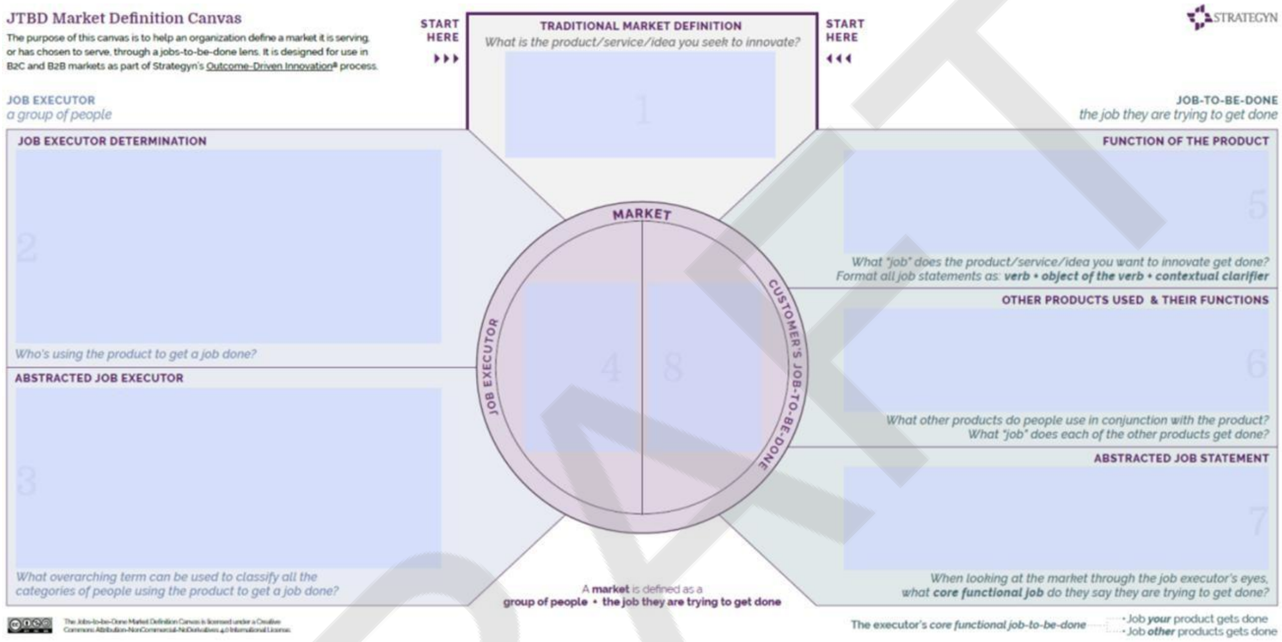
After you finish the exercise, test your hypothesis "out the lab", with at least 2 to 3 real potential customers. Validate the following assumptions:

- Are the problems you assume really the ones? Is your solution to solving their problem?
- Are the features your solution is offering the ones the market needs and looks for?
- Are the explanations provided in the canvas sufficient to provide the customer with an understanding of your project?

Write down the feedback and update, revise, iterate the Canvas accordingly.

8.3 The Market Definition Canvas

According to Ulwick and Ted Thayer all markets can be described by what job the user wants to get done. The Jobs-tobe-Done Market Definition Canvas make the Lean Startup methodology more effective in better finding and defining a market up front. Generally, people buy products and services to get a "job" done, where a job is defined as a task people are trying to accomplish, a goal or objective they are trying to achieve, a problem they are trying to resolve, something they are trying to avoid. According to this assumption, a market is best defined as a group of people and the job they are trying to get done. Such concept assumes more importance when dealing with New and Disruptive Markets.



8.4 How to fill out the Market Definition Canvas

The Market Definition Canvas works for both B2C and B2B applications. While it is optimized to define single-sided markets, it can be used twice to define both sides of a double-sided market. For component manufacturers who sell to OEMs or who are at the top of a long distribution chain, a canvas can be completed for each constituent in the distribution chain, including the end-user, as each constituent has its own unique job to get done. The definition of a market as a Job to Be Done, is structured in 8 steps:

- **1. Traditional market definition**

During this phase, research teams have to define what is the product/service/idea they seek to innovate. This is used as the grounding point, as the subsequent steps will help transition from a product view to a jobs-to-be-done view of the market.

- **2. Job executor determination**

The focus on "jobs to be done" begins with this step by asking who's using the product (or who would use the product once released) to get a job done. The goal is to reveal the diverse set of potential product users by producing a list of all the categories of people who use or would use the product to extract its value. The focus here is on the job executors, not on influencers, economic buyers, people who support the product throughout its lifecycle, or other customer types.

For example, if we address circular saw market, we can conclude that finish carpenters, framers, roofers, general contractors, electricians, and plumbers use circular saws (all categories of people who use circular saws).

• **3. Abstracted job executor**

Next research teams have to define the one overarching term that can be used to classify or describe all people using, or potentially using, the product as a single group. Since the definition of a market needs a group of people + the job to-be-done, when defining the group of people, it is not suggested to use an actual job title. Instead, an all-inclusive term that encapsulates all job executors, usually a higher-level, generic term has to be found. Following the previous example, abstracted roofers, framers, plumbers, finish carpenters, etc., can be grouped into a higher-level category using the term "tradespeople". For consumer product goods, the job executors are often referred to simply as "consumers."

• **4. Job executor**

Since more than one way to describe the "group of people" could be identified, at this stage research teams have to choose a label that fits all types of people using the product, service, or idea. Some examples include the use of the term surgeons over cardiac surgeons, tradespeople over tradesmen, educators over teachers, accountants over tax preparers, or consumers over adults, to be more inclusive. It is important to define the "group of people" before defining the job-to-be-done, as representatives of the group will be interviewed to determine, from them alone, the way they define the job they are trying to get done.

• **5. Function of the product**

Products don't have jobs-to-be-done; people do. But to uncover the targeted group's job-to-be-done, it is often helpful to start by understanding what function/job the innovative product performs.

The typical question is: what does/will the new product or service help the group of people accomplish from a functional perspective? This can be investigated internally or, better, by going directly to the "group" of people (defined in step 4). Responses have to be collected into a single statement according to this formula: "The product will help the group of people (verb) + (object of the verb) + (contextual clarifier (optional))". For example, a boiler may be used to "heat + water + to the desired temperature," or a dental drill may be used to "contour + the shape + of a tooth."

This is not the customer's job-to-be-done yet. It is the function or the job that the product gets done, which is often only part of the job the customer is trying to get done. For example, while people may use a kettle to "heat water to the desired temperature," the overall job they are trying to get done may be to "prepare a hot beverage for consumption."

The goal of the market definition canvas is to help innovators uncover the job-to-be-done as perceived by the customer, not the product developer.

• **6. Other products used and their functions**

To get a feel for the entire job customers are trying to get done, research teams have to analyse what other products they use immediately before, while, and immediately after using the innovative product/service. For example, when tradespeople use a circular saw to "cut wood," what other products are they using in conjunction with a circular saw? Perhaps they are also using a T-square, a measuring tape, sandpaper, and (or) a pencil. Once this list of products is ready, the functions / jobs that each of these other products gets done for the group of people has to be documented, using the same format used previously: (verb) + (object of the verb) + (contextual clarifier (optional)).

For example, it can be found through customer interviews that while the function of the circular saw is to "cut wood" (a job statement), that tradespeople use a T-square to ensure they "make a cut in a straight line" (a job statement), and that they use a pencil to "mark the cut path" (a job statement).

• 7. Abstracted job statement

Putting all the pieces together helps reveal the customer's ultimate job-to-be-done at the right level of abstraction. It is assumed that the new product is getting part of a job done and people are using other products to complete the entire job-to-be-done. The customer's job-to-be-done has to be defined in a way that includes the new product's function (job) and rationalizes why customers are using all these other products as they cobble together a complete solution. For example, tradespeople are using a circular saw along with other products so they can "cut wood in a straight line" (the abstracted job statement); accountants use tax preparation software in conjunction with other products so they can "formulate and execute a tax strategy for a client" (the abstracted job statement).

Defining the market at this level of abstraction allows an evolvement of the new product over time to help customers get more, and eventually all, of their job done. It offers the innovator a built-in path and vision for growth, tied directly to what customers are trying to accomplish.

• 8. Customer's Job-to-be-Done

Now the customer's job can be documented. If there are multiple versions of the job statement, research teams will have to work with job executors to gain consensus on the best version.

Steps 5-8 need the use of customer interviews. If the job of the product is not represented, might be the job statement was abstracted to too high a level.

The market defined as a Group of people (Step 4) + Job-to-be-Done (Step 8) will facilitate the application of the Lean Startup approach and better use further tools.

8.5 The Value Proposition canvas

The Value Proposition Canvas (VPC) is used to facilitate R&I projects clarifying the customer needs & how to create value for them. Osterwalder introduced this concept at depth in his book Value Proposition Design. The Value Proposition Canvas helps teams deepen their understanding of target customers. This allows to avoid one of the most common mistakes when developing an innovation: building something that nobody wants.

The Value Proposition Canvas is a plug-in tool to describe the Value Propositions and the target Customer Segments in more detail and evaluate the "fit" between the value the solution intends to create and the expectations the selected customers' segment. The Value Proposition Canvas can be used before, during and after developing an in-depth knowledge of the customers. If used before, it will highlight what is needed to learn about customers and test about value propositions. If used after, it will help analyse and evaluate the "fit". The Value Proposition Canvas can be applied to new and existing value propositions and customer segments alike.

An example of the Value Proposition Canvas

Customer job

- Providing monitoring/control system with self-electric power production capabilities (operating off grid)

Customers pains

- Reliability (over time and across weather conditions)
- Certification (Certified solutions)

Gains

- Plug and play (easy to install)
- Low maintenance /operation costs
- Capability to operate over a wide range of conditions (including limitations on pressure/flow of the fluid to be monitored/controlled)
- Self-monitoring
- Low dismantling costs

Product/service

- Micro-generator (activated by pressure drop in gas/water pipes)

Pain relivers

- Operating from inside the valve housing (protected from thieves/vandals)
- Produces energy 24/7 under any condition - Start working at low pressures (0,5 bar)
- CE / ATEX Zone 1 certification

Gain creators

- Pre-assembled (easy and fast to install)
- Embedded self-diagnosis capabilities
- Data exchange with third party devices
- No need for authorisation for installation
- No consumption of monitored fluid

Resulting UVP

The advanced micro turbines »plug and play« micro generator allows providers of electronic systems to offer off grid real time monitoring and control solutions with the highest reliability over time and across operating conditions, with no need of permission for installing generators unlike solar panels

8.6 How to fill out the Value Proposition Canvas

The VPC is based on 2 main concepts:

- the Value Map: the set of value proposition benefits that are designed by R&I projects to attract customers.
- the Customer Profile: the set of customer characteristics that R&I projects assume, observe and verify in the market.

The Customer profile section has to be filled in by making assumptions on:

- jobs: it specifies what target customers are trying to get done. As an example, in case of taxi passengers as customers, they generally try to call a taxi, find a taxi, pay the taxi driver, etc.
- customers pains: it makes assumptions on what annoys the customer before, during & after getting job done. This is the space to uncover and document what frustrates target early adopters. There is the need to detail what creates friction and to learn about the things early adopters are desperate

to solve. Following the previous example, taxi passengers may not want to wait for long time, be with an unsafe driver, etc.

- customers gain: it makes assumptions on what outcomes & benefits customers want. In the previous examples, taxi passengers may want to arrive on time, a fair price, an easy payment.

By doing this, an effective Customer Profile Summary will be created, which allows to have an immediate visualization of the customer profile.

Then it is the turn of the Value Map which describes explicitly how a product/service creates value, by specifying:

- products/services: This is how the value proposition manifests itself. In this space it's possible to be more specific about the proposed innovation.
- pain relievers: they specify exactly which customers pains the proposed products/services alleviate specifically. This space is useful to document how the innovative product or service could relieve the existing customer pains.
- gain creators: it describes how the innovative product or service could fulfil the desired customer gains. The "Pain relivers" and "Gain creators" spaces are not designed to describe features. Rather, they are designed to describe ways in which the desired outcome (relieved pain, desired gain or jobs to be done) could be fulfilled.

Finally, the Customer Profile and the Value Map have to be used to establish fit. Strategyzer defines fit as: "when your value map meets your customer profile-when your products and services produce pain relievers and gain creators that match one or more of the jobs, pains and gains that are important to your customer."

9 Annex C - Follow-up funding opportunities

9.1 EIC Transition

The EIC Transition funding scheme builds on promising research results to demonstrate and mature the technology and develop business plans.

EIC Transition funds innovation activities that go beyond the experimental proof of principle in laboratory to supports both:

- the maturation and validation of your novel technology in the lab and in relevant application environments
- the development of a business case and (business) model towards the innovation's future commercialisation. Grants of up to €2.5million and more are available to validate and demonstrate technology in application-relevant environment and develop market readiness.

EIC Transition has open funding for projects in any field of science or technology as well as challenge driven funding on specific strategic fields.

Single applicants (SMEs, spin-offs, start-ups, research organisations, universities) or small consortia (max 5 partners) may apply.

https://eic.ec.europa.eu/eic-funding-opportunities/eic-transition_en

9.2 EIC Accelerator

The EIC Accelerator supports individual Small and Medium Enterprises (SMEs), in particular Startups and spinout companies to develop and scaleup game-changing innovations. In some cases, small mid-caps (up to 500 employees) are supported.

The EIC Accelerator provides substantial financial support with:

- grant funding (non-dilutive) of up to €2.5 million for innovation development costs,
- investments (direct equity investments) of up to €15 million managed by the EIC Fund for scale up and other relevant costs.

In addition, EIC selected companies receive coaching, mentoring, access to investors and corporates, and many other opportunities as part of the EIC community.

Applications can be submitted at any time through the EIC platform. Applicants have to submit a video pitch, a slide deck and respond to a short set of questions about their innovation and their team.

Applications that meet all the criteria at the remote evaluation stage and are assessed positively by the EIC jury but not recommended for funding, will be awarded a Seal of Excellence to help them secure funding from other sources. Companies with a Seal of Excellence can also get support from EIC Business Acceleration Services.

https://eic.ec.europa.eu/eic-funding-opportunities/eic-accelerator_en

9.3 EIC Prizes

The EIC Prizes are awarded to whoever can most effectively meet a pre-defined challenge, without prescribing how that challenge should be solved. These will boost breakthrough innovation across sectors by fostering cutting-edge solutions which bring major benefits to citizens and society.

In 2021 the following challenges are defined:

- EU Prize for Women Innovators (3 prizes of €100k, 1 prize for 'Women Innovators' main category, 1 prize of €50k for 'Rising Innovator' category)
- The European Capital of Innovation Awards (iCapital) (total budget €1,8 million, European Capital of Innovation winner €1 million)
- The European Innovation Procurement Awards (total budget €300k)
- The European Social Innovation Competition (total budget €200k)

9.4 Fast Track scheme to apply for the EIC Accelerator

The 'Fast Track' scheme is a novelty under Horizon Europe and a specific process applicable to the EIC Accelerator. It provides for a specific treatment of applications that result from existing Horizon Europe or Horizon 2020 projects. Under the Fast Track scheme, applicants do not apply directly to the EIC Accelerator call. Instead, a project review is carried out by the responsible funding body to assess the innovation or market deployment potential of an existing project, to decide whether the project is suitable for support under the EIC Accelerator.

The responsible funding body can submit the outcome of the projects review to the EIC Accelerator, if the project review concludes that the following conditions are met:

- the proposal meets the two first criteria of the EIC Accelerator (excellence and impact),
- there is no duplication of funding of activities to be supported under the EIC Accelerator with the existing grant, and
- the applicant meets the eligibility criteria for the EIC Accelerator.

The applicant will then be invited to prepare a full application for the EIC Accelerator to one of the cut-off dates within the next 12 months following initial review. They will receive support through the EIC artificial intelligence-based IT platform and coaching.

9.5 Ad hoc grants for EIC Pathfinder and EIC Transition grant holders

The grant holders of EIC Pathfinder projects (including grants resulting from certain EIC pilot Pathfinder, FET-Open and FET-Proactive calls) and of EIC Transition projects are eligible to receive ad hoc grants with fixed amounts of up to EUR 50 000, as specified in the relevant call sections of the EIC work programme.

In line with Article 47(3)(b) of the Horizon Europe Regulation, the ad hoc grants are not subject to any call. They reflect the necessity and hence the possibility for the EIC to proactively support, at any stage of a project implementation, the assessment of any potentially innovative lead stemming from a EIC Pathfinder project, or reinforce the coordination and management of a Portfolio where needed.

These ad hoc grants fund either complementary activities to explore potential pathways to commercialisation (for EIC Pathfinder grant holders) or portfolio activities (for EIC Pathfinder and EIC Transition grant holders).

These ad hoc grants do not fund research or activities that were already foreseen in the original project. A maximum of three ad hoc grants can be awarded for each EIC Pathfinder project and more than three may be awarded in exceptional and duly justified cases. A maximum of one ad hoc grant can be awarded for each EIC Transition project. Any such ad hoc grant can be awarded to an individual grant holder or a group of grant holders.

EIC grant holders, after discussion with a EIC Programme Manager or following a project review, can apply for such an ad hoc grant.

9.6 The InvestEU Programme

The InvestEU Programme builds on the successful model of the Investment Plan for Europe, the Juncker Plan. It will bring together, under one roof, the European Fund for Strategic Investments and 13 other EU financial instruments. Triggering more than €372 billion in additional investment over the period 2021-27, the InvestEU Programme aims to give an additional boost to sustainable investment, innovation and job creation in Europe.

The Programme consists of:

- The InvestEU Fund which aims to mobilise more than €372 billion of public and private investment through an EU budget guarantee of €26.2 billion that backs the investment of implementing partners such as the European Investment Bank (EIB) Group and other financial institutions.
- The InvestEU Advisory Hub which provides technical support and assistance to help with the preparation, development, structuring and implementation of investment projects, including capacity building.
- The InvestEU Portal which brings together investors and project promoters on a single EU-wide platform, by providing an easily accessible and user-friendly database of investment opportunities available within the EU.

9.7 INTERREG EUROPE

Interreg Europe can help in the following ways:

- **Financial support** – funding is available for interregional cooperation projects, which have the potential to lead to longer-term collaborations and partnerships
- **Expand your network** – meet new like-minded partners, stakeholders, and business colleagues across Europe.

The DG also gives the opportunity to organisations to get some grants through calls for proposals. These are invitations for suppliers to submit a proposal on a specific commodity or service. A grant or a subvention is a direct financial contribution from the European Commission to support a specific action or project of a non-commercial nature, to cover eligible costs directly incurred by the beneficiaries.

For more information check here: http://www.interregeurope.eu/

9.8 EUREKA and Eurostars funding

Eurostars supports international innovative projects led by research and development- performing small- and mediumsized enterprises (R&D-performing SMEs). With its bottom-up approach, Eurostars supports the development of rapidly marketable innovative products, processes and services that help improve the daily lives of people around the world. Eurostars has been carefully developed to meet the specific needs of SMEs. It is an ideal first step in international cooperation, enabling small businesses to combine and share expertise and benefit from working beyond national borders.

Eurostars applies a decentralized funding procedure; participants do not receive funding directly from the EUREKA Secretariat or the EU. All funding to participants in approved projects is managed by their respective funding body and according to their national funding rules and procedures. These rules and procedures are dependent on the member countries involved in the project. Project partners are strongly advised to contact their National Project Coordinators (NPCs) and browse on the Eurostars in each country. https://www.eurostars-eureka.eu/

9.9 CASCADING GRANTS

Cascade Funding, also known as Financial Support for Third Parties (FSTP), is a European Commission mechanism to distribute public funding in order to assist beneficiaries, such as start-ups, scale-ups, SME and/or mid-caps, in the uptake or development of digital innovation.

This funding method aims at simplifying the administrative procedures, creating a light, SME-friendly application scheme, by allowing that some EU-funded projects may issue, in turn, open calls for further funding.

This scheme is based on the model of Erasmus students and was first introduced by the European Commission in Horizon 2020, the Framework Programme for Research and Innovation (2014-2020). It will be used also in the new Horizon Europe Framework Programme for Research and Innovation (2021-2027).

More information and open calls available here:

https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/competitive-calls

9.10 Seal of Excellence – EuroQuity Initiative

This initiative is dedicated to those companies who have received the Seal of Excellence from the EU Horizon 2020 SME Instrument Programme. Matchmaking activities and support services will be provided in order to facilitate their access to risk finance and enhance their visibility, through a specific on-line community based on the EuroQuity platform.

Each “Seal of Excellence” SME will gain in this way instant visibility among different actors: the main EU business angels’ networks, VCs, corporate investors and new business partners, at the same time investors will be guarantee on the quality of SMEs’ projects and their innovation potential. Free services will also be offered to these companies allowing them to grow on a European level:

- Visibility and access to European investors
- Possibility to pitch online in front of investors during e-pitch sessions
- Connections with National Contact Points of your Country

More information available here https://www.euroquity.com/fr/community/Access4SMEs--Seal-of-Excellence-5bb56459-4f88-4d3c-a2eb-8e4b6e865ea5/

9.11 European Green Deal

Background

On 11 December 2019, the Commission presented the European Green Deal, with the ambition of becoming the first climate-neutral bloc in the world by 2050. Europe's transition to a sustainable economy means significant investment efforts across all sectors: reaching the current 2030 climate and energy targets will require additional investments of €260 billion a year by 2030.

The success of the European Green Deal Investment Plan will depend on the engagement of all actors involved. It is vital that Member States and the European Parliament maintain the high ambition of the Commission proposal during the negotiations on the upcoming financial framework.
A swift adoption of the proposal for a Just Transition Fund Regulation will be crucial.
The Commission will closely monitor and evaluate the progress on this transition path. As part of these efforts, every year the Commission will hold a Sustainable Investment Summit, involving all relevant stakeholders, and it will continue to work for promoting and financing the transition. The Commission invites the investment community to make full use of the enabling regulatory conditions and ever-growing needs for sustainable investments, and authorities to take an active role in identifying and promoting such investments.

The Just Transition Mechanism

The Just Transition Mechanism (JTM) is a key tool to ensure that the transition towards a climate-neutral economy happens in a fair way, leaving no one behind. While all regions will require funding and the European Green Deal Investment Plan caters for that, the Mechanism provides targeted support to help mobilise at least €100 billion over the period 2021-2027 in the most affected regions, to alleviate the socio-economic impact of the transition. The Mechanism will create the necessary investment to help workers and communities which rely on the fossil fuel value chain. It will come in addition to the substantial contribution of the EU's budget through all instruments directly relevant to the transition.

The Just Transition Mechanism will consist of three main sources of financing:

1) **A Just Transition Fund**, which will receive €7.5 billion of fresh EU funds, coming on top of the Commission's proposal for the next long-term EU budget. In order to tap into their share of the Fund, Member States will, in dialogue with the Commission, have to identify the eligible territories through dedicated territorial just transition plans. They will also have to commit to match each euro from the Just Transition Fund with money from the European Regional Development Fund and the European Social Fund Plus and provide additional national resources. Taken together, this will provide between €30 and €50 billion of funding, which will mobilise even more investments. **The Fund will primarily provide grants to regions. It will, for example, support workers to develop skills and competences for the job market of the future and help SMEs, start-ups and incubators to create new economic opportunities in these regions. It will also support investments in the clean energy transition, for example in energy efficiency.**
2) A dedicated **just transition scheme under InvestEU** to mobilise up to €45 billion of investments. It will seek to attract private investments, including in sustainable energy and transport that benefit those regions and help their economies find new sources of growth.
3) **A public sector loan facility with the European Investment Bank** backed by the EU budget to mobilise between €25 and €30 billion of investments. It will be used for loans to the public sector, for instance for investments in district heating networks and renovation of buildings.

The Commission will come with a legislative proposal to set this up in March 2020.**The Just Transition Mechanism is about more than funding: relying on a Just Transition Platform, the**

Commission will be providing technical assistance to Member States and investors and make sure the affected communities, local authorities, social partners and non-governmental organisations are involved. **The Just Transition Mechanism will include a strong governance framework centred on territorial just transition plans.**

More information available here https://ec.europa.eu/info/research-and-innovation/strategy/european-greendeal/call_en

9.12 European Institute of Technology and Innovation

Under EIT's Knowledge and Innovation Communities (KICs) are partnerships that bring together businesses, research centers and universities. Through the KICs, EIT strengthen cooperation among businesses (including SMEs), higher education institutions and research organisations, form dynamic pan-European partnerships, and create favourable environments for creative thought processes and innovations to flourish. These partnerships are called Innovation Communities and each is dedicated to finding solutions to a specific global challenge, from climate change and sustainable energy to healthy living and food.

There are 8 Innovation Communities and each focuses on a different societal challenge:

- EIT Climate-KIC
- EIT Food
- EIT Health
- EIT Digital
- EIT Manufacturing
- EIT Innoenergy
- EIT Urban Mobility
- EIT Raw Materials

9.13 LIFE Programme

LIFE programme is the EU's funding instrument for the environment and climate action. The programme is divided into two sub-programmes, one for environment (representing 75% of the overall financial envelope) and one for climate action (representing 25% of the envelope).

- The programme includes large scale demos/pilots with focus on Environment and Climate Action; with clear impact aims during the project; and clear environmental/climate problem baseline (de-risk).
- Projects start at TRL 6-7 aiming up to 9 to bridge valley of death (income allowed – end-user important).
- The funding programme uses bottom-up approach (call-topics are broad) allowing proposers to define their solutions needed for their environmental context/problem.
- Focus is on making Environmental impacts in the EU.
- Even proposals from single EU beneficiaries are allowed.
- Proposers can apply in their own language.
- There is no set proposal budget limit.

9.14 Contracts and grants - access to business opportunities

Several different contracts and grants are regularly made available for companies or organisations who want to work with Directorate General (DG) for Internal Market, Industry, Entrepreneurship, and SMEs or apply for funding.

In the framework of public procurement contracts, DG Internal Market, Industry, Entrepreneurship, and SMEs regularly organizes calls for tenders. Calls for tenders are special procedures to generate competing offers from different businesses looking to obtain works, supply, or service contracts.

Those tenders/calls also give an insight in competitors' activities as well as ideas for partnerships and stakeholders. Furthermore, there are possibilities for winning contracts.

10 Annex D– Non-financial support

10.1 European Investment Project Portal (EIPP)

The European Investment Project Portal (EIPP) is the EU matchmaking portal, enabling EU-based project promoters – public or private – to reach potential investors worldwide. The Portal is a free service offered by the European Commission and is part of the Investment Plan for Europe, which aims to mobilise investment, boost economic growth and create jobs across the EU.

For more information check here: https://ec.europa.eu/investeuportal/desktop/en/index.html

10.2 Entrepreneurship and Small and medium-sized enterprises (SMEs)

The dedicated section on EU portal offers a wide focus dedicated to information on possible EU funding opportunities for SMEs and in general on what EU does for SMEs: https://ec.europa.eu/growth/smes
Furthermore, to know if a programme is relevant to your particular case, we strongly suggest that you contact your local Enterprise Europe Network partner, who can give you one-to-one advice and support in applying for EU funding. Contact details of the Enterprise Europe Network members: http://een.ec.europa.eu/about/branches/

10.3 Access to finance in Europe

University technology transfer offices (UTTOs) often perform the function of transferring technology and commercialising innovations emerging from the University sector to the market place.
For more information check here:
http://europa.eu/youreurope/business/funding-grants/access-to-finance/index_en.htm
This site can help to apply for loans and venture capital supported by the European Union
Click on your country to locate banks or venture capital funds that provide finance supported by the EU.

10.4 Tenders Electronic Daily

TED provides free access to business opportunities from the European Union, the European Economic Area and beyond.
Every day, from Tuesday to Saturday, a further 2,000 public procurement notices are published on TED.
You can browse, search and sort procurement notices by country, region, business sector and more.
Information about every procurement document is published in the 24 official EU languages. All notices from the EU's institutions are published in full in these languages. For more information check here:
http://ted.europa.eu/TED/search/search.do

10.5 Innovaccess - Intellectual Property Portal

Innovaccess aims to enhance Intellectual Property (IP) support services to Small and Medium-sized Enterprises (SMEs) to turn their Intellectual capital into commercial values and competitiveness.
The portal helps to protect IP rights and to understand IP security rules. For more information check here: http://www.innovaccess.eu/.

10.6 Dealflow

Dealflow is sponsored by the European Commission to support EU-funded innovations with fundraising, venture building and networking. It supports EU-funded projects from H2020.

Three typologies of support are foreseen:

- Venture-building: giving tailored support on challenging business topics (e.g. sales strategy, market sizing & research, organizational structure, and pitching);
- Fundraising (preparation): preparing investor materials and providing access to investor networks;
- Networking: introductions to industry experts, potential clients and new partners through their matchmaking platform, community & events.

https://dealflow.eu/

10.7 Innovfin

InnovFin – EU Finance for Innovators is a joint initiative launched by the European Investment Bank Group (EIB and EIF) in cooperation with the European Commission under Horizon 2020. InnovFin aims to facilitate and accelerate access to finance for innovative businesses and other innovative entities in Europe.

Innovfin makes available specific instruments for different typologies of financing.

Start-up and SME financing

- InnovFin Equity provides equity investments and co-investments to or alongside funds focusing on early stage financing of enterprises operating in innovative sectors covered by Horizon 2020, located or active in the EU or Horizon 2020 Associated Countries. InnovFin Equity is available via four products: InnovFin Technology Transfer, InnovFin Business Angels, InnovFin Venture Capital, InnovFin Fund-of-Funds
- InnovFin Guarantee SME guarantee provides guarantees and counter-guarantees on debt financing between EUR 25 000 and EUR 7.5 million, in order to improve access to loan finance for innovative small and mediumsized enterprises (SMEs) and small mid-caps (up to 499 employees).

Corporate finance

- InnovFin Emerging Innovators offers a range of tailored products which provide financing in support of R&I by small, medium-sized and large companies and the promoters of research infrastructure. It provides loans or guarantees directly or indirectly via financial intermediaries.
- InnovFin MidCap Guarantee provides guarantees and counter-guarantees on debt financing of up to EUR 50 million, in order to improve access to finance for innovative midcaps (up to 3 000 employees) which are not eligible under the InnovFin SME Guarantee.
- InnovFin Corporate Research Equity (in collaboration with EFSI) increases the supply of equity-type financing under the European Fund for Strategic Investments (EFSI) to large research and innovation (R&I) programmes and to innovative large mid-caps and small or medium-sized enterprises (SME). It addresses the market gap for large equity-type investment in the form of contingent loans, in particular with mid- to long-term repayments profile that are directly linked to product development cycles.

Science

- InnovFin Science (for research institutions and universities) aims at supporting research and innovation (R&I) investments by public or private research institutes/organisations and universities, including the financing of buildings and other infrastructure directly related to R&I activity. It provides different forms of debt or equity type financing

Thematic financing

- InnovFin Energy Demo Projects provides loans, loan guarantees or equity-type financing to innovative demonstration projects in the fields of energy system transformation, including but not limited to renewable energy technologies, smart energy systems, energy storage, carbon capture and storage or carbon capture and use, helping them to bridge the gap from demonstration to commercialisation. The product is deployed directly by the EIB.
- InnovFin Infectious Diseases provides financial products ranging from standard debt to equity-type financing for amounts typically between EUR 7.5 million and EUR 75 million, to innovative players active in developing innovative vaccines, drugs, medical and diagnostic devices or novel research infrastructures for combatting infectious diseases. The product is being made available directly through the European Investment Bank.

10.8 Startup Europe

STARTUP Europe is an initiative of the European Commission to connect high tech startups, scale-ups, investors, accelerators, corporate networks, universities and the media. The 4 main objectives of Startup Europe are to:

- Connect people
- Connect local start up ecosystems
- Help start-ups soft land in other market
- Celebrate entrepreneurs' success

In order to help build a strong European ecosystem where startups can thrive, Startup Europe is empowering 7 projects, funded under Horizon 2020, that are connecting local ecosystems across Europe. These projects will connect deep tech startup ecosystems and support cross-border activities for startups and scale-ups. The cross-border activities include the following: connecting tech entrepreneurs with potential investors, business partners, accessing skills, and services helping startups soft land in new international markets.

- Scaleup4Europe: The Scaleup Labs will provide deep tech start-ups with a structured open innovation approach in which they can achieve cross-border market success, through first successful collaborations with corporate customers, investors and/or public institutions.
- B-HUB FOR EUROPE: Will target deep tech vertical startups in the blockchain domain. The initiative is aimed at: discovering high-potential innovations, shaping suited proof of concepts and business models, providing specialised acceleration services to overcome current market barriers and assist the go-to-market process, unlocking new market channels with potential private/public customers, scaling up innovative businesses across five startups ecosystems in Europe: IT (Rome), FR (Paris), DE (Berlin), LT (Vilnius) and RO (Cluj-Napoca).
- The Scale-up Champions: Project builds on the premise of equalising opportunities of scaling up for startups across five countries represented through the partners of the consortium: Estonia, Lithuania, Poland, Denmark and Spain. Main activities targeting: corporate-startup collaboration, investment readiness and internationalization

- STARTUP 3: Will scout for top founding teams to identify (uptake) breakthrough innovations from deep tech verticals (i.e. built on tangible scientific discoveries or engineering/ technical advances). Then STARTUP3 will help them fine tune (upgrade) their technologies/ business models and align their value proposition to the actual market demand (the so-called Key Performance Areas – KPAs). Finally, STARTUP3 will bring together top deep tech startups/ SMEs and the most prominent corporate innovators – CVC arms, incubators and accelerators, and innovation labs (facilitated by clusters and digital innovations hubs – DIHs) with the aim of catalysing productive interaction (upscale).
- X-Europe: Brings together leading training, acceleration, events, and media companies from across Europe. Through the delivery of training, matchmaking & promotional services X-Europe will support 150 deeptech startups and help them to internationalize, grow across borders, and into developing frontiers.
- INNODEC - (Innovation Radar Data-based Identification & Commercialisation): Aims to close the gap between investors and research projects from both sides. On the one hand, this is achieved through placing investors/partners in contact with the research projects with the highest potential, and then on the other, to coach the projects on raising capital, identifying a business model and developing a sound go-to-market strategy. This approach will ensure scalability while simultaneously catering to the large diversity between projects and their needs.
- MediaMotorEurope: Will boost solutions that can address challenges. Its goal is to nurture high-potential European deep tech innovators, solving today's most prominent media industry challenges and support them in building the media solutions of tomorrow such as misinformation, accessibility, user interfaces and use of data. A large focus will be on deep tech solutions, such as AI and machine learning, and their potential application in the domain of media and creative industries.

10.9 Accelerators and Incubators

If the intention is to create a startup/spinoff, you are suggested to check Accelerators/Incubators in your area.

Here below there is a non-exhaustive list of international and pan-European Accelerators/Incubators networks:

- Startup Bootcamp: founded in 2010, Startup Bootcamp is a well-known global network of startup accelerators that offer an intense 3-month program. After Selection Days, 10 startups join diverse accelerator programs (Amsterdam, Istanbul, London, Barcelona, Copenhagen, Berlin, Eindhoven and Haifa) where they receive mentoring, free workspace, great networking opportunities, and pitching opportunities to over 400 investors on Investor Demo Day.
- Startup Weekend: Startup Weekend brings together developers, designers, product managers, aspiring entrepreneurs, marketers and tech enthusiasts to launch a startup in 54 hours. These weekend-long events are focused on learning through creating, building professional relations and networking.
- StartupBus Europe: is a unique project founded in 2010. It is a hackathon for European tech entrepreneurs
("buspreneurs") where they compete over the course of a 3-day bus ride on the way to Vienna.

- IMPACT Accelerator: (Internet Mobile Projects Accelerator) offers premium acceleration services for European mobile start-ups and small and medium-sized business for a period of six months. It operates in several locations in Spain and Italy and given it is one of the 16 consortia selected by the European Commission within the framework of the Seventh Framework Programme, the selected start-ups in the extended phase can count on the Buongiorno Headquarters in 14 countries.
- Wayra: launched in 2011, Wayra is a startup accelerator financially backed by Telefonica, one of the biggest telecommunication companies in the world.

Below is a non-exhaustive list of Accelerators/Incubators in Member States:

- Austria: i5invest, INiTS, Up to Eleven, Kubator
- Belgium: Telenet Idealabs, NEST'Up
- Bulgaria: 3Challenge, Eleven, LAUNCHub
- Croatia: Zip
- Czech Republic: StarCube, Startup Yard
- Denmark: Accelerace
- Estonia: GameFounders,Garage48, Startup Wise Guys
- Finland: Startup Sauna
- France: TheFamily, Numa (Le Camping)
- Greece: OpenFund
- Germany: Axel Springer Plug & Play, hub:raum
- Hungary: iCatapult
- Italy: H-Farm, LuissEnLabs
- The Netherlands: Rockstart
- Norway: betaFACTORY
- Lithuania: StartupHighway
- Portugal: The Lisbon Challenge
- Poland: Gamma Rebels
- Romania: SeedForTech, Innovations,
- Spain: SeedRocket, Tetuan Valley

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More info: **www.icaria-project.eu**

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