

# Communication, Dissemination and Exploitation Report 3

**Period October 2024 to September 2025**

Wednesday, 26 November 2025

Tracy Irvine<sup>17</sup>, Max Steinhausen<sup>1</sup>, Sukaina Bharwani<sup>18</sup>, Natascha Ng<sup>18</sup>, Pia-Johanna Schweizer<sup>5</sup>, Benjamin Hofbauer<sup>5</sup>, Valeria Pancioli<sup>8</sup>, Dominik Hedderich<sup>9</sup>, Jana Löhrllein<sup>11</sup>, Paolo Mazzoli<sup>4</sup>, Lydia Cumiskey<sup>6</sup>, Martin Drews<sup>3</sup>, Sandro Nanni<sup>13</sup>, Stefan Hochrainer-Stigler<sup>10</sup>, Levente Huszti<sup>12</sup>, Heiko Apel<sup>14</sup>, Shahin Khosh Bin Ghomash<sup>14</sup>, Chahan M. Kropf<sup>16</sup>, Tobias Conradt<sup>2</sup>, Arnau Macia Pou<sup>7</sup>, Benedikt Gräler<sup>15</sup>, Martin Pontius<sup>15</sup>

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|---|--|
| 1. TECHNISCHE UNIVERSITÄT BRAUNSCHWEIG                                    | 10. INTERNATIONALES INSTITUT FÜR ANGEWANDTE SYSTEMANALYSE                            |
| 2. POTSDAM-INSTITUT FÜR KLIMAFOLGENFORSCHUNG E.V                          | 11. ERFTVERBAND  |
| 3. DANMARKS TEKNISKE UNIVERSITET  | 12. ZALA KÜLÖNLEGES MENTŐK ÉS ÖNKÉNTES TŰZOLTÓ EGYESÜLET                             |
| 4. GECOSISTEMA SRL  | 13. AGENZIA REGIONALE PER LA PREVENZIONE, L'AMBIENTE E L'ENERGIA DELL'EMILIA-ROMAGNA |
| 5. RESEARCH INSTITUTE FOR SUSTAINABILITY AT GFZ                           | 14. HELMHOLTZ CENTRE FOR GEOSCIENCES GFZ   |
| 6. UNIVERSITY COLLEGE CORK – NATIONAL UNIVERSITY OF IRELAND, CORK         | 15. 52 NORTH SPATIAL INFORMATION RESEARCH GMBH                                       |
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| 8. AGENZIA REGIONALE PER LA SICUREZZA TERRITORIALE E LA PROTEZIONE CIVILE | 17. OASIS HUB LIMITED  |
| 9. GENILLARD & CO GMBH  | 18. SEI OXFORD OFFICE LIMITED  |

# Report Overview

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# Executive Summary

This report reviews the communication, dissemination and exploitation work that was conducted by the DIRECTED Project partners in the period between October 2024 to the end of September 2025. We have reported in direct relation to our original Communications and Dissemination Strategy re-submitted to Horizon Europe in March 2023 and linked to our exploitation strategy found in D6.3 Gaps and Opportunities report.

The report includes updates on:

- Our achievements towards our expected outcomes and impacts for the period October 2024 to September 2025
- Our project communications activities in the period October 2024 to September 2025
- Our project dissemination activities in the period October 2024 to September 2025
- Individual partner communications and dissemination activities over the period October 2024 to September 2025
- Planned activities for communications and dissemination for October 2025 to September 2026
- We also summarise the exploitation activities underway for all the main Key exploitable results (KER's) including the Data Fabric, the Risk-Tandem Framework Toolkit and the beneficiary models used within the project including SaferPlaces, RIM2D, the Climate Connectivity Hub and Taxonomy, Oasis VR Citizen Apps, CLIMADA, Danube Model and Absolut, Damage Cost Model

Our goals are to deliver a comprehensive communications, dissemination and exploitation programme that engages, informs and influences our target audiences and enables us to move towards our outcomes and in the longer term see the impacts we wish to make. In the last year of the DIRECTED Project we are also planning the delivery of a range of 'whole project' and organisational specific communications, dissemination and exploitations activities, outlined in this report.

Specifically, our target audiences include:

- First and second responders
- Regional and municipal civil authorities - including disaster management, planning authorities and cross regional municipalities
- Physical and social scientific organisations - those who work in climate change, natural disaster sciences and damage and loss, governance and innovation
- The general public - represented by municipalities and NGOs

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# List of Abbreviations

ACRONYM	DEFINITION
CCA	CLIMATE CHANGE ADAPTATION
DMP	DATA MANAGEMENT PLAN
DRM	DISASTER RISK MANAGEMENT
DRR	DISASTER RISK REDUCTION
FAIR	FINDABLE, ACCESSIBLE, INTEROPERABLE AND REUSABLE
RWL	REAL WORLD LAB
WP	WORK PACKAGE
KERs	KEY EXPLOITABLE RESULTS
SSH	SOCIAL SCIENCES AND HUMANITIES
ECA	ECONOMICS OF CLIMATE ADAPTATION

# 1 Introduction

## 1.1 Background of the DIRECTED Project

The recent droughts and unprecedented floods in central and southern Europe have illustrated our vulnerability to extreme weather events. Besides climate change as a driver of more frequent and intensifying weather extremes, demographic change and socioeconomic development exacerbate severe impacts. International frameworks for Disaster Risk Reduction and Climate Change Adaptation (e.g., SENDAI framework, EU Strategy on adaptation to climate change) acknowledge the critical need for integrating risk governance, communication, and operational mechanisms for coping with extreme climate events throughout the entire Disaster Risk Management cycle.

DIRECTED aspires to foster disaster-resilient European societies by expanding our capabilities to communicate, utilise and exchange state-of-the-art data, information and knowledge between different actors; boosting the integration, accessibility and interoperability of models; facilitating knowledge sharing; improving dialogue and cooperation encompassing all levels of actors based on enhanced community engagement and developing new governance and risk management strategies using a bottom-up, value driven co-development approach. Key to supporting interoperability will be the establishment of the Data Fabric, an innovative, governed, cloud platform that enables secure, flexible, discovery and sharing of all structured and unstructured data. Thus, dissemination and communications are a core part of this project.

Central to DIRECTED are four Real World Labs that co-develop new governance, interoperability and knowledge production frameworks and demonstrate their benefits for enhanced disaster risk governance supported by innovative technical frameworks to access, transform and integrate data and models into customised workflows for creating actionable solutions. The Real World Labs ensure the project continuously and actively involves key stakeholders in the co-development process and address topical problems of multi-hazard risk management and Climate Change Adaptation to maximise impacts.

DIRECTED builds on a highly interactive transdisciplinary knowledge co-production process and an innovative digital architecture for process integration and analytics aimed at facilitating enhanced knowledge-based dialogues, communication, cooperation and “interoperability” on the three levels that are essential for integrating Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) related to extreme climate events in a

multi-scale and multi-risk perspective: 1) Governance interoperability, 2) Information interoperability, and 3) Data and model interoperability (Figure 1).

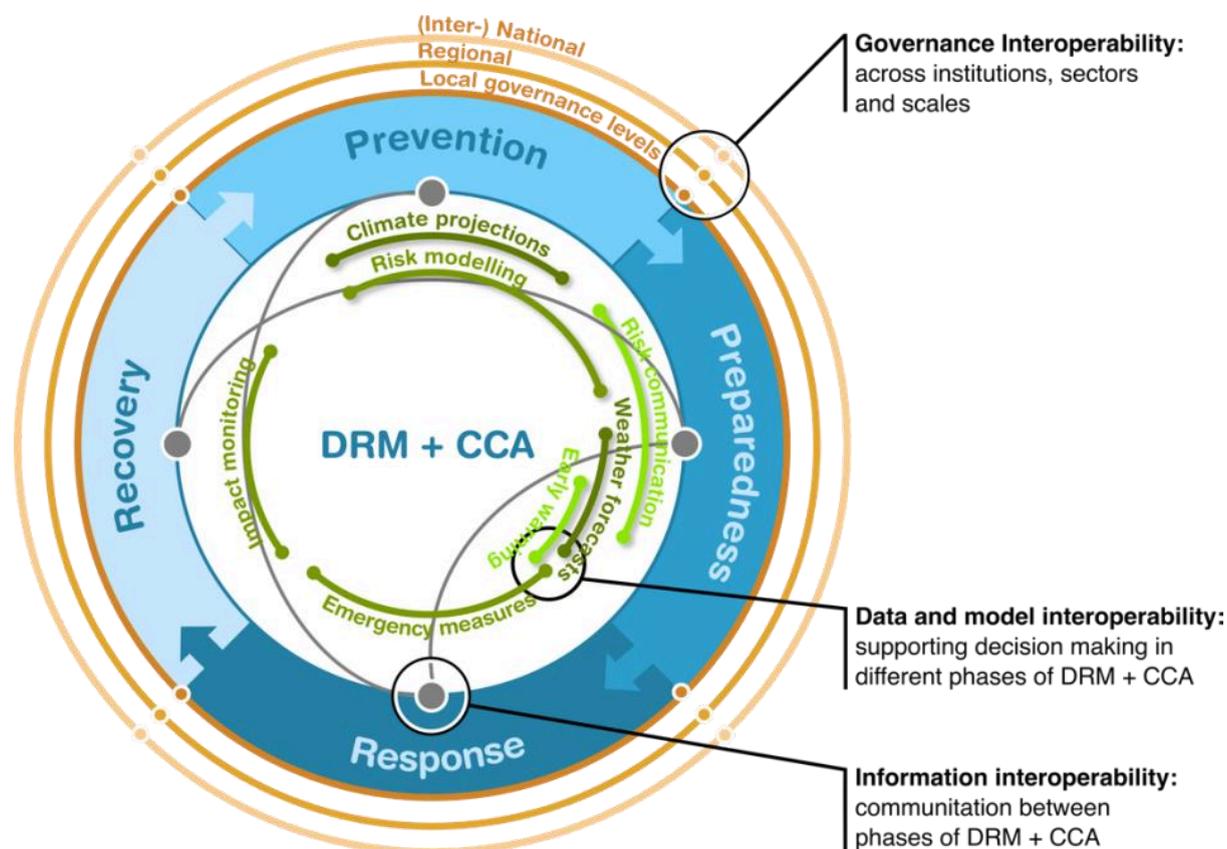


Figure 1: The DIRECTED Project Concept.

For this aim, experts and expertise from the Social Sciences and Humanities (SSH), provided from within the consortium, play a crucial role. Governance interoperability seeks to integrate relevant actors, responders and stakeholders across institutions, sectors and scales through suitable governance and enabling mechanisms, suggestions for adjusted legal frameworks and tailored responsibilities and financing arrangements. Information interoperability pursues a verifiable and timely information exchange between all phases of the Disaster Risk Management (DRM) cycle through improved dialogues and communication between DRR and CCA communities across multiple levels, such as resolving issues in understanding early warnings and turning relevant information into effective and coordinated actions.

In this regard, model-based information such as flood forecasts, disaster risk assessments, climate projections and cost-benefit analyses play a critical role in decision-support in different phases of the integrated DRM-CCA cycle. Data and model interoperability addresses the need for combining data and models (e.g., multi-risk), including proprietary resources, from/at different domains, providers, resolutions, vintages, sources, formats (and more) into highly customized DRR and CCA workflows given the frequent absence of

standards, and the lack of a common understanding and infrastructure. This includes, but is not limited to, differences with respect to purpose, spatio-temporal scales, resolutions and conflicting model assumptions.

DIRECTED aims to pave the way for the generic use of existing state-of-the-art data and models combined by means of open standards for information and data exchange; and to demonstrate the feasibility thereof when available tools are made interoperable. Four RWLs form the core of our DIRECTED approach and frame the settings for co-creating solutions and demonstrating integrated DRM and CCA, including our new and enhanced tools and processes.

Our four laboratories cover representative European geographies (Scandinavia, Central and Eastern Europe and the Mediterranean) and are characterized by a diversity of challenges from extreme climate events (including compound events), multi-risks, climate adaptation options, scales (from local to regional), and institutional and legal settings. This approach ensures that co-designing solutions to real-world challenges is central, and that stakeholder involvement occurs throughout the project.

## 1.2 Project partners

The DIRECTED Project has brought together a team of collaborators that cover different areas of work including physical and social science research organisations and sit in a range of different sectors including (R) Research, (L) local or regional authorities, (P) practitioners, (C) commercial / private sector (See [Table 1](#)). As a group, from a dissemination and communication perspective, we have large existing networks in the research & academic, commercial, local authorities and emergency services who we intend to engage, disseminate and where appropriate involve in the Project. We also intend to grow these networks through different communication platforms and techniques.

*Table 1: List of participants.*

No.	Role	Sector	Short name	Legal name	Country
1	COO	R	TUBS	TECHNISCHE UNIVERSITAET BRAUNSCHWEIG	DE
2	BEN	R	PIK	POTSDAM-INSTITUT FÜR KLIMAFOLGENFORSCHUNG (PIK)	DE
3	BEN	R	DTU	DANMARKS TEKNISKE UNIVERSITET	DK
4	BEN	C	GECO	GECOSISTEMA SRL	IT
5	BEN	R	RIFS	RESEARCH INSTITUTE FOR SUSTAINABILITY AT GFZ	DE
6	BEN	R	UCC	UNIVERSITY COLLEGE CORK - NATIONAL UNIVERSITY OF IRELAND, CORK	IE
7	BEN	L	REGIONH	REGION HOVEDSTADEN (left the Project due to	DK

				change of government approach end Oct 2025)	
8	BEN	P	ARSTPC-ER	AGENZIA REGIONALE PER LA SICUREZZA TERRITORIALE E LA PROTEZIONE CIVILE	IT
9	BEN	C	G&C	GENILLARD & CO GMBH	DE
10	BEN	R	IIASA	INTERNATIONALES INSTITUT FUER ANGEWANDTE SYSTEMANALYSE	AT
11	BEN	L	EV	ERFTVERBAND	DE
12	BEN	P	ZSRT	ZALA KULONLEGES MENTOK ES ONKENTES TUZOLTO EGYSULET	HU
13	BEN	P	ARPAE	AGENZIA REGIONALE PER LA PREVENZIONE, L'AMBIENTE E L'ENERGIA DELL'EMILIA-ROMAGNA	IT
14	BEN	R	GFZ	HELMHOLTZ CENTRE FOR GEOSCIENCES	DE
15	BEN	C	52N	52 NORTH SPATIAL INFORMATION RESEARCH GMBH	DE
16	AP	R	ETH	EIDGENOESSISCHE TECHNISCHE HOCHSCHULE ZUERICH	CH
17	AP	C	OASIS	OASIS HUB LIMITED	UK
18	AP	R	SEI	SEI OXFORD OFFICE LIMITED	UK

## 1.3 Expected outcomes & impacts

The DIRECTED Project has set itself some ambitious objectives to achieve within the four years of the Project and beyond. In this part of the report, we will summarize Year 3 outcomes from October 2024 to September 2025 for the Project and links to our M&E Framework and Impact tracking approaches can be found in this document.

### 1.3.1 Outcomes and indicators of scale and significance

**Outcome 1:** Improved dialogue and cooperation among scientific and technical communities, stakeholders, policymakers, and local communities in the field of extreme climate events and associated events (e.g. forest fires, droughts, floods, heatwaves and storms) and DRR. Improved dialogue further fosters meaningful knowledge sharing and a common ground to deliberate climate adaptation mechanisms.

**Output 1:** Using the Risk-Tandem Framework and the associated co-production approach we will increase the interactions, co-exploration, coproduction with transdisciplinary stakeholders in the DRR/ CCA sectors (including first & second responders, planners, scientists, media, utilities, social services & NGO's) - through the creation of four Real World Labs – assisting the development of long-term working relationships; understanding roles, responsibilities, dependencies, barriers to improvements and efficiencies needed.

**Indicator 1:** Real World Lab case studies and summary reports used by DRR/CCA stakeholders for planning purposes

Scale of contribution – The Risk-Tandem Framework will enable the building of consensus approaches towards Disaster Risk Management, Reduction and climate adaptation for the four regions of the Real World Labs: the Danube River Basin, covering Vienna, Austria and the Zala Region in Hungary – in city and countryside contexts, and Capital Region of Denmark, Emilia-Romagna Region, Italy, and the Rhine-Erft Region, Germany.

**Outcome 2:** Enhanced community engagement for prevention, preparedness, response, recovery and learning to extreme climate events by strengthening knowledge and involvement of volunteers linked to recognised organisations into the planning, design and implementation of prevention, including building with nature, preparedness and emergency response activities.

**Output 2:** A co-production methodology for disaster resilience will be developed and used by at least two municipalities increasing the connections and engagement of volunteers in the planning, design and implementation of prevention, including building with nature, preparedness and emergency response activities.

**Indicator 2:** Co-produced planning reports

**Outcome 3:** Strengthening of Disaster Risk Reduction and resilience building through innovative use of media means, namely by examining the potential of new communication tools and apps for better preparedness and response.

**Output 3a:** A Data Fabric/ mesh/ ecosystem – and linked tools, developed into workflows, that enable the rapid delivery of relevant information, data, maps etc. to relevant stakeholders e.g., maps of potential areas at risk using forecast information for risk assessment to early responders or communications for mass media delivered with warning visualisations or integration of data sources for Climate Change Adaptation etc.

**Indicator 3a:** workflows will be utilised by Real World Lab participant stakeholders to improve current processes

**Output 3b:** Visualisations – Simple communications in the form of visualisations of threat level, action required and how to get communications on hazard events will be developed for

the general public consumption – enabling faster actions of citizens to prepare for climate events – for 3 municipalities.

**Indicator 3b:** Visualisations disseminated to general public online, social media &/or via printed mailings

Scale of contribution – The Data Fabric/ mesh/ ecosystem will provide a prototype system and tools enabling replicable workflows of work including multiple stakeholder organisations, all types of quantitative and qualitative: including data, maps, visualisations and text formats for communications to diverse stakeholders. The system is intended to radically reform and improve the management and communications for disaster management, risk assessment and adaptation planning enabling actionable decisions using complex and multiple data sources. We intend for these tools to be replicated across Europe and beyond.

**Outcome 4:** Overview of existing knowledge, tools and development of new tools (innovative data collection, satellite data, data harmonisation, artificial-intelligence tools, algorithms, sensors and decision-aid approaches) for early warning, response and resilience / adaptation to be demonstrated in the framework of real-case scenarios designed for training addressed to first and second responders, (national, regional, local) authorities and populations. The overview should document how legal and ethical rules of operation as well as fundamental rights such as privacy and protection of personal data are taken into account.

**Output 4:** Forecasting and risk assessment, and adaptation tools made interoperable to increase functionality and multi-risk outputs necessary for seamless early warning, risk assessment and risk reduction strategy decision-making. The tool collaboration will have the capability to be used for training and implementation of Disaster Risk Management.

**Indicator 4:** Use of interoperable systems by DRR and CCA authorities to assist training, planning and decision making

**Scale of contribution** – From within the Project a range of existing tools in flood risk assessment, adaptation planning, forecasting, citizen App will be enabled to become interoperable – thus improving multi-hazard risk assessment capabilities and functions – on top of this the work on interoperability is set to develop a standard so that multiple tools and data from beyond the project can also become interoperable in the future and in doing so improve access to and functionality of single use tools into a multi-hazard ecosystem for decision support for multiple stakeholders across sectors and European regions and beyond.

**Outcome 5:** Based on the demonstrations, development of new governance strategies and robust decision-support methodologies for integrated risk reduction and improved adaptation to climate extreme events.

**Output 5:** Data Fabric/ mesh that enables the sharing, management and communication to relevant stakeholders in usable formats of complex information, data, maps and risk assessment – managed through one multi-partner system.

**Indicator 5:** – Governance workflows agreed by stakeholders and implemented into management system/ Data Fabric

**Scale of contribution** – Governance workflows on a range of case studies will be implemented in the Danube River Basin, covering the multiple municipalities – in city and countryside contexts, Emilia-Romagna Region, Italy, the Capital Region of Denmark, and the Rhine-Erft Region, Germany work ongoing and results likely in 2024/ 2025.

**Outcome 6:** Improved understanding of enablers and barriers to multi-risk governance frameworks and multi-risk thinking, by involving interdisciplinary teams in different fields, particularly the social and behavioural sciences.

**Output 6:** Policy brief on risk governance in the context of DRR and CCA highlighting barriers and potential solutions to improve multi-risk governance.

**Indicator 6:** Uptake of recommendations from policy brief by at least one DRR/CCA agency

**Scale of contribution** – The EC and national policymakers in Germany, Hungary and Italy will have access to findings and results of the DIRECTED Project. We envisage this will assist future governance of disasters and climate adaptation planning.

**Outcome 7:** Cost-benefit or cost-effectiveness analyses of investment and regulatory strategies to protect people and nature in vulnerable areas.

**Output 7:** Cost-benefit analysis of climate adaptation/ disaster reduction measures made for at least 2 municipalities during the project.

**Indicator 7:** Cost-benefit analysis of climate adaptation/ disaster reduction measures for at least 2 municipalities used in future planning documents or applications for adaptation funding for climate adaptation/ DRR.

**Scale of contribution** – Two municipalities will have conducted cost/ benefit analysis of potential climate adaptation actions enabling a strong needs analysis of multiple climate adaptation solutions that increases the potential for investment

## 1.3.1a Outputs and Outcomes for October 2024 to September 2025

As suggested by the DIRECTED reviewers in our first review period, DIRECTED have developed our M&E system using an internationally established and well-used M&E recording system, that of a M&E log-frame to record the activities within the above intended outputs and outcomes. Therefore, the results of this M&E System can be found in the linked spreadsheet:

[https://docs.google.com/spreadsheets/d/1THTL2jZOHo\\_L-rUjvKx5rTjmDOU9ku-kktHOOZMFs9l/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1THTL2jZOHo_L-rUjvKx5rTjmDOU9ku-kktHOOZMFs9l/edit?usp=sharing)

## 1.3.2 Intended Impacts

**Scientific:** The DIRECTED Project will assist the scientific community in stocktaking of standards for the interoperability of data and models, identifying gaps and requirements to exchange information between different phases of DRM/ CCA cycle and across hazards and integrating quantitative and qualitative indicators. This will assist the scientific community with providing an interoperability framework that enables future tool development that can become part of a wider network for decision-making data, tools and systems increasing the potential to provide actionable intelligence based on data and information from multiple sources by the DRR and CCA community.

Through the production of workflow processes within the Project – the provision at what stages, to whom and in what format scientific information is included and communicated will be an impact of the Project providing collaboration between sectors that do not traditionally have access to science and scientists directly, likely to become a policy recommendation moving forward, thus increasing access to actionable science by all levels of government and society.

**Economic:** the DIRECTED Project outputs will contribute a range of economic impacts in the future:

- The breakdown of silos e.g., between cross-boundary municipalities, between multiple stakeholder groups in the DRR/CCA process will increase the economic efficiency of work and linked funding by creating more seamless workflows, preventing duplication of spend on the same actions with the potential to more carefully budget and target spend across actors and locations.
- Work that has enabled the interoperability of multiple forms of data and tools into producing multi-risk, risk assessment and Climate Change Adaptation solutions plus

linked cost-benefit analysis will increase the potential to implement adaptation actions, targeted at locations most at risk, thus reducing the overall spend required to enable increased resilience by society.

- Losses from climate disasters are reduced through enhanced DRR based on preventive actions, better societal preparedness and resilience and improved DRM in a systemic way – with the potential to reduce losses significantly over time in the regions of billions of Euros
- Enhancing economic efficiency in DRM and climate adaptation. By optimizing emergency resource allocation, integrating climate risk into municipal budget planning, and facilitating access to high-quality risk data and simulations, the work with RWLs has potential to reduce unnecessary expenditures, foster long term cost savings, and lower disaster recovery costs.

Societal: The DIRECTED Project outputs will also contribute to societal impacts in the future:

- Losses from climate disasters are reduced through enhanced DRR based on preventive actions, better societal preparedness and resilience and improved DRM in a systemic way.
- Enabling scientific outputs to more rapidly be utilised by DRR/CCA actors and also directly communicated to the general public – helping to inform potential for damage and then actions required across society including at household & business levels to reduce the impact of climate-related catastrophes.
- Supporting first, second and third responders with forecast and risk assessment information they need to utilise emergency services more effectively – understanding the likelihood of the most impacted zones after a disaster and conditions associated with that emergency e.g., flood levels, types of properties and multiple other data sources as brought together by interoperable tools and the Data Fabric/ mesh
- Supporting first, second and third responders with training materials enabling more efficient responses to climate emergencies

## 1.3.2a Intended Impacts Report

As mentioned in the section above, a full M&E and the Impacts Log frame has been developed to log progress on both our outputs and outcomes and in addition to progress towards our impacts. These can be found in the same spreadsheet here:

[https://docs.google.com/spreadsheets/d/1THTL2jZOHo\\_L-rUjvKx5rTjmDOU9ku-kktHOOZM-Fs9l/edit?gid=771337100#gid=771337100](https://docs.google.com/spreadsheets/d/1THTL2jZOHo_L-rUjvKx5rTjmDOU9ku-kktHOOZM-Fs9l/edit?gid=771337100#gid=771337100)

# 1.4 Target Groups for Communication and Dissemination

DRR and CCA communities involve multiple stakeholder groups, all requiring information for different purposes and at different levels of communication. Likewise, the work undertaken involves different time dimensional needs, e.g., disaster information during a disaster and the need for risk reduction and climate adaptation planning. We seek to reduce complexity and increase efficiency to access the relevant information and data needs through understanding and creating appropriate workflows where we will seek to link appropriate climate science outputs and information to make operational decisions at the appropriate time, e.g., risk reduction and adaptation planning or for training and preparation or operational response. We have carefully selected representational organisations of our target groups to be directly involved as co-production, co-design partners in the Project.

Our target groups include:

- First and second responders
- Regional and municipal civil authorities - including disaster management, planning authorities and cross regional municipalities
- Physical and social scientific organisations - those who work in climate change, natural disaster sciences and damage and loss, governance and innovation
- The general public - will mainly be represented by municipalities

The Real World Labs will invite other local stakeholders including utility companies, NGO's, health and social care organisations to become part of the consultations. We perceive that the four RWL's: in the Danube catchment basin, Germany, Italy and Scandinavia will be representative of stakeholders from across Europe to ensure the potential for scalability of governance structures, the use of interoperable tools and management via Data Fabric/mech digital architectures.

Beyond the work of the Project directly, we intend to engage stakeholders who will benefit from knowledge of the techniques used in the Project, as well as the tools used within the system and the Data Fabric itself from the four communities named above, and extended beyond the regions involved in the Project.

# 2 Report on Communications

## October 2024 to September 2025

In this section, we will report on progress towards our communications and dissemination goals for October 2023 to September 2024.

As per our original proposal, we had drafted a broad communications timeline as per [Table 2](#). We will report on this table, as well as the targets we have set for each dissemination and communications activity, as below.

Table 2: DIRECTED Communications Timeline.

Phase 1 Oct 2022 to March 2023.	Phase 2 March 2023 to March 2024	Phase 3 March 2024 to March 2025	Phase 4 March 2025 to March 2026	Phase 5 March 2026 to October 2026
Communications strategy developed Project launch communications Start of Project Blog – quarterly blog posts to continue to end of the Project Bi-weekly social media posts began and continued to the end of the Project e.g. stories, plans etc. Website development Brand development	Communications on: Project events Workshops Processes and techniques and the physical and social scientists/ themselves Building a picture of the people involved in DIRECTED stakeholder involvement and outcomes during this phase Continued social media dissemination	Communications on: Early scientific & governance and process Findings from market research and stakeholder needs assessment Real World Lab reports Continued conference dissemination Continued social media dissemination Case study creation	Research publications and related news and articles Training material and programme on use of tools and systems Webinar series with physical and social scientists Continued social Media dissemination Media pack creation & dissemination (press releases for international media)	Policy-maker meetings, policy briefs. Conference dissemination of results Continued social media dissemination
	Beginning of conference dissemination			

Using the Communications and Dissemination Strategy we have reported on the actions and outputs so far in terms of communications and dissemination function within the DIRECTED Project. A report on communications and dissemination work from individual organizations is also included later in the report.

## 2.1 Communications

### 2.1.1 Project launch

Completed in the previous period.

### 2.1.2 Project branding & website

Table 3: Updates on Website.

Target Groups Reached	Goal	Actual October 2025	Indicator	Aids Outcome/ Impact
All	30.000 Users over 4 years	Total users Yr 1 Website users are up from 4222- Sept 2023 13987 in Sept 2024 <b>21527 on 30.9.25</b>	Users from google analytics	Outcomes 1,2,3,4,5,6,7 Broad communication of reports, videos, podcasts, webinars, papers, news, presentations

#### Report on Goals for Oct 2024 to September 2025

We intended to drive up more use of the website through driving traffic from our social media posts and increasing the content of the website and sharing it. Our target was bringing further 10,000 users to the site. We actually achieved a further 7540 users to the website, lower than targeted. This is likely because of social media sites including LinkedIn, Instagram and Twitter now actively lowering the visibility of posts that have links to other sites in the algorithm. Nonetheless, we have still progressed our visitors to the website.

Targets for October 2025 to September 2026

#### Goals for October 2025 to September 2026

We will continue to set a further 10,000 users to our website as we will be posting more in the final year of our project despite the changes in the algorithms – we will still have to post links on posts in social media to at least bring some users back to the website and will push

our website in conference presentations thus bringing back viewers through direct links back to the website.

We will also be updating our accessibility to the website in-line with new EU legislation.

## 2.1.3 Real World Labs/ Case Study creation

### Report October 2024 and September 2025

The Real World Lab case studies (D1.3) have been completed and submitted. It was decided the most useful case study format to be used was to develop a comparative case study of two of the most extreme floods in Europe, the July 2021 floods in Germany and the May 2023 Emilia-Romagna floods that mirror two of the DIRECTED Real World Labs and a comparative analysis of how these events rolled out and the management of the events ensued.

In this comparative case study, we looked backwards and gathered information to understand, compare the preparation, management and post-disaster learnings of these two major floods in Europe. The case study is produced as a broad scoping report that brings together available information and draws out learnings and potential areas of future, more formal research, as well as practical considerations in the aftermath of both events. Looking at the events comparatively also allows us to ascertain common issues that should be tackled in disaster planning in the future.

The Emilia-Romagna floods in 2023 and the Rhine-Erft floods in 2021 provide valuable insights into the growing threat of climate-related extreme weather events. Both floods were caused by intense rainfall that overwhelmed local river systems, leading to significant damage to infrastructure, agriculture, and communities. Comparing these events reveals the vulnerability of different regions to similar natural disasters, highlighting the need for effective flood management and climate adaptation strategies. Key areas of comparison include the socio-economic impacts, such as displacement, financial losses, and economic disruptions, as well as the responses from local governments in terms of emergency management and recovery efforts.

Furthermore, these floods offer an opportunity to evaluate long-term resilience and adaptation strategies. By studying the differences in flood prevention measures, recovery processes, and policy responses, the comparison can inform future disaster preparedness and climate action.

The two cases underscore the urgency of investing in flood mitigation, improving infrastructure resilience, and developing comprehensive emergency and communication plans to address the increasing frequency of extreme weather events. This case study can provide valuable lessons for policymakers, practitioners and communities facing similar risks in the future.

In addition, the comparative case study provides important insights that can be used for training programmes for professional first responders, disaster management authorities and local municipalities - opening up discussions around planning for disaster management of extreme events, communications and post event analysis.

In our analysis of the two events, it has been discovered during the desk-top research phase of this report that most academic materials that examine the two extreme events focus on large-scale, regional analysis of the events. Therefore, this report takes advantage of two local, Real World Labs in Rhine-Erft and Emilia-Romagna from the EU Horizon Europe, DIRECTED Project, <https://directedproject.eu/> to focus on local level impacts and learnings, thus making the situational analysis more focused on local disaster risk managers and planners, emergency services and disaster impact volunteers.

A broad synthesis and resultant recommendations have been made for each area, as well as at European Level.

The D1.3 Case Study was now submitted to the EU Portal and will be published on our website and marketing of the document will happen imminently.

## Next Steps for September 2025 to October 2026

- The case study will be utilised within the e-Learning platform.
- We have decided to use elements of the case study as a training tool to increase the utility of the study for training and awareness purposes.
- We will discuss the case study findings at WMO conference in Nov 2025 and other venues
- We will publish the case study as a creative commons document on Zenodo and our website.

### 2.1.4 Visualisations

Visualisations for the general public will be designed for effective communications of stages of risk decision for public information to enable a simple understanding on the processes of risk e.g., prepare, evacuate, where to find official communication, level of flood that sparks decision stages – these will be designed in local languages and for the local context for the RWL's.

This deliverable will begin in year 3/ 4 of project.

Table 4: Visualisation Update.

Target Groups Reached	Goal	Indicator	Results in Yr 3	Aids Outcome/ Impact
General Public	Reach 2000 households per each RWL case study area	Downloads/ Views	Emilia-Romagna immersive Flood Safety Virtual Reality Experience developed and built. Viewed by publics: ECCA 2025 70 people used VR experience REMTECH 2025 50 people used the experience, plus associated video used on Region Emilia-Romagna REMTECH conference stand (approx 200 views via video) A blog was also published with seen by 175 people Data Fabric video (52 views, 14.10.2025) Data Fabric blog posts	Outcome 3 General public informed of disaster decision-making process and where to get information

### Update October 2024 to September 2025:

Oasis Hub has developed a new VR experience for citizens with technical information provided by ARSTPC-ER and SaferPlaces. The VR experience, named as ‘Emilia Romagna Flood Safety Experience’, encompasses the main stages of Disaster Risk Management namely - preparation, response, recovery and mitigation, as well as educates citizens about the Emilia-Romagna 2023 flood response. The fully immersive App has the advantage of:

- **Embodied learning:** People remember what they do - not just what they hear. By physically turning, reacting, and making decisions within a VR environment, users develop muscle memory and emotional recall that static instructions can't provide.
- **Safe simulation of dangerous events:** Training for real floods is impossible and unsafe. VR creates realistic, risk-free scenarios where users can experience rising water, blocked roads, or emergency alerts without real-world consequences.
- **Decision-making under pressure:** Users must respond to prompts and unfolding situations, helping them rehearse what actions to take when time is critical. This includes recognising visual and auditory cues, evaluating risk, and choosing safe routes or behaviours.
- **Fast transfer of complex information:** Flood safety involves multiple messages — warnings, infrastructure risks, evacuation steps, emergency contacts. VR delivers this

layered information all at once, through story, sound, action, and environment. What might take pages of explanation can be understood in minutes through immersion.

- **Adaptable to diverse users:** VR can be customised for different age groups, languages, literacy levels, and risk profiles - making it an inclusive tool for public education, emergency services, and vulnerable populations alike.
- **Emotional impact builds memory:** Many participants in the pilot said the experience stayed with them — from the sound of water to the sight of submerged homes. This emotional imprint makes it more likely that people will remember what to do in real emergencies.



*Figure 2: Emilia-Romagna Flood Safety App Image.*

The App has been tested at two conferences, ECCA 2025 and REMTECH 2025 with positive responses and is currently being shown through the ARSTPC-ER team (See exploitation section below). Results from feedback can be seen below. The resulting film from the App will also be placed on the ARSTPC-ER website with the written flood safety information to increase engagement.

ARSTPC-ER have been developing visualisation materials as information for the citizens of Comacchio Region of Emilia-Romagna related to wildfire response and management for citizens and tourists residing near large plantations. This comes as a result of co-exploration and co-design workshops arranged with the stakeholders of Real World Lab 2 meetings being held within the Real World Labs.



Key performance highlights include:

DIRECTED Project Group: 668 active members

DIRECTED Project Members Page: 2,597 impressions and +80 followers

Individual contributions: Tracy Irvine's posts generated 18,346 impressions and 421 engagements

YouTube channel: 10 new videos published, reaching 472 views and 2,100 impressions

The project deliberately reduced activity on X (formerly Twitter) during this period, following the decline in professional content moderation and overall quality on the platform. Instead, resources were directed toward maintaining and growing activity across professional and high-engagement channels, including LinkedIn, YouTube, and to a lesser extent Instagram.

Overall, DIRECTED's coordinated approach to digital communication continues to deliver measurable improvements in visibility, professional engagement, and partner participation. These results contribute directly to Project Outcomes 1–7, by fostering awareness, collaboration, and knowledge dissemination within the European resilience and adaptation community.

## Update for October 2024 to September 2025

Table 5: Social Media Updates.

Target Groups Reached	Goal	Actual Year 3	Indicator	Aids Outcome/ Impacts
All	Reach users: LinkedIn – 200 external DRR & CCA professionals YouTube – create at least five short videos and gain 100 subscribers on YouTube Twitter and Mastodon develop followers on both platforms of 500 Instagram gain 500 followers	DIRECTED Project Group 668 active members DIRECTED Project members page 2597 Impressions + 80 followers T Irvine 18, 346 impressions + 421 engagements Videos posted: 10 Viewers 472 Impressions 2100 X has removed retroactive analytics for non-premium accounts - we have 116 followers. 54 followers - 1362 Views	Analytic indicators provided on each platform	Outcomes 1,2,3,4,5,6,7

Samples of LinkedIn content and YouTube Video Analytics from October 2024 to September 2025 can be seen in [Figure 4](#) and [Figure 5](#).

<p>Tracy Irvine posted this · 1mo</p>  <p>Fantastic meeting with the DIRECTED Team at our General Assembly this week in Copenhagen. Lots of field visits to Copenhagen's first responders, water management and we even saw how the ...show more</p> <p>You and 45 others</p> <p>8 reposts</p>	<p>▲ 1,303 Impressions</p> <p>View analytics</p>
<p>Tracy Irvine posted this · 1yr</p> <p>Press Release - Find out more about the Civil Protection Exercise on Flood and Storm Surge Risks in Rimini on 13th and 14th June in Rimini, Emilia-R...</p>  <p>Press Release - Civil Protection Exercise on Flood and Storm Surg... Tracy Irvine on LinkedIn · 3 min read</p> <p>25</p> <p>7 reposts</p>	<p>▲ 1,009 Impressions</p> <p>View analytics</p>
<p>Tracy Irvine reposted this · 10mo</p>  <p>Great opportunity to join the DIRECTED Team to develop eLearning programmes that assist risk governance for Disaster Management and Climate Adaptation. DIRECTED is a very friendly bunch of ...show more</p> <p>11</p> <p>2 comments · 5 reposts</p>	<p>▲ 787 Impressions</p> <p>View analytics</p>
<p>Tracy Irvine posted this · 6mo</p>  <p>If you are interested in managing climate and disaster risks and seek locally led knowledge coproduction, I recommend attending this webinar with the DIRECTED Projects, Lydia Cumiskey, wh ...show more</p> <p>20</p> <p>3 comments · 2 reposts</p>	<p>▲ 780 Impressions</p> <p>View analytics</p>
<p>Tracy Irvine posted this · 4mo</p>  <p>It is great to be at the ECCA Conference 2025 with all my colleagues from the fabulous DIRECTED Project. Oasis Hub has brought along one of our new VR immersive experience Apps for citizen floo ...show more</p> <p>Dickie Whitaker and 22 others</p> <p>7 reposts</p>	<p>▲ 738 Impressions</p> <p>View analytics</p>
<p>Tracy Irvine posted this · 4mo</p> <p>ECCA 2025 side event – Join Us!</p> <p>...show more</p>  <p>Emilia-Romagna Flood and Storm Surge Simulation Training for E... youtube.com</p> <p>12</p> <p>4 reposts</p>	<p>▲ 705 Impressions</p> <p>View analytics</p>

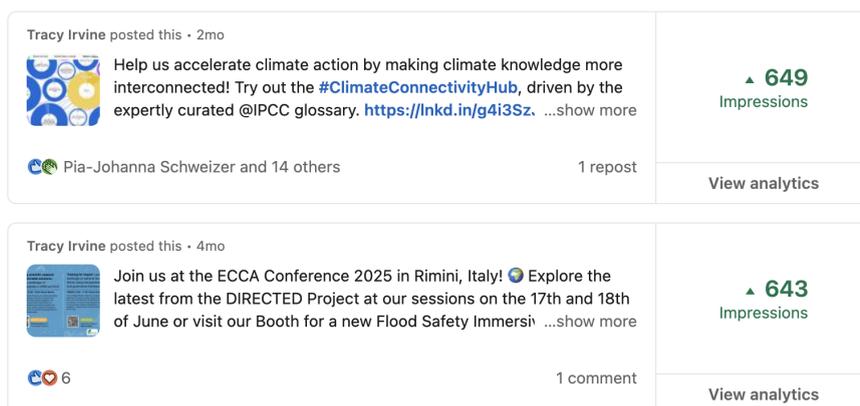


Figure 4: Samples of DIRECTED Social Media Posts.

Views by: Content Show chart

Content	Duration	Publishing date	Views	Watch time (hours)	Subscribers	Impressions
 SaferPlaces flood simulation for Rimini on coastal flooding	0:31		41 8.7%	0.2 1.9%	0 0.0%	374
 SaferPlaces flood simulation for New York on coastal flooding	0:51		39 8.3%	0.2 1.7%	0 0.0%	248
 Civil Protection in the West Morava River Basins - the importance of...	40:56		19 4.0%	0.1 0.8%	0 0.0%	151
 Extracts from Breaking the Silos Serious Game	5:53		15 3.2%	0.4 3.1%	0 0.0%	100
 Have you wondered if where you live might be at risk of flooding?	3:12		14 3.0%	0.5 3.8%	0 0.0%	164
 Scientists, Municipalities and Emergency Responders...	14:42		13 2.8%	0.6 5.1%	2 22.2%	58
 VR Flood Safety Experience - Emilia-Romagna	11:38		13 2.8%	0.3 2.6%	0 0.0%	30
 Sharing lessons on bridging Science & Society through...	45:03		12 2.5%	0.9 7.3%	0 0.0%	74
 DIRECTED Webinar- Emilia Romagna data and tools for...	2:09:39		8 1.7%	0.1 0.7%	0 0.0%	48
 Civil Protection and Civil Engagement with RISKPACC...	36:14		7 1.5%	0.1 1.2%	0 0.0%	96

Figure 5: DIRECTED YouTube Channel Analytics.

## Next Steps October 2025 to September 2026:

Social media changes during 2025 have, in some cases, been significant, with new ownership structures and evolving content policies altering the professional value of several platforms. In response, DIRECTED will continue to take a measured and adaptive approach to its digital communications strategy, focusing on quality of engagement rather than platform quantity.

The consortium will prioritise maintaining a credible and professional presence across selected channels, led by LinkedIn and YouTube, while monitoring the relevance of alternative platforms as the social media landscape stabilises. Partner support in amplifying

posts will remain central to the project's outreach efforts, ensuring consistent visibility across networks even as algorithms and user behaviours evolve.

#### **Planned actions for 2025–2026 include:**

- **LinkedIn:** Continue as the primary dissemination channel for professional audiences, with a target of +20% increase in engagement and membership growth within the DIRECTED Project Group.
- **YouTube:** Produce a short video series (3–5 films) highlighting key results and innovations emerging in Year 4, with improved metadata and cross-posting on partner websites.
- **Instagram:** Use selectively for visually strong project moments and events, supporting cross-sector visibility and storytelling.
- **Partner Coordination:** Strengthen the cross-sharing system, ensuring each new output is reposted by at least three consortium members within 48 hours of publication.

This pragmatic plan ensures DIRECTED's communication activities remain aligned with evolving digital environments while sustaining professional credibility, partner collaboration, and measurable reach.

## **2.1.6 Video, Podcasts & Webinars**

Webinar series will be designed for specific sectors in phase 4 of the project communications with the physical and social scientists, and local governance actors engaged in the project, presenting and talking to specifically targeted sectors and then further engagement by Oasis Hub of attendees in encouraging the use of outputs by those stakeholders engaged in the webinars. In addition, the recordings of the webinars will be shared on YouTube and the DIRECTED website.

### **Update for October 2024 to September 2025**

After our webinar series last year this year we have not made a project wide plan for webinars for this year, instead planning for a comprehensive webinar for the final year of the Project (see below). Nonetheless, we have noted UCC's contribution to a major webinar series in the results below.

Table 6: Webinars, videos and podcasts update.

Target Groups Reached	Goal	Actual Yr 3	Indicator	Aids Outcome/ Impacts
<p>Webinars</p> <p>1) First and second responders</p> <p>2) Regional and municipal civil authorities - including disaster management, planning authorities and cross regional municipalities</p> <p>3) Physical and social scientific organisations</p>	<p>100 attendees x 4 webinars aimed at specialist groups</p>	<p>Webinar series of the Working Group on Co-Creating Water Knowledge</p> <p>HELPING - Hydrology Engaging Local People IN one Global world</p> <p>Scientific decade of the International Association of Hydrological Sciences (IAHS)</p> <p>-</p> <p>Webinar #4</p> <p>Capacities and skills for locally-led knowledge co-production for managing climate and disaster risk in Europe: lessons from the DIRECTED project</p> <p>Lydia Cumiskey, Senior Postdoctoral Researcher, MaREI, University College Cork</p> <p><a href="https://www.youtube.com/watch?v=4YOi0xDw_s4&amp;t=3s">https://www.youtube.com/watch?v=4YOi0xDw_s4&amp;t=3s</a></p>	<p>Attendees' engagement as collected in Zoom analytics</p> <p>Resulting engagements/ links/ collaboration after webinars</p>	<p>Outcomes: 1,2,3,4,5,6,7</p>
<p>Videos &amp; podcasts</p> <p>All</p>	<p>At least 6 x videos and podcasts placed on website and YouTube &amp; Instagram – and shared on other platforms</p> <p>Reaching 600+ viewers</p>	<p>The DIRECTED YouTube now has 12 videos uploaded to our channel and have had a total of 788 views of our content.</p> <p><a href="https://www.youtube.com/@directedproject">https://www.youtube.com/@directedproject</a></p> <p><a href="https://www.youtube.com/@52North">https://www.youtube.com/@52North</a></p> <p>YouTube video about the Data Fabric (52 views, 14.10.2025)</p>	<p>Analytics from Google analytics, YouTube, Instagram, X, Mastodon on message containing videos or podcast</p>	<p>Outcomes: 1,2,3,4,5,6,7</p>

## Next Steps October 2025 to September 2026

In the last year of the DIRECTED Project we are planning a series of webinars as follows:

### DIRECTED Webinar Series: *Building Resilience Through Data, Models & Governance*

#### 1 Format

- 6-8 webinars over 12 months
- Each session: 60–75 minutes (40 min presentations + 20 min moderated discussion + 10 min Q&A)
- Co-hosted with project partners and Real World Labs
- Aim: Combine knowledge-sharing, policy impact, and business exploitation pathways

#### 2 Proposed Episodes

##### 1. Launch Webinar: The Future of Disaster Risk Management in Europe (Nov 2025)

- Introduce DIRECTED goals, partners, Real World Labs
- Highlight the innovation vision (data interoperability, governance, communication, resilience decision-making)
- Highlight some of the headline results – results to highlight the issues at grassroots
- Lessons from recent disasters (Rhine-Erft 2021, Emilia Romagna 2023(Case Study findings))
- Target audience: EU policy makers, municipalities, insurers, innovation networks

##### 2. Data for Resilience: Building the DIRECTED Data Fabric (Dec 2025)

- Showcase the Data Fabric innovation and interoperability standards
- How data models are being connected across sectors and borders
- Case studies from RWLs
- Audience: technical agencies, open data communities, researchers, SMEs

##### 3. From Models to Action: Risk Assessment & Forecasting Tools (Jan 2026)

- Spotlight on flood, wildfire, drought models and their applications
- Linking hazard models to practical decision-making (SaferPlaces, RIM2D, others)
- Audience: civil protection authorities, insurers, scientists

##### 4. Communicating Risk: Immersive Tools, VR, and Storytelling for Preparedness (Feb, 2026)

- Communications findings from Case Study
- Highlight the VR experiences and communication tools (e.g. Oasis IRIS work)
- Highlight artist work
- How to move beyond reports to experiences people feel and act upon
- Audience: municipalities, NGOs, media

##### 5. Governance in Crisis: Decision-Making Under Uncertainty (March, 2026)

- RWL leaders present governance challenges & innovative approaches
- Risk Tandem Framework and adaptive governance
- Audience: city authorities, EU governance networks, international orgs

##### 6. Local Insights: Real World Labs in Practice (April 2026)

- Panel with 2–3 RWLs (Copenhagen, Austria/Zala, Rhine-Erft, Emilia-Romagna)
- What worked, what didn't, what's replicable
- Audience: regional/national disaster managers, EU policy

##### 7. Financing Resilience: Opportunities for SMEs, Insurers, and Innovators (May 2026)

- Business and exploitation pathways for DIRECTED outputs
- How SMEs and industry can engage with tools, data, and IP
- Audience: insurers, finance sector, SMEs, investors

##### 8. Closing Webinar: Towards a European Risk and Resilience Ecosystem (June 2026)

- Wrap-up of lessons across DIRECTED
- Policy recommendations for Horizon Europe, EU Civil Protection Mechanism
- Future collaborations and pathways
- Audience: all stakeholders, EU institutions, global resilience networks

#### 1 Add-ons

- Record all sessions → upload to DIRECTED website/YouTube channel
- Create 2-page **Webinar Briefs** per session with key insights & resources
- Invite external high-level speakers (e.g., DG ECHO, JRC, IPCC contributors) to boost visibility

Figure 6: Proposed DIRECTED Webinar series 2026.

We are intending to run the webinars by zoom but will also attempt to stream on our LinkedIn channel to gain more interactions with our sessions. We will also send out invites to appropriate potentially interested parties.

52°North will present the Data Fabric (among results from I-CISK) in a webinar hosted by EUROGI (European Umbrella Organisation for Geospatial Information) on 22nd October 2025

## 2.1.7 Quarterly Blog

Blogs will be used as a medium to fully engage audiences in a more detailed fashion. These will include information about the Projects, about results and discussions of Real World Labs, what a Data Fabric is, information on the scientific tools within the Project and much more.

## Update for October 2024 to September 2025

During the reporting period, DIRECTED published a series of high-quality blogs and partner features that collectively enhanced the project's online visibility and helped communicate complex scientific and governance concepts in accessible ways.

### DIRECTED Website Blogs (2024–2025)

Three main articles were published on the DIRECTED website:

1. *"I Felt the Flood": How Immersive VR Could Transform Flood Preparedness in At-Risk Communities*  
[directedproject.eu/blog/i-felt-the-flood-how-immersive-vr-could-transform-flood-preparedness-in-at-risk-communities](https://directedproject.eu/blog/i-felt-the-flood-how-immersive-vr-could-transform-flood-preparedness-in-at-risk-communities)
2. *Building Climate Resilience within the Danube River Basin: Insights from DIRECTED's Real World Labs*  
[directedproject.eu/blog/building-climate-resilience-within-the-danube-river-basin-insights-from-directeds-real-world-labs](https://directedproject.eu/blog/building-climate-resilience-within-the-danube-river-basin-insights-from-directeds-real-world-labs)
3. *Tailormade, Applicable and Iterative – The Key Tenets of the Risk-Tandem Framework*  
[directedproject.eu/blog/tailormade-applicable-and-iterative-the-key-tenets-of-the-risk-tandem-framework](https://directedproject.eu/blog/tailormade-applicable-and-iterative-the-key-tenets-of-the-risk-tandem-framework)

The DIRECTED website posts collectively achieved **1,018 total views** and were widely shared across partner LinkedIn and institutional networks, demonstrating interest in DIRECTED's applied outputs and methodological approaches.

### Partner Blogs

Several consortium partners also produced complementary articles that extended the project's reach to their own audiences, including:

- **52°North:** *Flood Protection and Climate Change Adaptation in the Copenhagen Capital Region* – highlighting Data Fabric and RWL activities linked to GA Copenhagen and MCDM at ECCA 2025.
- **RIFS Potsdam:** *Preparing for the Challenges Ahead – Flood Preparedness, Disaster Risk Management, and Climate Change Adaptation in Europe*  
[rifs-potsdam.de/en/blog/2024/10/preparing-challenges-ahead-flood-preparedness-disaster-risk-management-and-climate](https://rifs-potsdam.de/en/blog/2024/10/preparing-challenges-ahead-flood-preparedness-disaster-risk-management-and-climate)
- **Genillard & Co:** *Second DIRECTED Workshop at the Hydraulic Engineering Lab, BOKU Vienna*

[genillard-co.com/2025/08/06/second-directed-workshop-at-the-hydraulic-engineering-lab-boku-vienna-09-07-2025](https://genillard-co.com/2025/08/06/second-directed-workshop-at-the-hydraulic-engineering-lab-boku-vienna-09-07-2025)

- **52°North Feature:** *Interoperable Tools and Governance for Disaster Risk Management* [52north.org/solutions/directed](https://52north.org/solutions/directed)
- **Vas County Disaster Management Directorate (Zala):** *Effects of Extreme Weather Events* workshop coverage [vas.katasztrofavedelem.hu/25692/hirek/287220/szelsoseges-idojarasi-esemenyek-ha-tasai-workshop-a-vas-varmegyei-katasztrofavedelmi-igazgatosag-szervezeseben](https://vas.katasztrofavedelem.hu/25692/hirek/287220/szelsoseges-idojarasi-esemenyek-ha-tasai-workshop-a-vas-varmegyei-katasztrofavedelmi-igazgatosag-szervezeseben)

These partner blogs and press items provided national and regional exposure for DIRECTED activities and helped align communication outputs with local stakeholder engagement.

**Summary:**

The blogging strategy has proven highly effective in strengthening DIRECTED’s online communication ecosystem. It links technical work with real-world impact stories, supports the dissemination of methods such as the Risk-Tandem Framework and Data Fabric, and other tools and ensures visibility of Real World Lab outcomes across multiple platforms.

Table 7: Blog update.

Target Groups Reached	Goal	Actual Year 3	Indicator	Aids Outcome/ Impact
Specialist users – including DRR & CCA professionals	20,000 views on specialist channels	Blogs from DIRECTED website 2024-25: <b>“I Felt the Flood”: How Immersive VR could Transform Flood Preparedness in At-Risk Communities.</b> <a href="https://directedproject.eu/blog/i-felt-the-flood-how-immersive-vr-could-transform-flood-preparedness-in-at-risk-communities/">https://directedproject.eu/blog/i-felt-the-flood-how-immersive-vr-could-transform-flood-preparedness-in-at-risk-communities/</a> <b>Building Climate Resilience within the Danube River Basin: Insights from DIRECTED’s Real World Lab’s</b> <a href="https://directedproject.eu/blog/building-climate-resilience-within-the-danube-river-basin-insights-from-directeds-real-world-labs/">https://directedproject.eu/blog/building-climate-resilience-within-the-danube-river-basin-insights-from-directeds-real-world-labs/</a> <b>Tailormade, Applicable and Iterative - The Key Tenets of the Risk-Tandem Framework</b> <a href="https://directedproject.eu/blog/tailormade-applicable-and-iterative-the-key-tenets-of-the-risk-tandem-framework/">https://directedproject.eu/blog/tailormade-applicable-and-iterative-the-key-tenets-of-the-risk-tandem-framework/</a> <b>Total views on DIRECTED website blogs - 1018</b> <b>Partner blogs</b> 52N: <b>Flood Protection and Climate Change Adaptation in the Copenhagen Capital</b>	Blog views	Outcomes: 1,2,3,4,5,6,7

		<p><b>Region</b>  <a href="#">GA Copenhagen and MCDM</a>, <a href="#">ECCA 2025</a>,  <a href="#">Data Fabric Copenhagen RWL</a></p> <p><b>RIFS: Preparing for the Challenges Ahead – Flood Preparedness, Disaster Risk Management, and Climate Change Adaption in Europe</b>  <a href="https://www.rifs-potsdam.de/en/blog/2024/10/preparing-challenges-ahead-flood-preparedness-disaster-risk-management-and-climate">https://www.rifs-potsdam.de/en/blog/2024/10/preparing-challenges-ahead-flood-preparedness-disaster-risk-management-and-climate</a></p> <p><b>Second DIRECTED Workshop at the Hydraulic Engineering Lab, BOKU Vienna</b>  <a href="https://www.genillard-co.com/2025/08/06/second-directed-workshop-at-the-hydraulic-engineering-lab-boku-vienna-09-07-2025/">https://www.genillard-co.com/2025/08/06/second-directed-workshop-at-the-hydraulic-engineering-lab-boku-vienna-09-07-2025/</a></p> <p><b>Interoperable Tools and Governance for Disaster Risk Management</b>  <a href="https://52north.org/solutions/directed/">https://52north.org/solutions/directed/</a></p> <p><b><a href="#">Our Shared Future: A look into the Data Fabric</a></b>  <b>Effects of extreme weather events – workshop organized by the Vas County Disaster Management Directorate</b>  <a href="https://vas.katasztrofavedelem.hu/25692/hirek/287220/szelsoseges-idojarasi-esemenyek-hatasai-workshop-a-vas-varmegyei-katasztrofavedelmi-igazgatosag-szervezeseben">https://vas.katasztrofavedelem.hu/25692/hirek/287220/szelsoseges-idojarasi-esemenyek-hatasai-workshop-a-vas-varmegyei-katasztrofavedelmi-igazgatosag-szervezeseben</a></p>		
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## Next Steps October 2025 to September 2026

In the final project year, DIRECTED will focus on consolidating and amplifying its digital storytelling outputs to ensure the project’s legacy, key findings, and applied innovations remain visible and accessible beyond 2026.

Building on the strong foundation of web engagement achieved in 2024-2025, the communications will prioritise:

**1. Publication of Legacy Features:**

Prepare a series of final blogs highlighting DIRECTED’s most significant outcomes -including the Risk-Tandem Framework, Data Fabric, and Real World Lab findings - presented in accessible formats suitable for both expert and general audiences.

**2. Cross-Partner Authorship:**

Encourage joint authorship between scientific, technical, and communication partners to reflect the project’s interdisciplinary nature and ensure diversity of voice across final outputs.

**3. Thematic Blog Series:**

Develop a 3-4 part blog series titled “Lessons from Europe’s Real World Labs”, drawing on the outcomes and experiences from Emilia-Romagna, Rhine-Erft, West Balaton, and Vienna, to showcase lessons learned for replication in other regions.

#### 4. Enhanced Multimedia Integration:

Embed videos, infographics, and immersive visuals from the project’s VR applications and workshops within blog posts to increase audience engagement and accessibility.

#### 5. Project Closure Compilation:

The WP 6 team, compile a “Best of DIRECTED” digital collection summarising key blogs, videos, and visual materials, ensuring these remain accessible on the project website and archived for long-term reference.

By focusing on synthesis, visibility, and legacy, these activities will ensure that DIRECTED’s web presence continues to deliver value beyond the life of the project - supporting knowledge uptake, replication, and continued collaboration across Europe’s disaster resilience community.

## 2.1.8 Mass Media and Media Pack Creation

During this reporting period, DIRECTED and its partners achieved strong external media visibility through thought-leadership pieces and feature articles in respected science, planning, and water management publications. These collaborations extended DIRECTED’s reach beyond academic and project networks, positioning it as a contributor to European and international dialogue on resilience, adaptation, and trust-building in times of crisis.

#### Key media highlights include:

**“Camaraderie in Chaos: Using Play to Build Needed Trust in Uncertain Times”**

-*Stockholm Environment Institute (SEI) Perspectives*, March 2025

[sei.org/perspectives/camaraderie-in-chaos](https://sei.org/perspectives/camaraderie-in-chaos)

This feature explored the role of creative, participatory methods such as tabletop exercises and serious games in building trust and cooperation during crisis planning, referencing DIRECTED’s Real World Labs.

- **“European Cooperation for Climate Resilience”** - *Byplan Nyt* (Danish Urban Planning Magazine), June 2025

[byplanlab.dk/sites/default/files/2025-06/Byplan%20Nyt%202025%20NY%20%28redigeret%29.pdf](https://byplanlab.dk/sites/default/files/2025-06/Byplan%20Nyt%202025%20NY%20%28redigeret%29.pdf)

This article highlighted DIRECTED's collaboration with the Copenhagen Real World Lab and the integration of data and governance models to inform climate adaptation planning at municipal and regional scales.

- **“Dikes Won’t Do: Why Europe is Failing to Reduce Flood Risks”** - *SEI Perspectives*, July 2025  
[sei.org/perspectives/dikes-wont-do-why-europe-is-failing-to-reduce-flood-risks](https://sei.org/perspectives/dikes-wont-do-why-europe-is-failing-to-reduce-flood-risks)  
A widely circulated opinion piece critiquing Europe's overreliance on structural flood defences, using insights from DIRECTED's field research in the Rhine-Erft and Emilia-Romagna Regions.
- **“Tabletop Exercise: DIRECTED”** - *Erftverband Infolfluss* (Water Management Bulletin), February 2025  
[erftverband.de/wp-content/uploads/2025/03/infolfluss\\_0225\\_web.pdf](https://erftverband.de/wp-content/uploads/2025/03/infolfluss_0225_web.pdf)  
This feature reported on a DIRECTED tabletop exercise and stakeholder engagement activity, showcasing collaborative approaches to improving flood preparedness and cross-sector decision-making.
- **“Summer Emergency Drills at Lido degli Scacchi”** - *RAI News Emilia-Romagna*, May 2025  
[rainews.it/tgr/emiliaromagna/video/2025/05/prove-di-emergenza-estiva-lesercitazione-a-lido-degli-scacchi-98325046-0e3c-4940-aff9-da28aae67b92.html?wt\\_mc=2.www.wzp.rainews](https://rainews.it/tgr/emiliaromagna/video/2025/05/prove-di-emergenza-estiva-lesercitazione-a-lido-degli-scacchi-98325046-0e3c-4940-aff9-da28aae67b92.html?wt_mc=2.www.wzp.rainews).  
A broadcast segment covering a **large-scale summer emergency drill** in Lido degli Scacchi, Emilia-Romagna. The simulation involved **around 90 participants**, including local law enforcement, civil protection units, and volunteers, testing coordination for **forest fire and coastal evacuation scenarios**. The event was supported by the **Emilia-Romagna Real World Lab**, demonstrating local-level preparedness and cooperation in line with DIRECTED's resilience objectives.
- **“Forecasting systems can help prevent disasters”** - *TVKeszthely*, March 2025  
[tvkeszthely.hu/news/12318-elorejelzo-rendszerek-segithetnek-hogy-megelozzuk-a-katasztrofakat](https://tvkeszthely.hu/news/12318-elorejelzo-rendszerek-segithetnek-hogy-megelozzuk-a-katasztrofakat).  
A broadcast segment with news story covering a DIRECTED lead stakeholder workshop in collaboration with the Majors' office of Keszthely in the **Hungarian Zala Region (Danube RWL)**. The workshop brought local, regional and national DRM and CCA stakeholder together. Participants included first responders, forestry and hydrological agencies, representatives from tourist and agricultural sector as well as many regional policymakers.

Together, these features reached broad professional and policy audiences, significantly enhancing DIRECTED's public profile. They positioned the project as a trusted source of

applied knowledge on risk communication, governance innovation, and climate resilience, while also strengthening media partnerships for future dissemination

Table 8: Mass Media update.

Target Groups Reached	Goal	Indicator	Actual Year 3	Aids Outcome/ Impact
Mass media – General Public	25 Media packs downloaded	Articles published	<p><b>Camaraderie in chaos: using play to build needed trust in uncertain times</b>  <a href="https://www.sei.org/perspectives/camaraderie-in-chaos/">https://www.sei.org/perspectives/camaraderie-in-chaos/</a></p> <p><b>DIRECTED</b>  <b>European cooperation for climate resilience</b>  <a href="https://byplanlab.dk/sites/default/files/2025-06/Byplan%20Nyt%202%202025%20NY%20%28redigeret%29.pdf">https://byplanlab.dk/sites/default/files/2025-06/Byplan%20Nyt%202%202025%20NY%20%28redigeret%29.pdf</a></p> <p><b>Dikes won't do: why Europe is failing to reduce flood risks</b>  <a href="https://www.sei.org/perspectives/dikes-wont-do-why-europe-is-failing-to-reduce-flood-risks/">https://www.sei.org/perspectives/dikes-wont-do-why-europe-is-failing-to-reduce-flood-risks/</a></p> <p><b>Tabletop Exercise DIRECTED</b>  <a href="https://www.erftverband.de/wp-content/uploads/2025/03/infoluss_0225_web.pdf">https://www.erftverband.de/wp-content/uploads/2025/03/infoluss_0225_web.pdf</a></p> <p><b>Summer emergency drills at Lido degli Scacchi</b>  <i>A simulated forest fire involved 90 people, including law enforcement, civil defense, and volunteers.</i>  <a href="https://www.rainews.it/tgr/emiliaromagna/video/2025/05/prove-di-emergenza-estiva-lesercizio-a-lido-degli-scacchi-98325046-0e3c-4940-aff9-da28aae67b92.html?wt_mc=2.www.wzp.rainews">https://www.rainews.it/tgr/emiliaromagna/video/2025/05/prove-di-emergenza-estiva-lesercizio-a-lido-degli-scacchi-98325046-0e3c-4940-aff9-da28aae67b92.html?wt_mc=2.www.wzp.rainews.</a></p>	Outcomes: 1,2,3,4,5,6,7

## Next Steps October 2025 to September 2026: Media Outreach

In the final project year, DIRECTED will focus on consolidating external visibility and legacy impact through targeted media outreach and authored articles that highlight key results and lessons learned.

### Planned activities include:

#### 1. Flagship Closing Articles:

Publish 2-3 reflective opinion pieces in reputable outlets such as SEI Perspectives, Euractiv, or CORDIS News, summarising DIRECTED's overall contribution to European resilience-building and data interoperability.

## **2. Regional Media Engagement:**

Work with Real World Lab partners to secure local-language coverage in regional planning or environmental journals (e.g. Byplan Nyt, Infolluss, ARPAE channels) to reinforce impact at local governance level.

## **3. Policy-Facing Communications:**

Develop one op-ed or media feature directly addressing EU climate resilience priorities ahead of ECCA 2026, demonstrating DIRECTED's alignment with Green Deal and Mission Adaptation objectives.

## **4. Visual Media Features:**

Pair written pieces with short video or VR extracts to create multimedia content suitable for publication across institutional websites and YouTube.

## **5. Media Legacy Compilation:**

Compile all published articles, interviews, and media appearances into a single "DIRECTED in the Media" archive on the project website, ensuring accessibility beyond the project's completion.

This approach will secure DIRECTED's reputation as a thought leader in climate and disaster resilience communication and ensure that its results remain visible to scientific, policy, and practitioner audiences beyond 2026.

# 3. Dissemination

## 3.1 Tool Demonstrations

As a part of the programme there will be a need to demonstrate a range of newly developed climate change risk assessment, Climate Change Adaptation and disaster management tools within the Real World Labs and the organisations represented in them. This will enable the DRR and CCA practitioners to more clearly understand some of the new tools developed in the previous H2020 programmes and via other programmes and companies to seek advice from CCA and DRR practitioners how they would like the tools to be made interoperable and what additional parameters should be added to make them more useful.



## Update for October 2024 to September 2025

Table 9: Tool Demonstrations Outcomes.

Name of Tool	Date of demonstration	Audience	Outcome
Data Fabric	04.12.2024.	National and regional level Authorities	Early demonstration of Data Fabric, user stories and municipality-level needs.
CLIMADA	02.09.2025	All project partners at GA	MCA works, UI in Data Fabric needs polishing.
CLIMADA	26.06.2025	CLIMADA user community (from industry, public institutions, NGOs, and academia)	Technical demonstration of MCA and interoperability with the other DIRECTED models.
Data Fabric	26.03.2025	Stakeholder workshop in Zala Region	Live demo of a first version of the Data Fabric
SAFERPLACES	14/04/2025	DEMO RWL 2 DIRECTED DATA FABRIC (over 20 provincial and regional Civil Protection +ARPAE technicians attending)	Demo of live forecast ingestion, modelling functionalities. Review & comparative analysis; planning of next-pilot with stakeholders, collect feedback
Climate Connectivity Hub and Taxonomy	23rd April 2025	Webinar hosted by MAIA project for public audience	Technical demonstration of Hub and Taxonomy in different use cases and plans within DIRECTED.
Climate Connectivity Taxonomy	13 June 2025	The <a href="#">Climate Connectivity Taxonomy</a> (v1) was released on 13 <sup>th</sup> June 2025.	Public release of the taxonomy that will be used and refined for the Data Fabric, Capacity Development modules and e-Learning platform.
Danube Model, Data Fabric, SaferPlaces	9 July 2025	Representatives of the insurance industry, Austrian and Viennese officials (water department), engineers, technicians, scientists and other stakeholders present at the second RWL 3 stakeholder event in Vienna	Demonstration of flood height and recurrence interval simulations, partly through the Data Fabric online viewer.
ABSOLUT crop yield model	29 April 2025 Table 9: Tool Demonstrations Outcomes	Geoscientists from various countries (mostly from the EU and China) at the EGU General Assembly in Vienna	Poster presentation "Mapping future crop yield trends across Europe..."

ABSOLUT crop yield model	21+22 May 2025	Geoscientists and civil protection experts from various countries (mostly from Hungary and South-Eastern Europe) at the 2nd Natural Hazards and Climate Change Conference in Szeged, Hungary	Poster Presentation “Future crop yield trends across Europe from past observations and ISIMIP climate scenarios”
SaferPlaces, Data Fabric,	16 - 18 June 2025	Demonstration of SaferPlaces and Data Fabric at booth during the ECCA conference	Raised awareness of tooling among ECCA attendees and valuable feedback.
Citizen Flood Safety VR Experience	16 - 18 June 2025	Demonstration of Flood Safety VR App to a policy/ climate adaptation audience at ECCA 2025	Full trial of app with a live audience Over 30 Feedbacks collected and reviewed
Citizen Flood Safety VR Experience	15 – 19 September, 2025	Demonstration of Flood Safety VR App at REMTECH Europe 2025 to a Disaster Risk Management Audience	Full trial of app with a live audience Feedbacks collected to be reviewed

Table 10: Tool demonstrations update.

Target Groups Reached	Goal	Indicator	Actual Year 3	Aids Outcome/ Impact
Specialist audiences	At least 16 presentations of tools & services made to real-world practitioners	Number of presentations and members in the audience	13 presentations to diverse audiences	Outcomes: 1,2,3,4,5,6,7

## 3.2 Stakeholder engagement in co-design and co-production

DIRECTED puts co-creation and co-production at its heart, by applying the Tandem approach of transdisciplinary knowledge co-production with a risk governance lens, resulting in the Risk-Tandem Framework. The Tandem philosophy represents a major shift away from a focus on ‘products’ to a transdisciplinary knowledge co-production ‘process’ in which co-design and collaborative learning is the defining characteristic, and both stakeholders and modellers alike build their capacity to understand the decision context and the potential of data and tools. The use of Tandem guides stakeholders from across the science-society interface, with diverse knowledge, expertise and experience to collaborate, co-design activities and co-produce knowledge and data for models and tools to provide

context-specific input to Climate Change Adaptation plans and policies. With a risk governance lens, the Risk-Tandem Framework acts as a lever to bring knowledge on co-design and co-development to the core of model development processes to support more effective decision-making and serve as a mechanism for facilitating participation, engagement, and communication. Transdisciplinary co-production, knowledge exchange and learning processes will be designed to enhance and reconcile key aspects of “interoperability” that currently represents a barrier for effective DRR.

## Update for October 2024 to September 2025

From a communications and dissemination perspective, DIRECTED has significantly enhanced the visibility, accessibility, and uptake of its foundational stakeholder engagement methods that have been applied through the Tandem framework. A set of DIRECTED capacity development modules and facilitation canvases has been produced to translate complex Tandem concepts into clear, engaging, and participatory formats. These resources build on co-produced insights from RWLs, Training-of-Trainers workshops, capacity needs assessments, and ongoing consultations, ensuring that messaging reflects stakeholder priorities and real-world practice. By adapting training materials originally aimed at RWL hosts into practical, ready-to-use guidance for a wider community of practitioners and policymakers, DIRECTED has extended and broadened the relevance of its approach to co-production. The interactive [online Tandem guidance](#) has been updated with a more intuitive structure, making the Tandem Guiding Questions easier to navigate and communicate to diverse audiences. The training materials are available as both printable PDFs and interactive Miro boards providing versatile formats for dissemination across in-person and digital channels, reinforcing the DIRECTED Tandem approach as a communicable, scalable, and trusted framework for DRM and CCA professionals.

Engagements across the RWLs:

A comprehensive log of participants, events, and outputs is also consolidated in Milestone 13, with traceability and evidence for RWL stakeholder engagement activities.

*Table 11: Volume of WP 2 engagement activities by Real World Labs (RWLs).*

RWL	Interviews	Workshops/Exercises	Webinars	Meetings
RWL 1 – Capital Region of Denmark	4	2	1	2
RWL 2 – Emilia-Romagna		3		3
RWL 3 – Vienna	3	2		
RWL 3 – Zala	4	2	3	5
RWL 4 – Rhine-Erft		4		2

These activities received varied levels of coverage and recognition:

**RWL 1:** Interviews aimed at eliciting stakeholder needs and preferences for a Data Fabric (interviews, questionnaires) followed by a Data Fabric co-design and demonstration workshop and a stakeholder mapping exercise between the municipality employees and emergency response identified information needs, local hotspots, strengthening shared understanding of key risk areas. The exercise also resulted in a better understanding between stakeholders which data they each used for their specific planning and which data sharing and potential data sharing platform would improve collaboration across organisations and municipality borders.

**RWL 2:** A flood and coastal risk exercise that engaged more than 100 people, across law enforcement, civil defence, volunteer and municipalities. The exercise had the main purpose of improving the response capacity of the regional civil protection system to storm events concomitant with river flooding (Video <https://www.youtube.com/watch?v=EwH3io6NF6I> showed during Remtech expo 2025 in the ARSTPC-ER stand).

A forest fire simulation exercise engaged 90 stakeholders across law enforcement, civil defence, volunteer and municipalities, the exercise had the main aim of improving the response capacity of the regional civil protection system in the event of forest fires. The event received local news coverage: [Prove di emergenza estiva, l'esercitazione a Lido degli Scacchi](#).

**RWL 3:** Two workshops (March 2025) brought together over 40 diverse stakeholders, including first responders, mayors, government agencies, and NGOs, generating local momentum for climate resilience in West Balaton. The activities were covered by local news media and highlighted by the mayor’s press office, extending reach beyond the immediate participants.

**RWL 4:** A co-designed Tabletop Exercise (TTX) (see Section 5.2.3) provided a safe and creative space to test flood response and CCA scenarios. Following the exercise, SEI published an OpEd, further amplifying impact and visibility: [Camaraderie in chaos: using play to build needed trust in uncertain times](#).

Table 12: Stakeholder engagement update.

Target Groups Reached	Goal	Indicator	Actual Year 3	Aids Outcome/ Impact
Specialist audiences	Detailed stakeholder engagement for co-design and co-production in conjunction with four Real World Labs	Number of specialists involved in workshops	Refer to D3.2 for a detailed analysis of the 4 RWL’s	Outcomes: 1,2,3,4,5,6,7

## Next Steps October 2025 to September 2026

In the coming year, the next steps will include developing the final two phases of the Tandem Capacity Development training modules. Concurrently, efforts will build on the existing modules to scale adoption of the broader Risk-Tandem Framework through the creation of e-Learning modules and by positioning Risk-Tandem outputs for legacy, embedding the capacity development materials within diverse practitioner and policy communities beyond the project. We will ensure Risk-Tandem outputs are integrated into ongoing DRM and CCA initiatives through strengthened networks through targeted dissemination partnerships with professional associations, academic institutions, and practitioner networks. Efforts will also enhance interactivity through the inclusion of digital tools and multimedia content within the Tandem Capacity Development Training Modules and e-learning (see section 3.4), ensuring the guidance is engaging and adaptable across contexts. This stage marks a shift from production to widespread refinement, testing, embedding, and mainstreaming, ensuring Risk-Tandem resources are not only visible and accessible but also actively applied in real-world decision-making.

Moving into the sustain phase of the Risk-Tandem Framework, all labs are planning up to 3 workshops.

## 3.3 Policy Briefs & Policymaker Meetings

Policy briefs will be created using the results of the DIRECTED Project to make recommendations towards EU and local disaster risk, economic and climate adaptation policies. A briefing of the results of the Project will be conducted in phase 5 of the Project to relevant EU Departments and Executive Agencies (DG's) - we will also seek an understanding whether relevant DG's would seek to be kept up-to-date in the progress of the project e.g. how & when. Likewise, policy briefs can also be distributed amongst local level policy stakeholders to guide policy as appropriate.

*Table 13: Policy Briefs and Policymaker Meetings updates.*

Target Groups Reached	Goal	Indicator	Aids Outcome/ Impact
<p>Policymakers and senior civil servants</p>	<p>At end of project deliver policy implications for governance and transfer of climate change science to the DRR/CCA communities across Europe</p>	<p>Number of policymakers and senior civil servants attending meeting</p> <p>Downloads of policy briefs</p>	<p>Outcomes: 1,2,3,4,5,6,7</p>

## Update for October 2024 to September 2025 and plans for final year.

The DIRECTED team have discussed the knowledge accumulation over the Project and have decided that there are a number of policy briefs we would like to produce and disseminate over the last phase in the project. These are;

### EU/ Government Policy-Maker

1. **Risk-Tandem Framework** - 'D3.3 Policy brief on risk governance in the context of DRR and CCA' will be produced combining the findings during the development of the Risk-Tandem Framework and its applicability to assisting trans-sector communications, understanding and decision making on the complex relationships and required actions needed during an extreme climate emergency, as well as for longer term climate adaptation.
2. **Interoperability of data and models and beneficial outcomes for local authorities/ municipalities and first responders.** Discussing the Data Fabric and how it has enabled complex discussion and agreement between a range of stakeholders - showing case studies
3. **Communications - a discussion and recommendations of findings from the Comparative Case Study of the floods in Emilia-Romagna 2023 and Rhine-Erft 2021.** The policy brief will discuss contrasts e.g situational governance structures and communications, communications content and public reception of this information, plus the need for citizen training and awareness in advance of events and the potential for misinformation dissemination.
4. **The use of VR and Immersive technology for citizen, volunteer and professional training** - this document will attempt to draw assimilation with other EU projects to produce the policy recommendations.

### Regional/ Local Factsheets/ Policy Briefs

The DIRECTED consortium feel it is also important to summarise local level findings for each of the Real World Labs in short policy briefs. The briefs will be developed in English and the Local Languages and dissemination to decision makers at local level.

### Assimilation into Policy Consultations at EU Level

Where relevant we will also respond to EU or UN Policy consultations calls. One already recognised is the public consultation phase at end of 2025 of [https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/14770-European-climate-resilience-and-risk-management-integrated-framework\\_en](https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/14770-European-climate-resilience-and-risk-management-integrated-framework_en)

## 3.4 DIRECTED e-Learning Portal

Development of programmes that combine information and learning related elements of governance frameworks that can be supported by innovative technical frameworks to access, transform and integrate data and models into customised workflows for creating actionable solutions.

Programmes will target vocational long-life training to support the Real World Labs, student support materials and provide support and help build risk and adaptation solutions, especially those identified by Real World Labs.

To perpetuate learning programmes, a co-designed and co-developed “Training of Trainers” programme will be developed through a dedicated Workshop with trainers, and curriculum developed in response to needs, so that capability beyond the DIRECTED project is ensured. Workshops delivered both in-person and online will be highly participatory and practical, focusing on techniques, tools and tips of training management, with participants themselves designing, delivering and critiquing methods.

A suitable e-Learning portal will be identified during the project to deposit and make available all training materials produced; this will increase the ability to deliver 21st century learning and training opportunities.

Table 14: e-Learning Portal Update.

Target Groups Reached	Goal	Indicator	Actual Year 3	Aids Outcome/ Impact
Specialist Groups	Development of Trainer of Trainers Programme and curriculum development	Number of Workshops Number of Trainees	2 (ECCA training - 23 participants) General Assembly - 15 participants	Outcomes: 1,2,3,4,5,6,7

### Update for October 2024 to September 2025

**Platform hosting:** The weADAPT platform (<https://weadapt.org/>) will be used for hosting the DIRECTED e-Learning materials as it offers a sustainable solution that will be maintained long-term and made easily accessible to the CCA and DRM community of professionals, researchers and policymakers. Initial mock-ups of the look-and-feel of such a webpage on weADAPT have been developed by UCC. Consultations with SEI Oxford (who manage the weADAPT platform) occurred to understand the options for hosting the learning materials within the existing web-structure of weADAPT or via one of its Microsites which would offer more functionality. Given the extra development costs associated with a Microsite, it was decided to work within the existing weADAPT web-structure and benefit from web

development updates used for Tandem (e.g. interactive graphics, DIRECTED taxonomy (CCT) (WP 2) that will drive an interactive website glossary, etc).

**Target groups and learning programmes:** The target groups have been refined through engagement and consultation with Real World Lab hosts to better understand their context-specific emerging outputs (including Data Fabric and Risk-Tandem application) that can be used for the training programmes. Three training programmes (or modules) were identified which will link to RWL experience and related target groups. These include (but are subject to change):

- Interoperability in operation for extreme climate events: flooding in Rimini targeting civil protection officers.
- Integration in DRM and CCA planning: coastal flooding in Roskilde Fjord targeting municipalities.
- Risk communication and citizen engagement: combining experiences from Rhine-Erft in Germany targeting districts, Zala, Hungary targeting mayors and Ferrara, Italy targeting the public.

**Training co-design workshop:** For the first module "interoperability in operation"- a training session was organised as part of the European Climate Change Adaptation Conference in Rimini (18th of June 2025) targeting representatives from municipalities, civil protection and other government authorities/ agencies and policymakers responsible for managing extreme climate/ weather events and adaptation/ resilience planning. The workshop included an immersive exercise using the prototype Data Fabric to prepare for future extreme climate events. For the second module "integration in planning", a mock-up workshop focusing on multi-criteria decision-making occurred within the General Assembly (September 2025) and the Field Visit to Roskilde Fjord informed a better understanding of the municipalities role as the target groups. Additionally, at the General Assembly, a co-design workshop, and related exercises with RWL hosts enabled a deeper dive into the target groups for each RWLs and their expected training outputs to further guide the programme development in Year 4.

## Next Steps October 2024 to September 2025

**Platform hosting:** A sprint session is planned between UCC and SEI Oxford to develop a technical mock-up of the look-and-feel of the DIRECTED e-Learning webpage on WeAdapt. UCC and SEI Oxford will work closely to develop 1) main landing page with signposting to learning programmes and additional resources (related to the Data Fabric, Risk-Tandem, and Tandem) three separate learning pages, one for each programme/ module.

**Target groups and learning programmes:** UCC will work closely with RWL hosts, stakeholders and other Work Packages to co-design the learning content. This will involve interviews with RWL stakeholders in each of the RWLs to ensure the content meets their needs. A trip to the Copenhagen RWL has been planned for the first week of December

2025, which will involve a workshop focused on the multi-criteria decision-making tool and interviews with key stakeholders/target groups (emergency response, municipalities).

**Training co-design workshops:** In-person workshops will support the co-design, testing and refinement of the learning material, both within the RWL context (aligned to planned RWL activities) and to wider stakeholders. One external workshop is currently planned within the DRR Academy for Early Career Scientists and Practitioners Winter School in Salerno, Italy (February 2025) being co-organised by DRS sister projects. This will focus on the Rimini case study and test the draft learning materials.

## 3.5 Published Papers

Academic journals – academic partners will target online high impact journals with academic research and new methodologies produced by the Project.

Target Groups Reached	Goal	Indicator	Aids Outcome/ Impact
Scientists & Researchers	Publication of at least 2 papers in high impact journals	Papers published Citations	Outcomes: 1,2,3,4,5,6,7

### Update for October 2024 to September 2025

Table 15: Publications.

Date	Publication Name + Link	Journal	Beneficiary partners
04.12.2024	Technical Note: Influence of building representation in flood hydrodynamic modelling: the case of the 2021 Ahr valley flood Shahin Khosh Bin Ghomash, Nithila Devi Nallasamy, and Heiko Apel <a href="https://hess.copernicus.org/preprints/hess-2024-314/">https://hess.copernicus.org/preprints/hess-2024-314/</a>	Under review for Journal of HESS	GFZ Potsdam
Jan 2025	International Journal of Disaster Risk Reduction - The Risk-Tandem Framework: An iterative framework for combining risk governance and knowledge co-production toward integrated Disaster Risk Management and Climate Change Adaptation <a href="https://www.sciencedirect.com/science/article/pii/S21242092400832X?via%3Dihub">https://www.sciencedirect.com/science/article/pii/S21242092400832X?via%3Dihub</a> Janne Parviainen, Stefan Hochrainer-Stigler, Lydia Cumiskey, Sukaina Bharwani, Pia-Johanna Schweizer, Benjamin Hofbauer, Dug Cubie	International Journal of Disaster Risk Reduction - Volume 116, January 2025, 105070	SEI Oxford, RIFS-Potsdam, UCC,
04.03.	Monte Carlo-based sensitivity analysis of the RIM2D	Under review for	GFZ

2025	hydrodynamic model for the 2021 flood event in western Germany Shahin Khosh Bin Ghomash, Patricio Yeste, Heiko Apel, and Viet Dung Nguyen	Journal of NHESS	Potsdam
2025	Leveraging climate resilience capacities by (un)learning from transdisciplinary research projects Simona Pedde, Reginald Grendelman, Lydia Cumiskey, Denise McCullagh, Joanne Vinke-de Kruijf, Katharina Hölscher <a href="https://www.sciencedirect.com/science/article/pii/S212096324000925?via%3Dihub">https://www.sciencedirect.com/science/article/pii/S212096324000925?via%3Dihub</a>	Climate Risk Management - <a href="#">Volume 47</a> , 2025, 100675	UCC
27.02., 2025	Strengthening all-of-society approaches for disaster resilient societies: a European research agenda Nathan Clark, Kees Boersma, Emmanuel Raju, Antonio Opromolla, Kati Orru, Sten Hansson, Raffaella Russo, Maria Vittoria Gargiulo, Gabriella Duca, Paolo Capuao, Pia Johanna Schweizer, Lydia Cumiskey, Max Steinhausen, Matthieu Branlat, Alexandra Olson, Nina Blom Andersen, Robert Larruina, Funda Atun, Cees vanWesten, Rosa Tamborrino, Maike Vollmer <a href="https://www.sciencedirect.com/science/article/abs/pii/S2212420925001694?via%3Dihub">https://www.sciencedirect.com/science/article/abs/pii/S2212420925001694?via%3Dihub</a>	<u>International Journal of Disaster Risk Reduction</u> Available online 27 February 2025, 105345	Rifs-Potsdam, UCC, TUBS
14.03. 2025	Capacity development for locally-led knowledge co-production processes in Real World Labs for managing climate and disaster risk. Lydia Cumiskey, Janne Parviainen, Sukaina Bharwani, Natascha Ng, Stefano Bagli, Martin Drews, Christopher Genillard, Dominik Hedderich, Stefan Hochrainer-Stigler, Benjamin Hofbauer, Levente Huszti, Chahan M. Kropf, Jana Löhrlein, Arnau Macià Pou, Paolo Mazzoli, Jacob Pedersen, Angela Rosa, Pia-Johanna Schweizer, Max Steinhausen, Julian Struck, Victor Wattin Håkansson <a href="https://www.sciencedirect.com/science/article/pii/S212420925002225">https://www.sciencedirect.com/science/article/pii/S212420925002225</a>	International Journal Disaster Risk Reduction Available online 14th March 2025	UCC, SEI Oxford, GECOsystem a, DTU, G&Co, ZSRT, RH, TUBS, Erftverband, ETH Zurich, Rifs-Potsdam, ARSTPC
21.07. 2025	Just Systems or Justice in Systems? Exploring the Ethical Implications of Systemic Resilience in Local Climate Adaptation Hofbauer, B., Einhäupl, P., Hochrainer-Stigler, S. et al. Just Systems or Justice in Systems? Exploring the Ethical Implications of Systemic Resilience in Local Climate Adaptation. Int J Disaster Risk Sci 16, 550–559 (2025). <a href="https://doi.org/10.1007/s13753-025-00653-2">https://doi.org/10.1007/s13753-025-00653-2</a>	International Journal of Disaster Risk Science	RIFS, IIASA, Erftverband
22.08. 2025	Beyond single company climate risk disclosure: event-based physical risk reporting		ETH Zürich

	Victor Wattin Håkansson, Simona Meiler, Sarah Hülsen, Leonie Villiger, Mathilde Bossut, Jamie W McCaughey*, Chahan M Kropf and David N Bresch  <a href="https://iopscience.iop.org/article/10.1088/2752-5295/adf912">https://iopscience.iop.org/article/10.1088/2752-5295/adf912</a>		
05.09.2025	Invited perspectives: Fostering interoperability of data, models, communication, and governance for disaster resilience through transdisciplinary knowledge co-production  Kai Schröter, Pia-Johanna Schweizer, Benedikt Gräler, Lydia Cumiskey, Sukaina Bharwani, Janne Parviainen, Chahan M. Kropf, Viktor Wattin Håkansson, Martin Drews, Tracy Irvine, Clarissa Dondi, Heiko Apel, Jana Löhrlein, Stefan Hochrainer-Stigler, Stefano Bagli, Levente Huszti, Christopher Genillard, Silvia Unguendoli, Fred Hattermann, and Max Steinhausen  <a href="https://nhess.copernicus.org/articles/25/3055/2025/">https://nhess.copernicus.org/articles/25/3055/2025/</a>		UCC, SEI Oxford, GECOSistema, DTU, ZSRT, RH, TUBS, 52North, ETH Zurich, PIK, ...
2025	Uncertainty representation and propagation in flood risk modelling under climate change: A review Villy Mik-Meyer, Emma E Doyle, Morten Larsen, Rick Kool, Martin Drews	Under review for WIRES	DTU
2025	Measuring the social impacts of coastal flooding: A Danish example Kirsten Halsnæs, Emma Houmøller Veng, Per Skougaard Kaspersen, Villy Mik-Meyer, Tanya Pfeiffer Sunding, and Martin Drews	Under review for Climatic Change	DTU
2025	The Damage Cost Model: A Co-created Open-Source Tool for Assessing the Socioeconomic Impacts of flooding Per Skougaard Kaspersen, Emma Houmøller Veng, Shreya Some, Martin Drews, Kirsten Halsnæs	Under review for Climate Services	DTU

## Next Steps October 2025 to September 2026

Table 16: Upcoming publications.

Date	Publication Name + Link	Journal	Beneficiary partners
2nd half of 2026	Flood risks in the Danube river basin under climate change [originally planned: "...under CMIP7 climate scenarios"; these won't be available before mid-2026, though.]	Climatic Change (planned topical collection on ISIMIP, organized by Valentina Krysanova)	PIK
2nd half of 2026	Crop yields expected to decrease in most parts of Europe – projections of the ABSOLUT crop yield model for NUTS-2 regions	t.b.d.	PIK

2026	(working title) A Decade After Bodil: Assessing Climate Adaptation and Urban Resilience in Denmark's Roskilde Fjord	One Conference paper + one full journal paper	DTU, ETH, SEI, GFZ, GECOSistema, etc.
2026 (2 <sup>nd</sup> half)	(working title) Lessons learned from RWL 1 Danish Capital Region	T.b.d.	DTU, ETH, SEI, GFZ, GECOSistema, RIFS-Potsdam, TUBS, etc.

## 3.6 Conference Attendance

Partners will attend and develop sessions for academic, public sector and business conferences to promote the new methodologies, data, tools/ tool-kits/ training packs and reports etc.

These conferences will include EGU, COP, ICLEI, Disaster Risk, ECCA, DRR and CCA conferences – to target specific audiences where relevant. Where possible stands will be located at larger conferences promoting the full outputs of the Project in the later part of the Project.

A short conference strategy will be designed to ensure that information is disseminated as widely as possible to target audiences.

### Update for October 2024 to September 2025

Conference details and attendance by all partners can be found here:

[https://docs.google.com/spreadsheets/d/1-3VU2pQHpSvAjPGYC\\_ejeRnbVQoL3ejp/edit?gid=1160693962#gid=1160693962](https://docs.google.com/spreadsheets/d/1-3VU2pQHpSvAjPGYC_ejeRnbVQoL3ejp/edit?gid=1160693962#gid=1160693962)

### Next Steps October 2025 to September 2026

Table 17: Conference attendance 2025/ 2026.

Conference	Dates	Target groups	Which beneficiary in attendance
Danish Parliamentary Event (in Danish): Klimakatastroferne kommer – digital tilgang til klimatilpasning, Christiansborg (Danish Parliament), Denmark	10 Oct 2025	Policymakers, interest organizations, businesses, researchers, and the media	DTU
European Geosciences Union (EGU) General	3–8 May 2026	Principally Geo- and other scientists, to a lesser extent also	PIK, ETH, 52N

Assembly in Vienna, Austria		Industry and NGO representatives, and the media.	
CaMa-Flood User Conference in Reading, UK	10–11 September 2026	Users and Developers of CaMa-Flood (which is part of the Danube Model)	PIK
10th International Conference on Flood Management (ICFM10) in London, Ontario, Canada	20-22 May 2026	Risk managers, other scientists, UN organisations	DTU
Geospatial World Forum	28 April - 1 May 2026	Geospatial professionals, including representatives from local to international authorities.	52N
WMO ROX Lectures: Hybrid Event 2nd Regional Scientific Forum, Prague	04 - 06/11/2025	Global Climate Scientists	Oasis, TUBS
SRA Annual Conference	8 July 2026	Global Social Scientists	RIFS-Potsdam
EURESFO26	TBC	Cities and Municipalities	UCC
UCC Law & Environment conference	April 2026	Law and policymakers	UCC
Hochwasserforum 2026	June 2026	Water Management Authorities	EV
GISTAM 26	21 <sup>st</sup> -23 <sup>rd</sup> May 2026	Geographical Information Specialists	52N
FOSSGIS 2026	25 <sup>th</sup> -28 <sup>th</sup> May 2026	Geographical Information Specialists	52N

## 3.7 Use of EU Communications & Dissemination Platforms

Table 18: EU Communication Channels dissemination.

Target Groups Reached	Goal	Indicator	Aids Outcome/ Impact
All	Publication of at least 4 articles or posts on EC platforms	Publications posted	Outcomes: 1,2,3,4,5,6,7

Table 19: EU Communications and Dissemination updates.

Event	Date	Target Groups Reached	Goal	Indicator	Aids Outcome/ Impact
Multi-hazard DRR Academy in Barcelona	23–26 Oct. 2024	Young DRR and CCA professionals and researchers	20–40 participants	Number of participants	Outcomes:1,2,3,4,6
Disaster Risk Stakeholder Webinar with The HuT, coordinated by CMINE.	26th Feb. 2025	DRM and CCA professionals in data management and modelling, researchers, authorities	50–70 Attendees 1–2 follow-up engagements	Attendees’ engagement as collected in Zoom analytics Resulting engagements/ links/ collaboration after webinars	Outcomes:1,2,3,4,5
European Week of Regions and Cities 2025 – Session on Peer 2 Peer Learning	13–15 Oct. 2025	Policymakers on regional, national and EU level,	Active engagement with session audience, 50–100 Attendees	Number of engagements, Downloads of Tandem guidance, Interest in DIRECTED innovations	Outcomes:1,2,3,6
EU Science for Preparedness, Turin – Session contribution	4–6 Nov. 2025	Researchers, policy, and crisis response and preparedness communities	50–100 session participants	Attendees’ engagement, Follow-up invitations and collaborations	Outcomes:1,2,3,5,7
WMO/JRC RA VI Scientific Forum, Prague – Session on disaster communication	4–6 Nov. 2025	Regional and national hydrometeorological organisations researchers, businesses, policymakers	50–80 Attendees Follow-up invitations and collaborations	Attendees’ engagement, Follow-up invitations, Collaborations, Interest in DIRECTED innovations	Outcomes:1,2,3,4,5,6

## 3.8 Data Stewardship Principles

During the DIRECTED Project a range of data will be developed and used and will be made open publicly on a range of data platforms including the DIRECTED Website itself, Zenodo and the open databases of beneficiary organisations. We will also produce a data directory stating where all of the data developed during the project is made publicly available. This will include both the data itself, the outputs from modelling work and maps produced.

Organizations hosting and working with the Data Fabric will add their own internal and external data sources to the platform. Here, the role of the Data Steward is central to adding managing and providing access to data and models in the Data Fabric. The Steward will also be responsible to systematically add and maintain meta-data on the platform.

Work Packages engaged: WP 2, WP 5, WP 7 and WP 8

Data collected through WP 3 and WP 4 will be disaggregated and anonymised where any personal details or experiences has been conveyed.

*Table 20: Data Stewardship.*

Target Groups Reached	Goal	Indicator	Aids Outcome/ Impact
All	A data directory published on the DIRECTED website and across our social media platforms	Data Directory published	Outcomes: 1,2,3,4,5,6,7

Data Stewardship information has been submitted to EU Portal in D2.2 Enhanced interoperability of tools available to users through software repository and documentation.

## 4 Year 3 – Dissemination & Communication Plan – Partner Reports

The following dissemination and communication plans are guided by the reporting structure of Horizon Europe.

Communication on projects is a strategically planned process that starts at the outset of the action and continues throughout its entire lifetime, aimed at promoting the action and its results. It requires strategic and targeted measures for communicating about (i) the action and (ii) its results to a multitude of audiences, including the media and the public and possibly engaging in a two-way exchange.

List the communication activities carried out in the context of the project. Use the same labels used in your DEC plan.

The tables below directly correlate to the recording structure of Horizon Europe and are the planned work of the beneficiaries.

We will undergo further yearly communications and dissemination reviews to develop and improve the communications and dissemination we are undertaking. The review and planning phases are timetabled as follows;

- September 2023
- September 2024
- September 2025
- September 2026

We have included the tables of communications and dissemination reporting on last year and plans for next year below, however it may be easier to view them in the link here.

Link to Tables: [Beneficiary Communications & Dissemination Plan](#)

# 4.1 Year 3 – Dissemination Plan Delivery Report

Table 21: Dissemination Plan Report Yr 3.

Name of Beneficiary	Dissemination Activity Name	Type of Dissemination Activity	Target Audience Reached	Description of the objective(s) with reference to a specific project output (max 200 characters)*	Status of Activity	Notes
Oasis Hub	ECCA 2025 Rimini	Conferences	Research communities	Event (conference/meeting/workshop/internet debate/round table/group discussion etc.)	Delivered	
	Virtual Reality for Emilia Romagna CMNE meeting attendance	Education and training	Agri user communities	App	Delivered	<a href="#">https://oasis-hub.com/en/2024/04/04/</a>
TUBS	Virtual Reality presentations to stakeholders	Education and training	Research communities	Event (conference/meeting/workshop/internet debate/round table/group discussion etc.)	Delivered	
	EGU conference 2025 in Vienna	Conferences	Research communities	Event (conference/meeting/workshop/internet debate/round table/group discussion etc.)	Delivered	
	Copernicus Emergency Annual Conference 2024	Conferences	EU Institutions	Disseminate DRECTED views on interoperability for DRR/CCA in discussions on EU level	Delivered	
	ECCA 2025 Rimini	Conferences	Research communities	Disseminate DRECTED views on interoperability for DRR/CCA in discussions on EU level	Delivered	
GFZ	DRECTED General Assembly 2025 in Copenhagen	Meetings	Regional authorities	Showcase the latest innovations from DRECTED and engage in co-production process with	Planned	
	Regular CMNE meeting attendance	Collaboration with EU Funde	Research communities	Collaboration with EU Funde	Ongoing	
PK	Presentations at relevant conferences (EGU25 and Tag der Hydrologie 25)	Conferences	Research communities	Communicate the results and ongoing research of DRECTED to the science community in Eur	Ongoing	
	Presentations at conferences suitable for presenting our models	Other scientific collaborator	Research communities	Communicate the results and ongoing research of DRECTED to the science community in Eur	Ongoing	<a href="#">https://www.egu.eu/2025/abstracts/2024/77</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/10</a>
DTU	EGU 2025 General Assembly in Vienna	Conferences	Research communities	Accepted Contribution: "Mapping future crop yield trends across Europe by auto-adaptive	Delivered	EGU GA 2025 session B.10.10
	2nd International Natural Hazards Conference in Szeged, Hungary, in May 2025	Conferences	Research communities	Accepted Contribution: "Future crop yield trends across Europe from past observations an	Delivered	
G&C	Interview and feature article focused on DRECTED in "EUrbidok - a Journal public	Other	Communities	Introduce the research and innovation potential, main results to a mixed Danish commu	Delivered	<a href="#">https://urbidok.dk/</a>
	Paper in WRES Climate Change (in review January 2025)	Other scientific collaborator	Research communities	Linked to WP2, Task 2.1	Ongoing	
	DRECTED General Assembly 2025 in Copenhagen	Meetings	Regional authorities	Showcase the latest innovations from DRECTED	Delivered	
	RWL1 Workshop April 2025	Education & training events	Regional authorities	Demonstrate the innovations from DRECTED and engage in co-production process with	Delivered	
G&C	ECCA 2025 Rimini	Conferences	Research communities	Communicate the results and ongoing research of DRECTED to the science community in Eur	Planned	
	RWL1 Workshop December 2025	Education & training events	Regional authorities	Demonstrate the innovations from DRECTED and engage in co-production process with	Planned	
G&C	Presentation of selected DRECTED results to the Ministry of Environment	Other scientific collaborator	National authorities	Discussions on how to exploit DRECTED results nationally (January 2025)	Delivered	
	Technology transfer - Saferplaces in Esbjerg municipality (Stakeholder workshop	Collaboration with EU Funde	Local authorities	Transfer of Saferplaces to a Danish municipality/collaboration with H2020 ARSNOE	Delivered	
RFS	Presentation and demonstration of Saferplaces at National Conference in Esbjerg	Conferences	Other	Local and national authorities, business, civil society, NGOs (about 100 participants)	Delivered	
	Presenting DRECTED project at scientific conference and exhibition	Conferences	Local authorities	Presenting at scientific conference and exhibition	Delivered	<a href="#">https://www.soc2025.eu/abstracts/31169-2025091816164646</a>
SEI	Workshop on Systemic Risks at the RIFS	Conferences	Research communities	Framework, focus on WP3	Delivered	
	Workshop to integrate IAD framework into RWL stakeholder engagement strategy	Education & training events	Research communities	shared implementation and adaptation of IAD framework	planned	
	Journal article, systematic literature review	Other scientific collaborator	Research communities	Literature Review	Ongoing	
	Journal article, systemic risks and societal tipping points	Other scientific collaborator	Research communities	Framework Development	Ongoing	
	Proposed collaboration with RWL Capital Region of Copenhagen - implement and	Co-Production and Survey	Regional authorities	Event (conference/meeting/workshop/internet debate/round table/group discussion etc.)	Planned	
	Society for Risk Analysis annual meeting 2024, December 9-11, 2024, Austin, USA	The DRECTED Risk-Tandem	Research communities	Event (conference/meeting/workshop/internet debate/round table/group discussion etc.)	delivered	
	Workshop on Risk-Tandem implementation w RWL in Zala Hungary 2025 (March 2025)	Co-Production and Survey	Regional authorities	Event (conference/meeting/workshop/internet debate/round table/group discussion etc.)	delivered	
	RWLs training session on MEL and Risk Tandem Governance, 10th of October 2024	Co-Production and Survey	Regional authorities	Event (conference/meeting/workshop/internet debate/round table/group discussion etc.)	delivered	
	Presentation of DRECTED @ Deep Dive on Governance and Engagement project	Education & training events	Research communities	Event (conference/meeting/workshop/internet debate/round table/group discussion etc.)	delivered	
	EGU Conference 2025 in Vienna	Conferences	Research communities	Communicate the results and ongoing research of DRECTED to the science community in Eur	Delivered	
UCC	European Climate Change Adaptation Conference June Rimini Italy	Conferences	Research communities	Showcase the use of serious games within the DRECTED project	Delivered	
	DRECTED General Assembly 2025 in Copenhagen	Meetings	Research communities	Showcase the latest innovations from DRECTED and engage in co-production process	Delivered	
	<a href="#">DRECTED Academy Multi-hazard DRECTED Academy for young researchers and practice</a>	Collaboration with EU Funde	Research communities	Communicate the results and ongoing research of DRECTED to the science community in	Delivered	
	Journal article, systematic literature review	Other scientific collaborator	Research communities	Literature Review	Delivered	
	Journal article, Risk-Tandem: an iterative framework for combining risk governance	Other scientific collaborator	Research communities	Framework Development	Delivered	
	Journal article, Capacity development for locally-led knowledge co-production pro	Other scientific collaborator	Research communities	Outcomes co-production in RWLs	Delivered	
	Journal article, Fostering interoperability of data, models, communication and gover	Other scientific collaborator	Research communities	Perspective	Delivered	
	Journal article, systemic risks and societal tipping points	Other scientific collaborator	Research communities	Framework Development	Delivered	
	EGU Conference 2025 in Vienna	Conferences	Research communities	Convening session Operational forecasting and warning systems for food, water scarc	Delivered	
	EGU Conference 2025 in Vienna	Conferences	Research communities	Converter for session: Enhancing Risk Communication: Good Practices and Theoretical	Delivered	
European Climate Change Adaptation Conference June Rimini Italy	Education & training events	Regional authorities	Converter of short course: Meaning Risk Communication: Tools and Strategies for	Delivered	<a href="#">https://www.egu.eu/2025/abstracts/2024/101</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/102</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/103</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/104</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/105</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/106</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/107</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/108</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/109</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/110</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/111</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/112</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/113</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/114</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/115</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/116</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/117</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/118</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/119</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/120</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/121</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/122</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/123</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/124</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/125</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/126</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/127</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/128</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/129</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/130</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/131</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/132</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/133</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/134</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/135</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/136</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/137</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/138</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/139</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/140</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/141</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/142</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/143</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/144</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/145</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/146</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/147</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/148</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/149</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/150</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/151</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/152</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/153</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/154</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/155</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/156</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/157</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/158</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/159</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/160</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/161</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/162</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/163</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/164</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/165</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/166</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/167</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/168</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/169</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/170</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/171</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/172</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/173</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/174</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/175</a>	
UCC Erasmus Staff Exchange visits to RWL in Zala Hungary 2025 (March 2025)	Education & training events	Local authorities	Visit to Real World Lab in Zala, Hungary linked through an Erasmus Staff Training	Delivered		
Keynote at launch of the Resilience Strategy of the Northern Ireland Emergency	Conferences	Local authorities	Highlighting our work in the DRECTED Project: Improving transdisciplinary collabora	Delivered		
Galway Climate Inspirations Festival (Sept 2025)	Education & training events	Communities	Community Engagement Galway Climate Festival around food mapping for inspiration fo	Delivered		
Webinar on knowledge co-production paper (April 2025)	Other scientific collaborator	Research communities	Webinar series of the Working Group on Co-Creating Water Knowledge HELPNIG	Delivered	<a href="#">https://www.egu.eu/2025/abstracts/2024/101</a>	
Journal article, Capacity development for locally-led knowledge co-production pro	Other scientific collaborator	Research communities	Communicate the results and ongoing research of DRECTED to the science community in Eur	Delivered		
ETH	EGU conference 2025 in Vienna	Conferences	Research communities	Event (conference/meeting/workshop/internet debate/round table/group discussion etc.)	Delivered	
Ahead additional meetings with RWL stakeholders for data fabric user assessment	Meetings	Local & national authorities	Event (conference/meeting/workshop/internet debate/round table/group discussion etc.)	Planned		
CLMADays autumn 2024	Other scientific collaborator	Research communities	Feedback from CLMADUsers including the multi-criteria functionalities	Delivered		
Additional Meetings with new and existing RWL stakeholders	Meetings	Local & national authorities	Event (conference/meeting/workshop/internet debate/round table/group discussion etc.)	Planned	11/11/2024 - Online meeting with the RWL1 stakeholders to present them the first mock-ups of the Data Fabric and gather feedback. (25/04/2025)	
Additional Workshops with RWL stakeholders	Meetings	Local authorities	Event (conference/meeting/workshop/internet debate/round table/group discussion etc.)	Planned	15/04/2025 - First RWL1 Workshop with the RWL1 stakeholders with RWL1 stakeholders to present and test the Data Fabric. 15 group part	
Yearly updates on DRECTED tools for policy makers at Region H	Meetings	Regional authorities	Event (conference/meeting/workshop/internet debate/round table/group discussion etc.)	Cancelled	Given the restructuring of the Danish Regions it has not been possible to present DRECTED results to Region H politicians as intended	
Participation in additional relevant events such as workshops & conferences	Conferences	Local authorities	Event (conference/meeting/workshop/internet debate/round table/group discussion etc.)	Ongoing	Participation in ECCA - June 2025: The Capital Region of Denmark participated in the European Climate Change Adaptation Conference 2025	
ARSTPC-ER	Stakeholder Meeting on Forests Risk	Meetings	end user	Event (conference/meeting/workshop/internet debate/round table/group discussion etc.)	Delivered	
	Forests Risk Exercise	Education & training events	end user	Event (conference/meeting/workshop/internet debate/round table/group discussion etc.)	Delivered	
G&C	Presenting DRECTED project at conference (ECCA 2025)	Conferences	International organisation	Event (conference/meeting/workshop/internet debate/round table/group discussion etc.)	Delivered	
	REMTECH Expo	Education & training events	business partners	Event (conference/meeting/workshop/internet debate/round table/group discussion etc.)	Delivered	
G&C	Awareness-building with stakeholders, potential clients & partners	Meetings	Industry	WP1.1 pilot area and stakeholder engagement	Delivered	
	Informing and updating stakeholders about DRECTED	Meetings	Industry	WP1.1 pilot area and stakeholder engagement	Delivered	
	Collecting stakeholder views data about their perception of climate risks and clima	Meetings	Local authorities	WP1.1 pilot area and stakeholder engagement	Delivered	
IASA	Tool demonstration (Future Danube Model) and discussion of forthcoming	Meetings	Industry	on Events and in Videocalls to disseminate Danube Model, gather input for improvement	Delivered	
	Communicating DRECTED goals (focus on RWL Danube) on next NatCatWorks	Conferences	Industry	Measure the interoperability gap using systemic risk ideas.	Ongoing	
EV	Journal article: Interoperability between systems for managing risks	Other scientific collaborator	Research communities	Analyze how the risk-layering framework figures outputs of perception, implementation, etc	Ongoing	
	Journal article: on Risk-layering indicators	Other scientific collaborator	Research communities	Researchation of Risk Layering approach	Ongoing	
52*North	Presentation of Results in International Conference	Conferences	Other scientific communities	WP1 pilot area and stakeholder engagement	Delivered	
	Stakeholder meetings	Meetings	Local authorities	TTX to improve understanding of procedures during a flood event	Delivered	
ARPAE	Tabletop Exercise (TTX) with Stakeholders	Meetings	Local authorities	TTX to improve understanding of procedures during a flood event	Delivered	
	Poster "Reliability Stakeholders and Hochwasserassess.chutz"	Meetings	Civil society	Poster at national Event for citizens to inform themselves about flood and heavy rain	Cancelled	
ZART	Scientific and Technical Advisory Board	Meetings	Research communities	update Project work	Delivered	
	Stakeholders Assembly	Meetings	business partners	update Project work	Cancelled	December 6, 2025
	FOSSG 2025	Conferences	Research communities	Climate Services	Delivered	March 10, 2025
	ECCA 2025	Conferences	Research communities	Climate Services	Delivered	
	AGLE 2025	Conferences	Research communities	Climate Services	Cancelled	
	EGU 2025	Conferences	Research communities	Climate Services	Delivered	
	Staff Meetings	Meetings	Other	status of work	Ongoing	
	University partners Uni MS, Uni Twente [SU Forum, teaching activities]	Education & training events	Other	Use-case and context of DRECTED, sharing and training of recent developments	Ongoing	
	3 Blogs posts	Other	Research communities	forecasting, Climate Services, Data Fabric	Delivered	<a href="#">https://www.egu.eu/2025/abstracts/2024/101</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/102</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/103</a>
	ARPAE	GA and RWL Copenhagen	Meetings	Local authorities	Event (conference/meeting/workshop/internet debate/round table/group discussion etc.)	Delivered
Stakeholders Meeting on Forests Risk		Meetings	end user	Event (conference/meeting/workshop/internet debate/round table/group discussion etc.)	Planned	
ZART	Presenting DRECTED project at conference	Conferences	end user	Event (conference/meeting/workshop/internet debate/round table/group discussion etc.)	Planned	
	Presenting DRECTED project at conference	Conferences	Research communities	Event (conference/meeting/workshop/internet debate/round table/group discussion etc.)	Planned	<a href="#">https://www.egu.eu/2025/abstracts/2024/101</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/102</a> , <a href="#">https://www.egu.eu/2025/abstracts/2024/103</a>



# 4.3 Year 4 – Dissemination Plan

Table 23: Dissemination Plan Yr 4.

2025/ 2026 Organisational Dissemination Plan					
Name of Beneficiary	Dissemination Activity Name	Type of Dissemination Activity	Target Audience Reached	Description of the objective(s) with reference to a specific project output (max 200 characters)*	Status of Activity
<b>Oasis Hub</b>	D1.3 Case Study Glossy Marketing and Dissemination	Other	Regional authorities	Social Media	Planned
	WMO ROX Lectures: Hybrid Event 2nd Regional Scientific Forum, Prague - 06/2026	Conferences	Research communities	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned
	Host of DIRECTED Webinar series "Building Resilience through Data, Models, and Metrics"	Meetings	Civil Society	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned
	Policy Briefs	Meetings	EU Institutions	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned
	CMINE Event engagement	Meetings	Specific user communities	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned
<b>TUBS</b>	Virtual Reality App (Wildfire)	Education & training events	Citizens	App	Planned
	Host of DIRECTED Webinar series "Building Resilience through Data, Models, and Metrics"	Meetings	Civil society	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned
	Policy Briefs meetings	Meetings	EU Institutions	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned
	WMO ROX Lectures: Hybrid Event 2nd Regional Scientific Forum, Prague - 06/2026	Conferences	Research communities	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned
	CMINE Event engagement	Meetings	Specific user communities	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned
<b>GFZ</b>	Co-host the climate festival in the Zala region	Conferences	Civil society	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned
	Collaboration with	Collaboration with EU Funded Projects	Civil society	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned
	Presentations at relevant conferences (EGU2026 and Tag der Hydrologie 2026)	Conferences	EU Institutions	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned
	Involvement in DIRECTED Webinar series "Building Resilience through Data, Models, and Metrics"	Meetings	Research communities	Communicate the results and ongoing research	Ongoing
	Policy Brief meetings	Meetings	Civil society	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned
<b>PIK</b>	Publishing the work done in the RWLs and WPs as presentations/posters in national and international conferences	Other scientific collaboration	Research communities	Communicate the results and ongoing research	Ongoing
	Presentations at conferences suitable for discussing our modelling efforts	Conferences	Research communities	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Ongoing
	Involvement in DIRECTED Webinar series "Building Resilience through Data, Models, and Metrics"	Meetings	Civil society	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned
	EGU 2026 General Assembly in Vienna (in May)	Conferences	Research communities	Focusing on the flood frequency trends and their impact on society	Planned
	CaMa-Flood User Conference in Reading, England (in September 2026)	Meetings	Research communities	Presenting and discussing the further development of the model	Planned
<b>DTU</b>	Involvement in DIRECTED Webinar series "Building Resilience through Data, Models, and Metrics"	Meetings	Civil society	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned
	Policy Brief meetings	Meetings	EU Institutions	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned
	RWL Workshop February 2026	Education & training events	Regional authorities	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned
	RWL Workshop May 2026	Education & training events	Regional authorities	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned
	Presentation of selected DIRECTED results to the Ministry of Environment	Other scientific co-operation	National authorities	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Delivered
<b>GECO</b>	Present DIRECTED project at scientific conferences and exhibition	Conferences	Local authorities	<b>REMTECH EXPO 2026</b>	Planned
	Policy Brief meeting	Meetings	EU Institutions	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned
	Involvement in DIRECTED Webinar series "Building Resilience through Data, Models, and Metrics"	Meetings	Civil society	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned
	Present at SRA 2025 Conference	Conferences	Research communities	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned
	Lecture/Presentation of project outcomes to students	Education & training events	Research communities	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned
<b>RIFS</b>	publish article on indicators and risk layering	Other scientific collaboration	Research communities	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Ongoing
	Policy Brief meeting	Meetings	EU Institutions	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned

SEI	EU Regions Week in Brussels	Collaboration with EU Funded Projects	Regional authorities	Communicate the results and ongoing research	Planned		
	Zala Climate Festival	Other	Communities	Communicate the results and ongoing research	Planned		
	Tandem Update journal paper	Other scientific collaboration	Communities	Communicate the results and ongoing research	Planned		
	Policy Brief meeting	Meetings	EU Institutions	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned		
	Assumptions Framework journal paper	Other scientific collaboration	Research communities	Communicate the results and ongoing research	Planned		
	MCA Application journal paper	Other scientific collaboration	Research communities	Communicate the results and ongoing research	Planned		
	DRR Winter School in Salerno	Other scientific collaboration	Research communities	Title: Effective, Sustainable and Ethical Disaster Risk Reduction Location: Salerno, Italy. DIRECTED-led session Decision-Making for Extreme Flooding in Rimini. Target group: Researchers, practitioners, students, policymakers, community leaders	Planned		
	Involvement in DIRECTED Webinar series "Building Resilience through Data, M Meetings		Civil society	Holly will use this opportunity to disseminate DIRECTED results and discuss the development of eLearning materials with other DRM/CCA policymakers, academics and practitioners.	Planned		
				Lydia Cumiskey is a EU Climate Pact Ambassador and will use this role to support outreach on DIRECTED e.g. via conferences, events, forums locally and at EU level	Planned		
				Disseminate DIRECTED results with University College Cork through a lunchtime seminar linked to the Disaster Law Research Cluster	Planned		
UCC	UCPM Summer School: Evidence for Policy in Disaster Risk Management (DR Education & training events		EU Institutions	The Disaster Resilience Days is a multi-day event organised under the Community for European Research and Innovation for Security (CERIS), bringing together experts, policymakers, first responders, and innovators from across Europe and beyond. The event focuses on advancing disaster resilience and preparedness through EU-funded research, technological innovation, and international cooperation.	Planned		
	Winter School: DRR Academy February 2026	Education & training events	Research communities	Link to DIRECTED webinar series or other series to promote eLearning materials on WeAdapt	Planned		
	DIRECTED Outreach via EU Climate Pact (March 2026)	Conferences	Civil society	Disseminate the eLearning materials to reach other DRM/CCA practitioners	Planned		
	UCC Lunchtime Seminar on Disaster Resilience	Education & training events	Research communities	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned		
	CERIS Disaster Resilience Days engagement/ outreach (2026)	Conferences	Regional authorities	The NEEDS (Network of European Emergency and Disaster Studies) 2026 conference Societal Resilience in Times of Cascading Crises and Disasters, organized by Civil Society and Sustainability Research group at KTU, provides a forum for scholars, practitioners, and policymakers to examine challenges and opportunities of societal resilience in the context of interconnected and overlapping crises.	Planned		
	Webinar to disseminate eLearning (summer 2026)	Education & training events	Local authorities		Planned		
	Journal article on capacity and skills for interoperability/ integration in DRM/ CCA	Other scientific collaboration	Research communities		Planned		
	Urban Resilience Forum 2026 (eLearning dissemination)	Conferences	Local authorities		Planned		
	Involvement in DIRECTED Webinar series "Building Resilience through Data, M Meetings	Meetings	Civil Society		Planned		
	Panel session at UCC Law & Environment conference (April 2026)	Conferences	Research communities		Planned		
Presentation at NEEDS 2026 Conference "Societal Resilience in Times of Cascading Crises and Disasters"	Conferences	Research communities		Planned			
Policy Brief meeting	Meetings	EU Institutions		Planned			

	Policy brief meeting	meetings	EU institutions	etc.)	Planned
ETH	EGU conference 2026 in Vienna	Conferences	Research communities	Communicate the results and ongoing research c	Planned
	MCA workshop with RWL stakeholders	Meetings	Local & national authorities	Event (conference/meeting/workshop/ internet	Planned
	Research paper on MCA application	Other scientific collaboration	Research communities	Describe the MCA methodology and its applica	Planned
	Present MCA at the CLIMADA days	Meetings	Other	Present the MCA and data fabric to the CLIM, P	Planned
	Involvement in DIRECTED Webinar series "Building Resilience through Data, Models,	Meetings	Civil society	Event (conference/meeting/workshop/ internet	Planned
	Policy Brief meeting	Meetings	EU Institutions	Event (conference/meeting/workshop/ internet	Planned
	Research paper on Forensic approach to adaptation appraisal	Other scientific collaboration	Research communities	Describe the forensic adaptation methodology ;	Planned
REGIONH	Withdrawal from the project consortium from the 30.09.2025				
ARSTPC-EF	Involvement in DIRECTED Webinar series "Building Resilience through Data, Models,	Meetings	Civil society	Event (conference/meeting/workshop/ internet	Planned
	Present Directed Project at the international exhibition Remtech Expo	Conferences	end user	event (conference/meeting/workshop/ internet	Planned
	preparation of a communication kit on the risk of forest fires for citizens	Other	end user	panels, video, an social card	Planned
	Policy Brief meetings	Meetings	EU Institutions	event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned
G&C	Involvement in DIRECTED Webinar series "Building Resilience through Data, Models,	Meetings	Civil society	Event (conference/meeting/workshop/ internet	Planned
	Policy Brief meetings	Meetings	EU Institutions	event (conference/meeting/workshop/ internet	Planned
	DIRECTED Info both at next NatCat Workshop	Conferences	Regional authorities		Planned
	Danube RWL data fabric demonstration (Future Danube Model) and discussion of shc	Meetings	Industry		Planned
	Presentation of the DIRECTED project with a focus on the Real World Lab Danube F	Conferences	Industry	EUScience for Preparedness Conference	Planned
IIASA	Involvement in DIRECTED Webinar series "Building Resilience through Data, Models,	Meetings	Civil society	Event (conference/meeting/workshop/ internet	Planned
	Policy Brief meetings	Meetings	EU Institutions	Event (conference/meeting/workshop/ internet	Planned
		Conferences	Research communities		Planned
EV	Involvement in DIRECTED Webinar series "Building Resilience through Data, Models,	Meetings	Civil society	Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned
				Event (conference/meeting/workshop/ internet debate/ round table/ group discussion etc.)	Planned
	Policy Brief meeting	Meetings	EU Institutions		Planned
		Meetings	Civil society		Planned
				Information event (conference/workshop/group discussion) for our Stakeholders and regional/local authorities. The topics are related to floods, pluvial floods, droughts and adaptation	Planned
	Hochwasserforum 2026	Education & training events	Other	Multi perspective analysis	Planned
	RWL Workshop I	Education & training events	Regional authorities	tabletop exercise 2.0	Planned
	RWL Workshop II	Education & training events	Regional authorities		Planned
52°North	52°North Scientific and Technical Advisory Board	Meetings	Research communities	Project update	Planned
	52°North Shareholders Meeting	Meetings	business partners	Project update	Planned
	EUROGI Webinar	Education & training events	International organisation	Co-designing open climate data	Planned
	13. Deutsches GeoForum 2025	Conferences	Industry	Co-designing open climate data	Planned
	GWF 2026 in Amsterdam	Conferences	Research communities	How co-designed interoperable geospatial inforr	Planned
	EGU 2026 in Vienna	Conferences	Research communities	Climate Services	Planned
	GISTAM 26 in Spain	Conferences	Research communities	Climate Services	Planned
	FOSSGIS 2026	Conferences	Research communities	Climate Services	Planned
	Staff meetings at 52°North and con terra	Meetings	Other	status update	Ongoing
	Involvement in DIRECTED Webinar series "Building Resilience through Data, Models,	Meetings	Civil society	Event (conference/meeting/workshop/ internet	Planned
	Policy brief meeting	Meetings	EU Institutions	Event (conference/meetingE/workshop/ interne	Planned
	University partners Uni MS, Uni Twente [GI Forum, teaching activities]	Education & training events	Other	Use-case and context of DIRECTED, sharing	Ongoing
	ARPAE	Meetings	end user		Ongoing
	Conferences	end user		Planned	
ZSRT	Involvement in DIRECTED Webinar series "Building Resilience through Data, Models,	Meetings	Civil society	Event (conference/meeting/workshop/ internet	Planned
	Policy Brief meeting	Meetings	Local authorities	Event (conference/meeting/workshop/ internet	Planned
	Zala Climate Festival and final GA	Conferences	Local authorities	Event (conference/meeting/workshop/ internet	Planned
	Establishing a longer-term cooperation framework.	Meetings	Local authorities	Event (conference/meeting/workshop/ internet	Planned

## 4.3 Year 4 – Communication Plan

Table 24: Communication Plan Yr 4.

2025/ 2026 Organisational Communications Plan						
Name of Beneficiary	Communication Activity Name	Description	Target Audience	Communication Channel	Outcome	Status
<b>Oasis Hub</b>	Project closing media pack	Press release + information	Civil Society	Media Article		Planned
	Zara Climate Festival preparation	Exhibition	Citizens	Event (conference/meeting/workshop/ internet)		Planned
	Blogs	Facilitate/ write x blogs	Civil Society	Social Media		Planned
	Social Media programme - linked to webinar topics	Social media programme	Civil Society	Social Media		Planned
	Preparation of DCE final report	Report	EU Institutions	Publishing		Planned
	Website updates	Website Updates	Civil Society	Website		Planned
	Development of Policy Briefs	Policy Briefs	EU Institutions	Print materials		Planned
<b>TUBS</b>	Development of Policy Briefs	Policy Briefs	EU Institutions	Print materials		Ongoing
	Development of Communications Material for Climate Festival	Development of a climate	Citizens	Event (conference/meeting/workshop/ internet)	strong participation	Ongoing
	Develop activities for the climate festival	Outreach targeting youth	Citizens	Event (conference/meeting/workshop/ internet)	Increased local	Ongoing
	Updates to the project website	Updates to the layout, content	Civil Society	Website	increased engagement	Ongoing
<b>GFZ</b>	Publishing articles in national/international scientific journals	Presentation of the scientific results	Research community	Publication	papers under review	Ongoing
	Promotion of the project via the project and GFZ websites by contributing/uploading images, animations and other content	Images, animations and other content	Citizens	Website		
	Contributing material for the projects social media activities	Images, animations and other content	Citizens	Social Media		
	Development of Policy Briefs	Policy Briefs	EU Institutions	Print materials		Planned
<b>PIK</b>	Participation in national and international conferences	Presentation of Directed Project results	Research community	Event (conference/meeting/workshop/ internet)	internet debate	
	Publishing one article about the Danube Model implementation and results for R	Highlighting model advancement	Research community	Publishing		Ongoing
	Development of Policy Briefs	Policy Briefs	EU Institutions	Print materials		Planned
<b>DTU</b>	Publishing one article about the pan-European application of the ABSOLUT model	Highlighting staple crop yield	Research community	Publishing		Ongoing
	Development of Policy Briefs	Policy Briefs	EU Institutions	Print materials		Planned
	Presentation at 10th International Conference on Flood Management (ICFM10) in London, Ontario, Canada	Presentation of Directed Project results	Research community	Event (conference/meeting/workshop/ internet)		Planned
<b>GECO</b>	Share learnings from project at Danish Conference	Presentation of Directed Project results	Specific user community	Event (conference/meeting/workshop/ internet)		Planned
	2 scientific papers published	Scientific results	Research community	Publishing		Planned
		Communication DIRECTED Project	Civil Society	Social Media	20 viewers	Planned
<b>RIFS</b>	Development of Policy Briefs	Policy Briefs	EU Institutions	Print materials		Planned
	Shared post on LinkedIn	Shared post on LinkedIn	Civil Society	Social Media		Planned
	communication DIRECTED Project	communication DIRECTED Project	Civil Society	Social Media		Planned
<b>SEI</b>	publish policy brief	Blogpost	Research community	Publishing		Planned
	Updating project page on DIRECTED	Updating page with relevant information	Research community	Social Media		Ongoing
	Share news/posts from DIRECTED social media	Updates from the project	Research community	Social Media		Ongoing
	Share blog posts on DIRECTED activities	Updates from the project	Research community	Social Media		Ongoing
	Share journal articles published	Update from the project	Research community	Social Media		Ongoing
	Share conference updates	Update from the project	Research community	Social Media		Ongoing
	Share blog on EU Regions week	Update from the project	Regional authorities	Media Article		Planned
	Share blog on DIRECTED RWL 1 MCA Workshop					Planned
	Share blog on DIRECTED RWL 4 MLP Workshop					Planned
	Assumptions Framework OpEd					Planned
	Share Zala Climate Festival promotions					Planned
	Share blog on DIRECTED RWL 1 Simulation					Planned
	Development of Policy Briefs	Policy Briefs	EU Institutions	Print materials		Planned
	Tandem Update blog					Planned

<b>UCC</b>	Updating project page on DIRECTED	Updating page with relevant	Research community	Social Media	Ongoing
	Share news/posts from DIRECTED social media	Updates from the project	Research community	Social Media	Ongoing
	Share blog posts on DIRECTED activities	Updates from the project	Research community	Social Media	Ongoing
	Share journal articles published	Updates from project	Research community	Social Media	Ongoing
	Development of Policy Briefs	Policy Briefs	EU Institutions	Print materials	Planned
	Share conference updates	Update from the project	Research community	Social Media	Ongoing
<b>ETH</b>	Mention interoperability achieved in DIRECTED on CLIMADA website	Share interoperability achieved	Specific user community	Website	Delivered
	Development of Policy Briefs	Policy Briefs	EU Institutions	Print materials	Planned
	Share news/posts from DIRECTED social media	Updates from the project	Industry/business partners	Social Media	Ongoing
<b>REGIONH</b>	Withdrawal from the project consortium from the 30.09.2025				
<b>ARSTPC-ER</b>	News		Civil Society	Media Article	Awareness of DIRI
	Posting on Instagram, Youtube, Facebook		Civil Society	Social Media	Awareness of DIRI
	Development of Policy Briefs	Policy Briefs	EU Institutions	Print materials	Planned
	Website updates		Civil Society	Publishing	Awareness of DIRI
<b>G&amp;C</b>	Development of Policy Briefs	Policy Briefs	EU Institutions	Print materials	Planned
			Industry/business partners	Event (conference/meeting)	Event was cancelled
			Industry/business partners	Interview	Planned
			Industry/business partners	Social Media	Planned
			Industry/business partners	Interview	Planned
		Civil Society	Social Media	50 viewers	Planned
<b>IIASA</b>	Development of Policy Briefs	Policy Briefs	EU Institutions	Print materials	Planned
			Research community	Website	Awareness of DIRI
			Research community	Event (conference/meeting/workshop/interview)	Ongoing
<b>EV</b>	Development of Policy Briefs	Policy Briefs	EU Institutions	Print materials	Planned
			Industry/business partners	Newsletter	sharing information
			Civil Society	Social Media	sharing information
<b>52°North</b>	Re-posting of Directed social media communications	The overall project communication	Industry/business partners	Social Media	sharing information
	updated 2 pager about DIRECTED as part of Annual Report 2025	Description of project goal	Industry/business partners	Print materials	sharing information
	updated 1 pager about DIRECTED as project reference on website	Description of project goal	Industry/business partners	Website	sharing information
	Development of Policy Briefs	Policy Briefs	EU Institutions	Print materials	Planned
	Blog posts on significant milestones	forecasting, Climate Service	Industry/business partners	Social Media	sharing information
<b>ARPAE</b>			Specific user community	Social Media	DIRECTED in Italy
			Civil Society	Website	Planned
<b>ZSRT</b>	Re-posting of Directed social media communications	The overall project communication	Civil Society	Media Article	Awareness of DIRI
	Updating project page on DIRECTED	The overall project communication	Citizens	Media Article	Awareness of DIRI
	Blog posts on significant milestones	The overall project communication	Civil Society	Media Article	Awareness of DIRI
	Climate Festival and final GA	Other	Civil society	Live performances, press	Awareness of DIRI

# 5 Exploitation Planning and Actions

In the context of the Exploitation Strategy for the DIRECTED Project the Key Exploitable Results are divided into three main groups of potentially exploitable products these are:

**Knowledge Assets** – this includes the Risk-Tandem Framework and associated guidelines and courses produced to aid the use of this and other systems within the Project.

**The Data Fabric** – a tangible exploitable tech system/ service that makes data and information interoperable making the understanding of complex systems possible by all levels of users (from laypeople to expert) - in the case of DIRECTED we are looking at its exploitation within the Disaster Risk Management and Climate Adaptation Sectors - but the Data Fabric has major potential for other sectors utilising complex data systems.

**The Climate Risk and Adaptation Tools and Models** - these are models at different stages of Technical Readiness Levels - some already held within SME's with early market entry commercially and others held within research organisations - therefore the business planning for each of these tools will vary considerably – with the products in the SME's likely to be marketed within the commercial sector within a relatively short period, and the tools held within the research institutes more likely to be used as open access models - nonetheless consideration of how these tools can be utilised and developed long-term, which includes ensuring they are held within institutional spaces that can be utilised regularly with free access, but at the same time ensuring that further financial development can be sourced if their utilisation can be improved.

The tools within this category of exploitable products are listed here in Table 25:

*Table 25: Climate Risk and Adaptation Tools and Models under adjustment in the DIRECTED Project. (Table taken from original proposal).*

Tool or Model	TRL Start	Progress on innovations for interoperability	TRL End
(a) SaferPLACES Digital Twin Solution for flood risk intelligence (GFZ, GECO)	7	[Web platform][Python code] Developing compliancy (API, REST) with RWLs input flood hazard/damage data (forecast and real-time). Output compliancy with Data Fabric and (b), (d), (e).	8
(b) RIMurban pluvial flood risk modelling	6	[Numerical model] Added functionality for using additional input data sources, e.g. (c), and for merging model outputs (inundation maps) with data from other sources (remote	8

and forecasting (GFZ)		sensing, VGI), and combining them with vulnerability models.	
(c) Danube Model (PIK) [a.k.a. Future Danube Model or Seamless Forecasting Tool]	3	[Numerical Model] The Danube Model was reactivated with a new CaMa-Flood component, and a self-developed converter feeding SWIM discharges into CaMa-Flood's unit catchments with about four times higher resolution (~5 km with downscaling option for flood levels to ~90 m). Other improvements concerned the simulation of levees (including their failures under extreme floods) and the visualization of outputs. The idea to add near real-time applicability for flood warning purposes had been discarded due to several feasibility issues in favour of drought-related crop loss modelling with ABSOLUT.	5
(d) ABSOLUT (PIK)	5	[R code] ABSOLUT is a statistically based crop yield model developed at PIK. It assesses the relationship between weather variables and crop yield in sub-regions of the modelling domain from observed data and can project future climate change-related yield trends.	6
(d) CLIMADA (ETH)	6	[Python code] (probabilistic risk assessment and adaptation option appraisal tool) Adding functionality for multi-criteria inputs and analyses.	8
(e) Damage Cost and Adaptation Model – DCAM (DTU)	6	[QGIS tool] Added input compliancy with hazard data from (a), (b), and (c). Output compliance with Data Fabric. Alignment with damage cost functions used in CLIMADA. Within the reporting period, the original Danish version of this tool was further mainstreamed and operationalized via the OS2 community of public authorities in Denmark (TRL8). Explorative work and prototyping, implementing DamageCost damage cost functions into CLIMADA is being carried out at DTU for Central Copenhagen (TRL5- 6). Collection of data from e.g. CLIMADA and SaferPlaces for making the model available at a European level is ongoing.	8
(f) Climate Connectivity Hub & Taxonomy (SEI)	1 CCT 6 Hub	Development of an open-source taxonomy enabling external platforms to share qualitative data (e.g. lessons learned) seamlessly with the Hub (and other platforms/models potentially), to enhance 'search and discovery', and to maximise connections between the content.	6 8
(g) Oasis-VR app	6	Add flood hazard safety (c), information on how to prepare for a disaster and links to, e.g. (a) and Data Fabric to ensure the wider exploitation of results.	8-9

We will look at each of these exploitable products separately to ensure they reach the proposed TRL level and indeed their paths to TRL 9 – full market integration where relevant.

Further to this are the two KER's the Data Fabric and the Risk-Tandem Framework as discussed above.

## 5.1 Exploitation Strategy

The DIRECTED exploitation strategy follows a structured process as outlined in Figure 7., below, that takes tangible exploitation opportunities through a process of development over the entirety of the DIRECTED Project and beyond. As this is an innovation project most of the tools, models and services have been developed externally to this current project - but the DIRECTED Project assists most of them to define, combine and improve their existing functionality to suit real users, as well as develop interoperability to other models improving the offer of their tools and models. There is one exception to this, the Data Fabric that has been designed to act as the tool that assists interoperability and tailor information to different audience – some as laypersons and others as highly technical audiences. Thus, in essence, the business planning allows all the participant organisations with exploitable products, services and knowledge assets to reflect and innovate further their solutions.

Central to DIRECTED, is working on ground-up product development and improvements through the use of one of the exploitation opportunities itself, ‘the Risk-Tandem Framework’, where we work with Real World Lab host organisations to tailor the models and processes under development to the Real World Lab stakeholders’ needs: local municipalities, disaster response and management organisations and in the case of the Danube Region both local disaster management organisations and Insurers.

The diagram below includes the stages of the work, through deliverables that begin the processes of understanding stakeholders (potential users and clients) and improving targeted models and systems (the products) for stakeholder markets.

The DIRECTED Project will be developing appropriate business or exploitation models for each product, service or knowledge asset and later evaluating the potential of expanding the product markets to wider audiences/ markets and sectors. In the exploitation process and steps we intend to take to enable a full exploitation plan by September 2026. The plan will enable each beneficiary with exploitable results to have a full road map, actions and new or potential partnerships or commercial vehicles to exploit and scale to their target users and markets by the end of the Project.

It should be clearly stated that the final business/ exploitation plans will be a result of work conducted over the entire project - and not something undertaken in a short period.

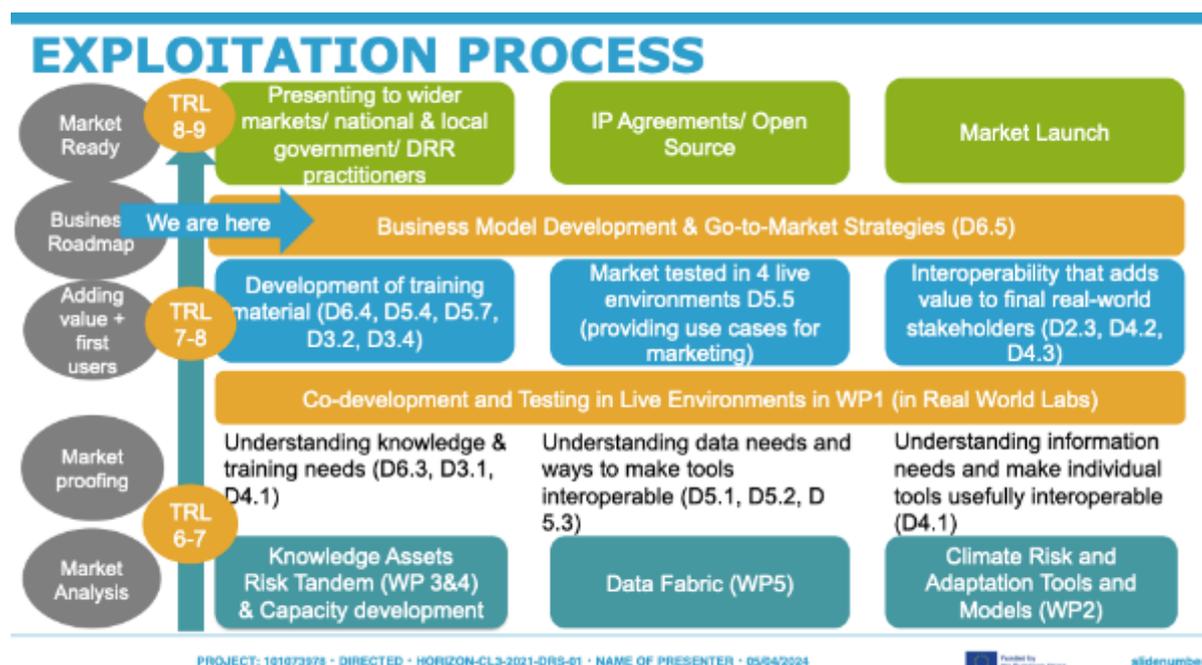


Figure 7: DIRECTED Exploitation Process.

This report tracks and reports on the progression of each key exploitable result (KER) with regards to moving towards their proposed TRL Levels and exploitation.

The following section reports on each KER separately and tracks their work on exploitation to this point, as well as next steps in the exploitation process.

## 5.2 Tandem and Risk-Tandem Framework

The Tandem Framework supports the co-production of climate adaptation interventions that promote long-term resilience. Through DIRECTED, new training modules and facilitation tools have been designed to help climate information providers, planners, researchers, and decision-makers collaborate, learn, and act together. These modules are designed to guide users through the Tandem process, recognising that co-production doesn't just happen, it must be intentionally designed and actively facilitated. The Overview Module introduces three essential skill areas at the heart of Tandem: Design, Research, and Facilitation. Each subsequent module takes you through the phases of the Tandem Framework, helping to build reflexive, collaborative, creative, and systems-thinking capacities through a 'learning by doing' approach. Together, these modules support practitioners and decision-makers to co-produce climate adaptation interventions that strengthen resilience and build the capacities needed for a sustainable future.

Risk-Tandem builds on the Tandem framework, applying a risk governance lens.

**Risk-Tandem**, is led by SEI Oxford, RIFS-PIK, and IIASA, and extends this framework by adding a **risk governance lens** that links co-production to concrete institutional and policy processes. It integrates methods such as stakeholder mapping, risk perception assessment, governance analysis, and policy dialogue facilitation, making the framework applicable to diverse climate and disaster risk contexts.

## 5.2.1 Report on business development to date

Within DIRECTED the Tandem framework has been followed by the RWLs and the resources that now make up the modules, have been led by their needs (read more in D4.1). Through this, Tandem has been actively engaging users, embedding it within their ways of working, while refining the process and generating case studies for wider use. A draft of the Tandem modules was presented at the ECCA 2025 DIRECTED stall and feedback was collected and integrated. The updated interactive Tandem, the Tandem Training Modules and the Tandem Activity Canvases are now live on weADAPT and have been promoted through social media.

Risk-Tandem presents a toolbox of approaches and methods to apply a risk governance lens to Tandem. Each RWL has explored different tools, these are now being refined and packaged for wider use.

Within DIRECTED, the Tandem Framework has been applied and refined through Real World Lab processes, ensuring user-led development. The resulting resources -Tandem Overview, Training Modules, and Activity Canvases - are now hosted openly at [www.weADAPT.org/tandem](http://www.weADAPT.org/tandem), promoted through SEI's dissemination channels and DIRECTED social media.

Risk-Tandem has evolved into a practical governance toolbox, currently composed of five adaptable modules:

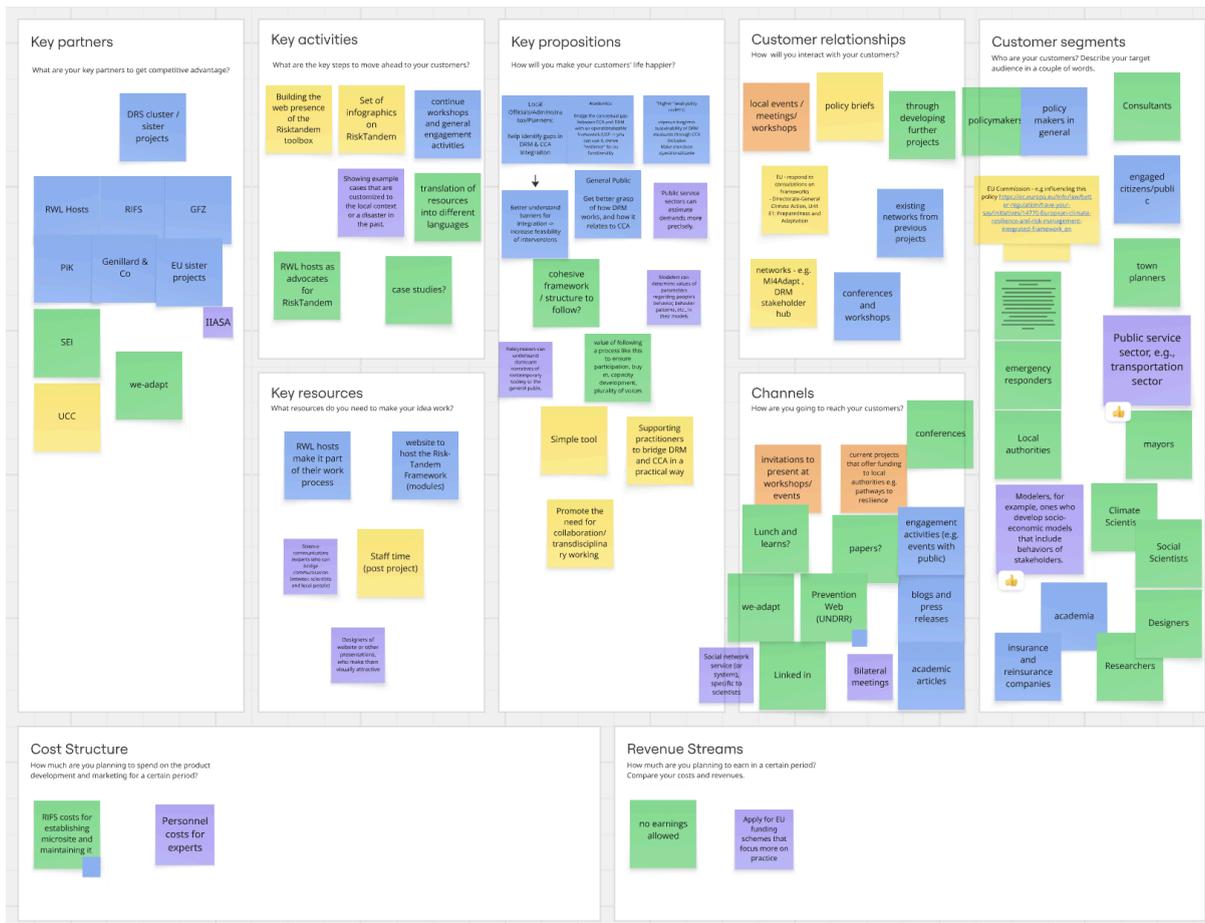
1. Context and Stakeholder Mapping
2. Risk Communication and Framing
3. Collaborative Decision Design
4. Institutional Embedding and Reflection
5. Monitoring and Learning

Each module has been tested in RWLs (see D4.1), refined through feedback, and presented at ECCA 2025, where user comments were integrated into the final prototypes.

The Rhine-Erft Tabletop Exercise (TTX) represents a flagship application, showing how Risk-Tandem outputs can become embedded within institutional processes-now adopted as an annual internal training mechanism by local authorities.

We have also begun the process of developing our open access business model by conducting an activity between SEI Oxford, RIFS-PIK, and IIASA to establish the initial business model that we will test to ensure its applicability in the final year of the Project (see section 5.2.2 below).

## 5.2.2 Business Model Canvas



The Tandem and Risk-Tandem Frameworks will be maintained as open, modular training and facilitation resources and integrated into SEI’s weADAPT knowledge platform for long-term access and use.

The exploitation strategy focuses on capacity-building, policy integration, and consultancy services, rather than commercial licensing.

## 5.2.3 Case Study Development/ User development

The development of Tandem and Risk-Tandem case studies within DIRECTED has been central to testing, refining, and demonstrating the framework in real-world settings. Each Real World Lab (RWL) offers a unique environment where tools and processes can be trialled, adapted, and institutionalized, ensuring both local impact and transferable lessons for broader uptake.

An illustrative example of this process is the collaboration with the Rhine-Erft RWL 4, where a Tabletop Exercise (TTX) was co-designed with the lab host. Developed within the Risk-Tandem Framework, the TTX has proven to be a powerful mechanism for embedding DRM and CCA into practice. Beyond serving as a one-off intervention, the exercise has been adopted as a recurring institutional process, demonstrating its value as both a governance innovation and a transferable tool.

By evolving from a simulation into an annual training and reflection practice, the TTX has shown how co-designed outputs can reshape institutional governance routines, strengthen communication across sectors, and empower hosts to continue knowledge co-production beyond the project. As such, it now constitutes an additional tool within the Risk-Tandem toolbox, enriching the framework with a tested, scalable method that other labs and regions can adapt to their own contexts.

Risk-Tandem has been embedded within the Real World Lab methodology, producing replicable case studies. Each RWL demonstrates how co-designed interventions strengthen institutional capacities and social learning.

The case studies will form the basis of training examples, online toolkits, and journal publications in 2026.

## 5.2.4 IP Scanning and development plans

The Tandem and Risk-Tandem Frameworks are non-proprietary, open-source conceptual and training resources, developed jointly by SEI Oxford, RIFS-PIK, and IIASA. The intellectual property resides in the co-developed methodologies and written materials rather than software. We are currently in the process of discussing IP arrangements, but likely outcomes under discussion are:

**IP approach:**

- Materials (modules, slides, canvases, training guides) will be released under a Creative Commons Attribution (CC-BY 4.0) licence.
- Hosting on weADAPT ensures open access, version control, and long-term curation.
- The partners will jointly maintain authorship credit and coordinate updates post-DIRECTED.
- It is envisaged that a full agreement between the partners will occur before the end of the DIRECTED Project

**Next steps for sustainability and exploitation (2025–2026):****1. Training and Outreach**

- a. Deliver online and in-person workshops (targeting RWLs and external agencies).
- b. Develop a short, self-paced course hosted on weADAPT and the e-Learning platform

**2. Institutionalisation**

- a. Formalise collaboration among SEI Oxford, RIFS-PIK, and IIASA to co-host the Risk-Tandem resources beyond the project.

**3. Policy and Practice Uptake**

- a. Translate methods into policy-ready briefs on risk governance, resilience planning, and citizen engagement. (see Section 3.3 above)

**4. Horizon Results Platform**

- a. Register Tandem and Risk-Tandem as two linked Key Exploitable Results (KERs) by Q2 2026.

**5. Monitoring**

- a. Track downloads, training participation, and policy references as exploitation indicators in the longer term.

**6. Exploitation Pathways**

- a. review target user groups and develop awareness raising initiatives to ensure uptake of results

## 5.3 Data Fabric (52°N)

In DIRECTED, the term Data Fabric refers to the entire interwoven set of distributed data, models, tools and resources that serves custom information products to the end users. The Data Fabric targets practitioners from e.g. local authorities and emergency agencies providing seamlessly integrated information products to plan training and assess mitigation measures under climate change for disaster management. However, it is also open to the public stressing the need to provide information in a comprehensive way for non-experts.

What is most visible to the end user and customer, is the frontend of the Data Fabric. It has been co-designed and validated with RWL hosts and stakeholders, to allow easy access to tailored information products addressing Climate Change Adaptation and Disaster Risk Management. The frontend is a modern React based web application incorporating among other elements maps, time series data and simplified model controls. The source code of the frontend uses the Open Pioneer Trails framework and numerous underlying well established libraries. It has been released as open source code and is freely available from GitHub (<https://github.com/directedproject-eu>).

Less visible is the backend of the Data Fabric, that entails the models (described separately in subsequent sections) and adaptors to import, access or load ex- and internal data resources including static scenarios but also real-time weather data. The backend manages access and orchestrates model runs and output collection and provision of results. The source code of the backend connects the different components and resources. The development has emphasised an API based approach where possible, to allow an easy exchange of modules or running only subsets of the entire Data Fabric. The predominately Python based source code builds upon well-established open source projects and has as well been released as open source code on GitHub. Details of the architecture and implementation of the Data Fabric are documented in Deliverables 5.1, 5.2, 5.3, and 5.4.

### 5.3.1 Report on business development to date

As the Data Fabric prototype is published as an open source solution, the business development does not target selling an off-the-shelf solution based on licensing agreements. The key exploitation of the Data Fabric lies within the provision of services to further develop and adopt the code to tailored solutions of possible customers. This exploitation can also be based on single components of the Data Fabric addressing only single or even parts of the interoperability use-cases prioritized in DIRECTED. The full potential of the Data Fabric can also only be realized if it features the modelling capabilities of the integrating models. However, the development of the Data Fabric has also contributed to a more general

blueprint of a co-designed Spatial Information System where geospatial and time series data needs to be managed and provided as easily accessible and comprehensive information likewise for experts and non-experts. Hence, the open source solution can be utilised beyond the use-cases addressed in DIRECTED. The developed software architecture reveals design patterns for integrating heterogeneous data sources that apply to spatial data infrastructures (SDI) in general. Insights on visualisation and data communications have been derived from the co-design of the information system that help to shape easily accessible future visualisations likewise for experts and non-experts.

While the development of the Data Fabric emerged towards its formal release in September 2025, first meetings were held to present the Data Fabric to potential customers. It has e.g. caught interest in the context of digital twins from cities to entire regions. Additionally, the Data Fabric and its potential have been presented during scientific conferences and geospatial forums. Blog posts on selected features (blog on [climate projections and flooding](#) and [MCDM](#)) of the Data Fabric have been publicly released to raise awareness and attract customers. A demonstration [video](#) has been released on YouTube to illustrate the capabilities of the Data Fabric.

## 5.3.2 Business Model Canvas

Based on the constraints, a business model canvas has been developed. It underlines the dependence of the Data Fabric on the components it interconnects which have their own business models (see corresponding paragraphs in subsequent sections). This canvas serves as the foundation for further marketing and exploitation activities. It will also be refined in year four of the project to reflect new features and insights gained from discussions with possible customers and users, where the presentations and interactions with RWL serve as test grounds to further solidify the approaches.

### Key assets (Solution)

What are you going to develop/sell?

- Open Source Solution integrating and harmonizing heterogeneous data sources
- Integration of models
- re-usable REACT code and framework
- Co-designed GUI
- Open Standards based solution

### Key partners

What are your key partners to get competitive advantage?

- GECCO providing saferplaces API access
- GFZ providing RIM2D code/API access
- (Open) Data provider: CDS, DWD, ...
- Operations service provider (1st level support) also as agents
- DTU providing the danish cost damage model
- PIK providing pre-calculated model outputs on-demand
- ETH CLIMADA model

### Key activities

What are the key steps to move ahead to your customers?

- develop show-cases along the interoperability use cases
- publish in relevant magazines
- assess /measure benefits of the interoperability data fabric
- workshops to steer developments to user needs

### Key assets (Expertise)

What are you going to develop/sell?

- Co-design process to develop decision ready information products
- specific expertise in the fields CCA and DRM
- facilitator to bridge the gaps between users, modellers, data and IT
- technical and professional expertise in model chaining

### Key resources

What resources do you need to make your idea work?

- 1000 developer hours
- access to data
- access to models
- access to cloud resoruces
- continuous feedback on implementations from end users

### Cost Structure

How much are you planning to spend on the product development and marketing for a certain period?

- Infrastructure: 500 €/month cloud costs
- Model Licensing: depends on partner and their business model
- Staff costs: development / deployment / maintenance / operations / 1st/2nd level support at 90 €/hrs
- non-free data: depends on data set (new data sources will come at an additional staff cost as new integrations need to be configured or even developed)

### Key propositions

How will you make your customers' life happier?

- hassle free interoperability between data sources and models
- co-designed UI addressing specific end-user needs supporting them on a daily basis
- re-evaluating scenarios with a single click
- empowering stakeholders to take better informed decisions
- easy to integrate with existing solutions (i.e. SDIs) as based on open standards
- wrapping complexity in hydrological forecasting and accelerating CCA and DRM strategies
- ease of customization and integration through individual software development support
- ease of customization and integration through individual deployment and operations support

### Customer relationships

How often will you interact with your customers?

- frequent during the design and implementation
- about quarterly to update solutions (if deployed at the customer's IT)
- on-demand
- at least annually to identify further customization and/or integration potential

### Customer segments

Who are your customers? Describe your target audience in a couple of words.

- local governments and municipalities: operating the Data Fabric to take better informed DRM and CCA decisions and provide training/material for operational plans
- regional governments and municipalities: operating the Data Fabric to take better informed DRM and CCA decisions and provide training/material for operational plans
- water management authorities: operating the Data Fabric to take better informed DRM and CCA decisions in their area
- providers of urban / local / regional digital twins: integrating / assessing the (flood) models through the Data Fabric (also as agents)
- insurance companies: nowcasting to assess the impact of an event right from the beginning
- agricultural/forestry co-operative: i.e. drought monitoring / forecasting, but also fields at risk for different flooding scenarios

### Channels

How are you going to reach your customers?

- promotion on fairs
- news in social media
- sharing success stories
- word of mouth through partners network
- publications in specialist's magazines

### Revenue Streams

How much are you planning to earn in a certain period?  
Compare your costs and revenues.

- depending on individual components used, data and models needed, deployment, hosting and service level agreement choices the price will largely vary between on-time revenue (integration and set-up based on time and material without any maintenance contract) up to a few thousand €/month.
- support in software development, deployment and operations: 135 €/hrs
- operations of the "DIRECTED" Data Fabric including infrastructure (cloud), and continuous maintenance (10 hrs/month) and 1st/2nd level support (10 hrs/month): 3.500 €/month + model licensing costs
- revenues through agents selling our service to customers

## 5.3.3 Case Study/User Development

All RWLs have contributed interoperability use-cases that the Data Fabric addresses. The work with the RWLs serves as case studies to co-design, co-develop and validate the solution by practitioners. These case studies also support marketing activities and are presented at conferences and fairs and showcased in webinars and video material promoted on online platforms.

The Data Fabric can for instance be used for multi-criteria decision-making (MCDM). The MCDM assessments are based on the [CLIMADA](#) model. For example, imagine that an end-user wants to evaluate different Climate Change Adaptation measures in a city. The adaptation measures they want to consider are: 1) a sea barrier to protect against coastal flooding events, 2) the changing of a city's building codes, so that housing in high-risk areas must follow stricter guidelines to protect against flooding, and 3) the relocation of critical infrastructure, such as cultural heritage sites, to areas safe from future flooding events. However, each of these adaptation measures have pros and cons; what if one measure is very costly, but longer-lasting than another, less costly, measure? What if the public does not approve of the costly measure, but environmental groups do? These are the kinds of trade-offs that the MCDM can evaluate, so that various groups, actors, and considerations are not left out of critical decision-making processes. The MCDM in the Data Fabric thus allows end-users to weigh different criteria, to find the most optimal solution when these external factors are considered. After weighing each criterion on a likert scale, users are presented with ranked adaptation measures. Further case studies are documented as interoperability use cases and user stories in D5.2.

The users of the RWLs are seen as nucleus of users that can spread the word about the Data Fabric and its entailed capabilities. Targeted workshops and publications in practitioner magazines are foreseen to further raise the awareness of the freely accessible Data Fabric to get to know its potential.

## 5.3.4 IP Scanning and development plans

IP and assets gained during the development of the Data Fabric:

- Extensive user requirements and co-design leading to accessible design principles for expert and non-expert users
- Integrating and harmonizing heterogeneous data sources through open source solutions

- Know how about real-time data (i.e. weather) provider, their APIs and the integration of this data
- Tailored visualisation and contextualisation of data, models and their results
- Generation and provision of decision ready information in CCA and DRM contexts.
- Set-up and control of models and their parameters in the Data Fabric
- Encapsulating and deployment of models
- Blueprint of a complex and modular information system
- User engagement in co-design and co-development
- Identifying, communicating and bridging the gaps between users, modellers, data sources and the development and deployment of IT solutions

Some of the IP is explicitly captured in the open source code and protected by corresponding open source licenses (e.g., Apache 2.0, MIT, CC BY-NC-SA 4.0). Other IP is predominately implicit and adds to the assets of the developing partners. The central commercialization strategy builds upon competitive advantage. The contributing partners are now able to use their gained IP to establish a strong market position and deter competitors. This applies to the explicit use-cases of DIRECTED, but also beyond, as some of the IP is easily transferred to other use cases and application scenarios.

Discussions are underway with longer-term, post-project use of the Data Fabric as developed in DIRECTED with two of the DIRECTED Partners, TUBS and SaferPlaces. 52°North already builds proposals and offers based on developed components. Thus a further use and development of the Data Fabric in the commercial and research spheres is in preparation. It is envisioned that these discussions and efforts will further intensify and lead to a usage of the results before the end of the project.

To further strengthen the exploitation of the Data Fabric possible formats of support contracts, service-level agreements and approaches to security patching need to be developed and evaluated. Based on those formal agreements, two pillars will be assessed in year four of the DIRECTED project:

1. **The *Ecosystem Model*** where partners of DIRECTED will further develop their expert service provider role becoming the de facto expert for implementing the open source solution. This leads to procurement of partners' services based on the software, but not the software itself. The following services could be developed and will be further assessed for fitness in the project's context:
  - a. Customization & Integration: Development of new features, dashboards, or models tailored to a specific country's or agency's needs.
  - b. Training & Capacity Building: Offering certified training courses for government staff. Hence, building long-term autonomy and preference for the Data Fabric solution.

- c. **Managed Hosting:** Provide a "turnkey" SaaS (Software-as-a-Service) version of your SII, handling all hosting, maintenance, and data backups for a recurring fee.
2. **The "Open-Core Model"** where the "core" of the Data Fabric remains open source and receives further development through research activities and partners. While proprietary software tools and services are developed around the open core. The following high-value product and services could be developed and will be further assessed for fitness in the project's context:
  - a. **SaaS Platform:** Developing and offering a polished, secure, multi-tenant platform for climate risk reporting.
  - b. **Data-as-a-Service (DaaS):** Integrating high-resolution hazard or exposure data that is "ready-to-use" with the open source Data Fabric.
  - c. **Bespoke Analytics:** Performing custom risk assessments for private clients (e.g., asset managers, corporations) who need confidential analysis.

Future exploitation could hence take the form of tailored service contracts for regional digital twins or resilience dashboards as well as being supported by upcoming Horizon or Copernicus bids.

## 5.4 SaferPlaces (GECOsistema)

[SaferPlaces](#) is a commercial, cloud-based platform for flood-risk intelligence, owned and developed by GECOsistema as Background IPR. It couples embedded models for pluvial, fluvial, and coastal hazards—SaferRAIN, SaferRIVER, SaferCOAST, and the UNTRIM hydrodynamic engine—with SaferDAMAGE for impact and loss estimation. Through a unified API, these modules integrate high-resolution topography, observations, and forecasts to produce decision-ready maps, time series, and indicators that can be embedded in external dashboards and workflows.

The platform addresses three operational gaps: turning heterogeneous real-time data into consistent hazard layers; exploiting short-range forecasts and nowcasts for anticipatory actions; and publishing interoperable outputs for rapid use by non-specialists during emergencies. Recent enhancements add ingestion of NWP rainfall, sea-level and storm-surge forecasts, and radar-based nowcasting, enabling both forecast-driven and nowcast-driven operation and seamless exchange within the DIRECTED Data Fabric.

Typical users include municipal and regional civil protection teams, environmental agencies, utilities and lifeline operators, urban planners, and the insurance sector, who require fast, interoperable hazard and damage insights to support early warning, incident response, and adaptation planning.

## 5.4.1 Report on business development to date

SaferPlaces has been actively engaged in business development activities spurred by the DIRECTED project, focusing on expanding the reach and application of its flood risk assessment and management tools.

Saferplaces Enhancements:

- A significant achievement has been the development of a VR experience for citizens in collaboration with ARSTPC-ER, which serves as a powerful new communication and training tool.
- Further develop the capacity to ingest real-time weather data (nowcasting and forecasting for rainfall and sea level) to enhance its utility as an early warning and DRR tool for civil protection and municipalities in managing flood events. This will include refining the integration of these data streams and demonstrating their impact in real-world scenarios.
- Thanks to the DIRECTED project and the activities developed within Real World Lab 2, SaferPlaces has significantly enhanced its capabilities, expanding its climate-related risk portfolio to include the simulation of wildfire events. This advanced functionality leverages real-time weather nowcasting and forecasting data, providing critical insights for supporting civil protection agencies and firefighters. The integration of this new simulation capacity allows for more accurate and timely assessments of wildfire risk, enabling better preparedness and more effective response strategies in the face of increasingly complex climate emergencies.

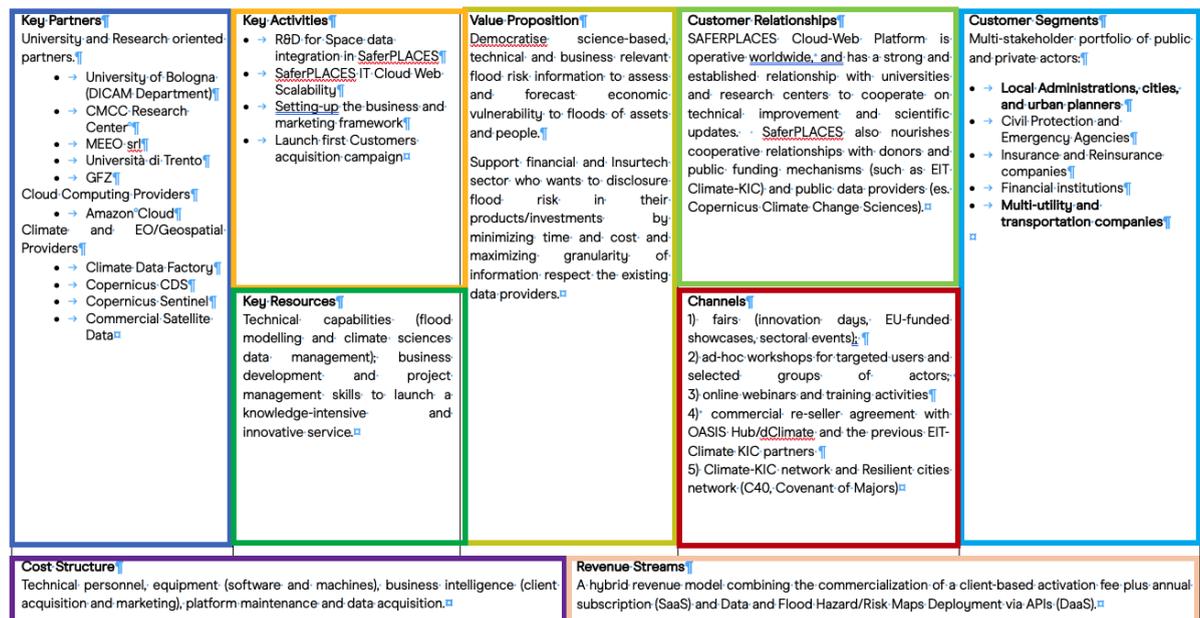
This initiative showcases a direct application of SaferPlaces' technical capabilities to enhance public preparedness and response to flood events, moving beyond traditional data dissemination to immersive, embodied learning. Furthermore, the integration of SaferPlaces' functionalities within the Data Fabric is opening new avenues for professional users, enabling the visualization of complex climate data and model outputs for more informed decision-making. These efforts are not only strengthening SaferPlaces' position in the market but also demonstrating the tangible benefits of the DIRECTED project in fostering innovation and real-world impact in Disaster Risk Reduction and Climate Change Adaptation.

SaferPlaces, a crucial tool in the DIRECTED project, has undergone significant development to enhance early warning capabilities for pluvial and flood risks, largely due to its integration with the Data Fabric. This integration allows SaferPlaces to leverage a wider array of data sources and computational power, leading to more accurate and timely risk assessments. The Data Fabric provides a seamless flow of real-time and historical data, including

meteorological forecasts, topographical information, and sensor data, directly into the SaferPlaces model. This enhanced data input enables more sophisticated hydrological and hydraulic modelling, allowing for precise predictions of flood extent, depth, and duration for both pluvial (surface water) and fluvial (river) flooding.

The direct link with the Data Fabric has also facilitated the development of interactive visualization tools within SaferPlaces. These visualizations provide an intuitive understanding of complex flood scenarios, enabling emergency responders, urban planners, and other stakeholders to quickly assess potential impacts and make informed decisions. Furthermore, the interoperability fostered by the Data Fabric allows SaferPlaces to seamlessly exchange information with other tools and systems within the DIRECTED ecosystem, such as CLIMADA and the various VR applications. This interconnectedness ensures that early warning information generated by SaferPlaces can be rapidly disseminated to target audiences, from civil protection agencies to the general public, in formats tailored to their specific needs. This capability is critical for supporting improved preparedness, response, and adaptation strategies in the face of increasingly frequent and intense extreme climate events.

## 5.4.2 Business Model Canvas



The Business Model Canvas outlines SaferPlaces’ strategy for delivering science-based, technical, and business-relevant flood risk information to support decision-making and risk disclosure.

The company’s value proposition focuses on democratizing access to flood risk intelligence, helping the financial, insurance, and public sectors assess vulnerabilities and manage investments efficiently. Key activities include R&D for integrating space and climate data, developing a scalable cloud-web platform, and launching customer acquisition campaigns.

SaferPlaces leverages partnerships with universities and research centers (such as the University of Bologna, CMCC, and the University of Trento), cloud providers (Amazon Cloud), and geospatial data suppliers (Copernicus, Climate Data Factory). Its key resources combine technical expertise in flood modelling and climate data management with business and project management skills.

The customer relationships are built through global collaboration with research centres, donors, and public data providers, ensuring continuous technical updates and innovation. Channels for engagement include international fairs, workshops, online webinars, partnerships with re-sellers like OASIS Hub and dClimate, and networks such as Climate-KIC and C40. The customer segments comprise local administrations, civil protection agencies, insurers, financial institutions, and multi-utility and transport companies.

The cost structure is driven by technical personnel, equipment, software, marketing, and data acquisition, while revenue streams follow a hybrid model combining client-based activation fees, annual subscriptions (SaaS), and API-based data services (DaaS).

## 5.4.3 Case Study Development/ User development

SaferPlaces satisfies the needs of different public and private actors:

- Local Administrations, cities and urban planners can benefit from improved resilience and adaptation plans (main market at the moment).
- Insurance and Reinsurance companies can fill their gaps in flood risk scoring and data at high resolution (parcel levels) for every location worldwide.
- Finance institutions (commercial and investment banks) need to adjust their risk assessment models with no prior specific knowledge on climate.
- Civil Protection and Emergency Agencies can support their first response and early warning plans/activities.
- Multi-utility and transportation companies can improve the resilience of their infrastructures.
- Climate Tech Companies require high-resolution data with global coverage that SaferPlaces can provide.

The above segments have different potential for growth. Particular attention is devoted to cities, thanks to policy and legislative pushes in Europe, as well as to increased economic losses triggered by more frequent and more severe disasters.

There is some evidence of general under-investment in prevention and risk reduction through financial instruments, furthermore insurance companies and financial institutions are expert users of risk models and sophisticated risk-adjusted pricing strategies. In fact, within the insurance sector, there is a growing need to fill data gaps at high resolution (parcel levels), for every location worldwide, to support risk scoring and profiling and to help improve risk selection, underwriting, premium setting, and pricing. Parametric solutions and predictive analytics based on data can help to counteract the effects of climate change and map the risks, as well as to develop appropriate services and policies.

From a financial point of view, risk data is the key for supporting flood risk disclosure, and physical climate risk assessment (TCDF, ESG, EU Green Taxonomy). Considering the large financial implication of climate change, climate risks often translate to financial risks. Companies and investors need to face growing pressure from compulsory regulations, external demand for transparency and disclosure of climate risk, requiring trustworthy data. Among the benefits of better climate disclosure, there are capital allocation based on

better-informed decisions, strategic planning over the short, medium, and long term, and more effective evaluation of actual Climate-related risk.

In addition, disasters and increasing climate impacts trigger new needs of multi-utility companies to protect their assets, making this another targeted sub-market. Lastly, Civil Protection and Emergency Agencies are expected to play a major role in flood risk management and early warning, thus relying on flood risk tools, also due to increasing exposure of the population that is living in flood prone areas.

The role of SaferPlaces in supporting the civil protection for early warning was made clear during the two catastrophic floods that hit the Italian Region Emilia-Romagna in May 2023, at about 2-week distance between each other. Thanks to the brilliant results obtained by our technology, the Civil Defence of the Emilia-Romagna Region has requested the activation for the entire area of the regional territory to support technicians in the evaluation of the effects of the embankment routes and possible early warning and evacuation actions.

In addition, the SaferPlaces platform was utilized by the Civil Protection to generate flood water and depth maps to take crucial decisions post-disaster and to support the assessment of the damages of the affected areas. SaferPlaces' AI-based algorithms were used to process terrain data and information on the flooded areas obtained by merging in situ data with multiple satellite sources including Copernicus Sentinel-1 and Sentinel-2, CosmoSky-Med, Planet and SPOT. Information on the flooded areas and the affected buildings conducted by local municipalities and data provided by the Emilia-Romagna Civil protection were also integrated to fill the gaps and increase the accuracy of urban flooded areas when not captured by satellites. Maps portraying the extent of the flooded areas in the most affected municipalities, (e.g. Faenza, Cesena, Forlì and Conselice) were generated with information on the depth and volume of the water. These maps provided crucial information for a preliminary Flood Damage Assessment to support the local and central authorities to estimate the damage as soon as possible. Specifically, the satellite-based water depth maps were used as input to assess the economic losses of affected buildings.

## 5.4.4 IP Scanning and development plans

The SaferPlaces platform does not hold any patents, but it is the result of years of research with inputs from European universities (UNIBO, UPM), research centers (CMCC, GFZ) and small and medium enterprises (GECOsistema, MEEO, Humer Consulting) and the subsequent years of development carried out since 2018. The know-how associated to SaferPlaces is owned by GECOsistema srl, that was granted the IPRs to continue the technological development and commercialization of the product, and from which the start was born.

The core modules of SaferPlaces technology are founded on background Intellectual Property Rights (IPR), developed prior to the DIRECTED project. The innovations specifically developed within the DIRECTED project relate to a new data ingestor, designed to integrate data and model outputs from ARPAE, HERA, and CAE. This ingestor facilitates the input of real-time pluvial and coastal data, enabling enhanced mapping and forecasting capabilities.

SaferPlaces background IP are property of GECOsistema srl; the generated IP from DIRECTED and their exploitation will be defined among the consortium with a specific IP agreement developed before the project's conclusion.

### Next Steps for 2025–2026

- **Scale SaferPlaces AI Flood Intelligence Platform** across Europe and internationally, focusing on integrating real-time early warning and digital twin capabilities for cities.
- **Operationalize the AI Agentic Framework** to enable autonomous risk analysis, combining satellite, weather, and hydrodynamic data.
- **Expand SaferSat** to include multi-sensor (SAR and optical) near-real-time flood detection pipelines and integration with Copernicus Emergency Management Service.
- **Launch commercial pilots** with insurers, municipalities, and international agencies to demonstrate the full operational value of the SaferPlaces platform.
- **Strengthen partnerships** with EO and insurtech actors to co-develop services for climate risk intelligence and parametric insurance.
- **Seek alignment with EU Green Deal and Copernicus Accelerator initiatives** to support scalability and policy integration.

### On Investment and Growth

SaferPlaces is **open to strategic investment** or partnerships to accelerate market scaling and technology deployment.

In particular, we are exploring opportunities with **impact investors, climate-tech funds, and strategic industrial partners** to:

- Expand operational capacity for large-scale urban digital twins;
- Accelerate AI model generalization and automation;
- Strengthen go-to-market strategy across EU and emerging markets.

## 5.5 RIM2D (GFZ)

RIM2D is a high-resolution, two-dimensional hydrodynamic model developed by the Section Hydrology of GFZ (Helmholtz Centre for Geosciences) for fast flood simulations. It is applicable for coastal, pluvial, and fluvial flood modelling, integrating fast numerical techniques leveraging GPU compute capabilities to simulate flood dynamics. Its ability to handle large-scale simulations while maintaining computational efficiency makes it a valuable tool for flood risk assessment, infrastructure planning, climate adaptation strategies, and early-warning and flood impact forecasting systems, helping to mitigate flood impacts and improve disaster preparedness.

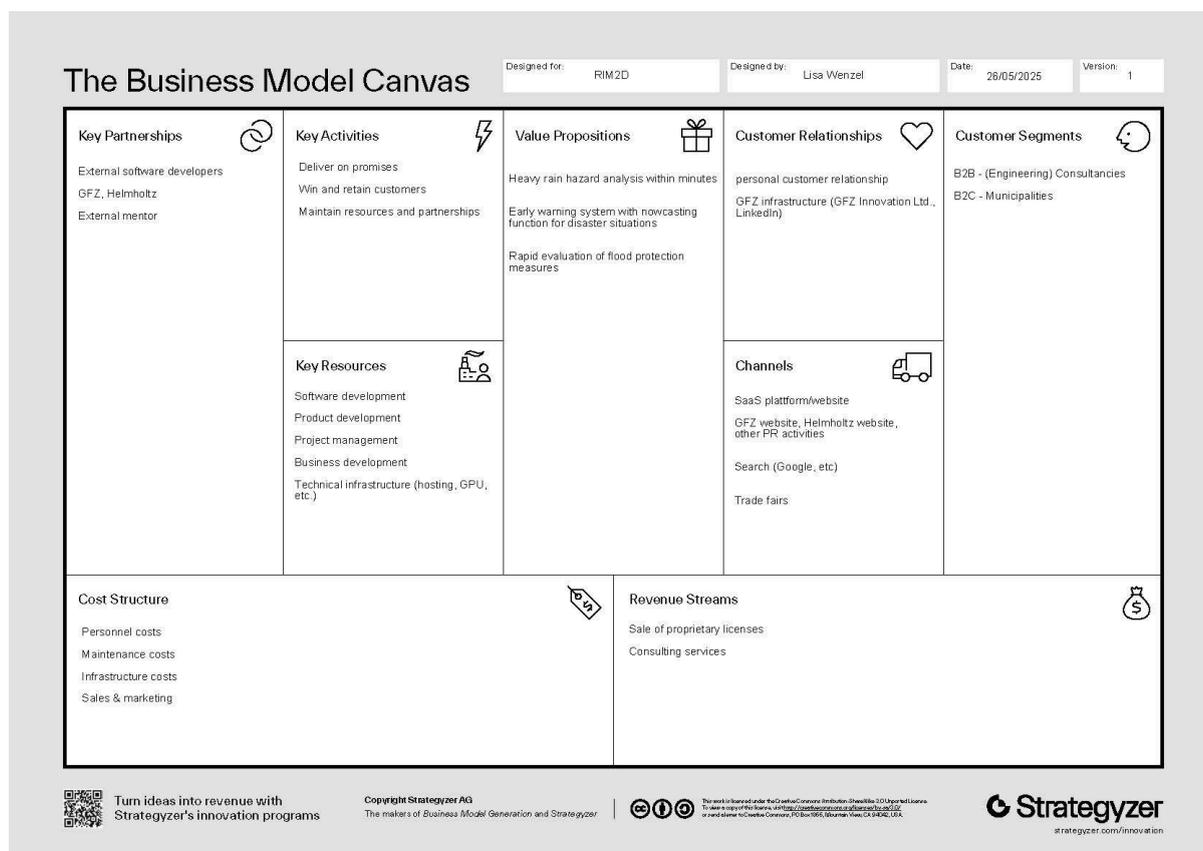
### 5.5.1 Report on business development to date

RIM2D is currently developed into a marketable software product. The TRL level is currently 8, with works ongoing to elevate it to TRL9 by testing the software with first commercial customers. A thorough market analysis has been conducted with the help of a professional agency. Users identified in the market analysis are consultant engineers and communes. Thus, the development of a business model focussed on the needs of these users. First customers are already contracted, using RIM2D for their projects as test users.

The RIM2D marketing strategy follows two major strains:

1. Using RIM2D as a software tool integrated in the model chain/software environment of the users. RIM2D is provided as a stand-alone docker image in this case.
2. RIM2D as a Software-as-a-Service (SaaS) including a user-friendly web-based Front End, including links to cloud computing resources, enabling the user to build and run RIM2D models without their own computing resources ([rim2d.eu](http://rim2d.eu)).

## 5.5.2 Business Model Canvas



## 5.5.3 Case Study Development/ User development

GFZ applied RIM2D in 3 of the RWLs in DIRECTED:

- RWL 1 - pluvial and coastal flooding in Roskilde fjord
- RWL 2 - pluvial and coastal flooding in Rimini
- RWL 4 - dam breach scenarios in the Erft catchment

Works in RWL 3 - Zala county are foreseen in the remaining project time, once required input data becomes available. User feedback from the RWL application was used to scope the requirements of users in DDR and CCA, with regards to the output and scenario definition. This feedback triggered improvements in RIM2D, e.g. in the setup of models considering flood protection measures (e.g. dikes).

The requested dam break simulations in RWL 4 triggered an evaluation of the applicability of RIM2D for this particular flood mechanism, providing valuable insights and opened a new field of application for RIM2D in flood management praxis.

Next to the works in the RWLs of DIRECTED, GFZ has acquired two German consulting engineers and a French insurance company as test users. Contracts have been signed to use RIM2D pro-bono until the end of 2025. The users cover both marketing strains. They can test all facilities and are requested to provide feedback about the software and the user experience.

## 5.5.4 IP Scanning and development plans

RIM2D is protected by a dual licensing scheme under the EUPL 1.2 license. RIM2D is open source for non-commercial and research use. For commercial use license fees apply. The fees were set after a market analysis of competitors.

RIM2D will be continuously developed and further features added. Moreover, a spin-off company is planned to be founded in mid-2026 for commercialising the software independently of GFZ. The envisaged RIM2D company will be founded by GFZ employees, including the main developers of RIM2D. GFZ will provide an exclusive IP license for the commercialisation of the software to the new company. This exclusive right is typically granted for 3 years, after which also other companies get the opportunity to commercialize the software. Profits gained by the new company will remain in the company. GFZ creates a revenue by selling the licence to the company only.

In summary the following exploitation action for RIM2D are foreseen in year 4 of DIRECTED:

- Continuous work in the RWLs and advertisement of the model among the stakeholders, with the prospect of continuous use after the project ends.
- Using the contacts and communication pathways established in DIRECTED to get in touch with other potential users/stakeholders.
- Founding of a company for the commercial exploitation of RIM2D. The company will sell licenses, customize RIM2D software packages to user requirements, and offer consultancy for flood simulation studies.
- Acquisition of new users by presentation of RIM2D at specific stakeholder conferences/meetings, as e.g. the “Tag der Hydrology” in Germany and the EGU General Assembly in Vienna. It is planned to be present at these events with a booth showcasing the capabilities of RIM2D.
- Further technical development of RIM2D, based on the feedback from stakeholders in DIRECTED and external test users. This encompasses both technical features of the

main, open-source model code, and the development of the commercial web-based Front-End for model development and visualisation.

- Presentation of RIM2D research and applications at scientific conferences.
- Publication of scientific papers using RIM2D in flood research.

## 5.6 Danube Model and ABSOLUT (PIK)

The two models maintained by PIK, Danube Model and ABSOLUT, share many similarities regarding their exploitation potential and boundaries as scientific models at a publicly funded research institution under German legislation. Therefore they are discussed here together.

The Potsdam Institute for Climate Impact Research (PIK) is a non-profit, publicly funded research organisation jointly supported by the German federal and Brandenburg state governments and a member of the Leibniz Association. Under German non-profit law (Gemeinnützigkeitsrecht) and public funding rules, such institutions cannot engage in direct commercial trade or profit-making activities that compete with private enterprises. However, we can disseminate and enable the application of our research results, including through open data, policy advice, training, and collaboration. As such our exploitation strategy is linked to actively providing our data, openly and transparently to organisations that can benefit from the information.

The Danube Model links weather data or climate scenario input to flood waves in river systems. It is usually applied to a river basin whose hydrologically relevant landscape features (from relief over land use down to crop species distributions to soil profiles and river geometries) are well known and represented by digital maps. Outputs include flood stages and water velocities in and along river branches, in- and outside of levees. Driven by climate scenario data, aggregating output assessments deliver trends of flood hazards under climate change. Downscaling results to high-resolution raster maps allows for detailed hazard analyses for single streets, urbanizations or business parks.

ABSOLUT is a weather-based crop yield model. Provided by a history of agricultural yields in sub-divisions of the modelling domain (e.g. districts of Germany, cantons of France or European NUTS-2 regions), and a parallel monthly history of weather variables aggregated over the cropland within these sub-divisions, it detects the cause-effect relationships of individual weather features during the growing season; different crops are treated separately owing to species-specific growth characteristics. The additional input of climate scenario data allows for simulating future yield projections. In contrast to other machine-learning approaches the effects of specific factors like heat, frost or drought can be assessed individually – in DIRECTED, drought was identified as a significant factor for future crop losses in RWLs 3 and 4 under climate change.

Problems that can be solved by the Danube Model are informing decisions on land use planning and real-estate economy and insurance by mapping (future) flood risks, down to personal decisions where to (not) rent an apartment or go for camping. ABSOLUT outputs aid in modernizing traditional cropping systems and methods for adaptation to climate change, e.g. by altering the species in crop rotations.

Both the Danube Model and ABSOLUT are classical numerical research models requiring highly technical set-up procedures on multi-CPU high-performance computers which can only be utilized by large business units or scientific institutions. End-users ranging from real estate investors to municipal planning offices and insurance companies to farmers and informed individuals can however utilize the openly distributed model outputs and downstream products, e.g. scientific publications, contracted studies, or interactive web pages such as provided by the Data Fabric.

## 5.6.1 Report on business development to date

PIK as a publicly funded research institution is legally restricted from making a revenue-generating business by selling modelling software or model results. Making code and results openly accessible to the public is a standard requirement for receiving the public funding, be it basic institutional support received in equal shares from the German taxpayers and the federal state of Brandenburg or the project-specific third-party support. The EU legislation on state aid ([https://competition-policy.ec.europa.eu/state-aid/legislation\\_en](https://competition-policy.ec.europa.eu/state-aid/legislation_en), [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=oj:JOC\\_2022\\_414\\_R\\_0001](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=oj:JOC_2022_414_R_0001))

also requires PIK to offer eventual services to third parties at market rates and to not spoil the competition for private contractors.

Given this background and additional license issues for parts of the Danube Model, business activities in the narrower sense have not been initiated from PIK's side. Freely distributing methods, results and lessons learned in- and outside the academic world through scientific publications and other communication channels listed in this report should however enable or further economic activities by third parties, e.g. the insurance industry or future research collaborations. The ongoing development and preliminary results from both the Danube Model as well as final results from ABSOLUT obtained in DIRECTED have already been communicated directly to stakeholders and towards scientific audiences at international conferences. Manuscripts are to be published in renowned OpenAccess scientific journals are in preparation.

## 5.6.2 Business Model Canvas

The following BMC represents PIK’s restricted business development activities – more business shall be driven based on utilizing the Danube Model results and ABSOLUT (model and results) outside the institute; this is not included here.

<b>Key Partners</b> 1 The EC providing the funding for DIRECTED and many other projects 2. The German national and Brandenburg state governments providing the research infrastructure 3. Collaborating scientific institutions, here especially the team at the University of Tokyo developing CaMa-Flood 4. Data providers	<b>Key Activities</b> 1. Code development, testing and documentation, always abiding by the rules of good scientific conduct 2. Publishing  <b>Key Resources</b> 1. Supporting work group and project partners 2. Suitable research infrastructure including a super computer	<b>Value Propositions</b> 1. Guiding some CCA and DRR related decision making in politics, enterprises, non-profit organizations, families, and individuals by scientific evidence. 2. Advancing commonly shared knowledge and future research, i.a. by pointing out new open questions	<b>Customer Relationships</b> Governments, enterprises (esp. from utilities and insurance sectors), farmer associations, and the media. Due to the open, wide-audience communication of our results, close personal relationships are rare.  <b>Channels</b> The scientific community values peer-reviewed articles most. Presentations and web content are standard, but there might be better ways to reach specific user groups.	<b>Customer Segments</b> 1. All decision makers concerned with CCA and DRR in politics, enterprises, non-profit organizations, families, and individuals, e.g. farmers or house owners. 2. Other scientists working in the same or closely related fields of research. 3. The media as important multipliers and distributors of our findings.
<b>Cost Structure</b> 80% of the costs are wages and social security for scientific personnel, 20% are caused by administrative personnel, workplace housing and provision of IT infrastructure, and by business travels.		<b>Revenue Streams</b> The customers of public research do not bother with payments as our product is regularly delivered for free. Our revenue is practically always 100% public research funding ultimately raised by the tax payers.		

## 5.6.3 Case Study Development/ User development

The developments about the Danube Model (DM) and ABSOLUT are closely related to the stakeholder process in RWL 3, the Danube basin. It took time to engage regional

stakeholders – mostly from Austria – with the capabilities of the models advanced within DIRECTED. In July 2025, during the second stakeholder event in Vienna, we had the impression that it finally became clear what the Danube Model would deliver in the end.

At the end of the current reporting period, users could access ABSOLUT crop yield projections for the Rhine-Erft and Zala Regions (RWLs 3 and 4) through the Data Fabric web frontend. Final Danube Model simulations were in the making while the Data Fabric offered some example visualizations of preliminary results. Still within 2025 we will expand the access to crop yield ensemble projections of all NUTS-2 regions within the Danube River basin. Comprehensive flood scenario results from the improved Danube Model should also become available within the near future.

The current composition of our stakeholder landscape is shown below. Not listed are the numerous unknown users of our online channels (e.g. Data Fabric viewer, Zenodo repository).

Table 26: Stakeholder Landscape.

	Stakeholder	Interested in outputs of	Contact through
RWL 3	Gesamtverband der Deutschen Versicherungswirtschaft (GDV)	DM	G&Co.
	Münchener Rückversicherungs-Gesellschaft (Munich RE)	DM	G&Co.
	Assicurazioni Generali S.p.A. (Generali Group)	DM	G&Co.
	UNIQA Österreich Versicherungen AG	DM	G&Co.
	Vienna Insurance Group	DM	G&Co.
	Zala Különleges Mentők és Önkéntes Tűzoltó Egyesület	DM, ABSOLUT	Project partner
	Bundesanstalt für Agrarwirtschaft und Bergbauernfragen (BAB, Austria)	ABSOLUT	PIK
RWL 4	University of Zagreb, Faculty of Electrical Engineering and Computing (Danube Model outputs directly contribute to the Croatian SERIOUS project, “Synthetic design hydrographs under current and future climate for local bridge scour assessment”)	DM	PIK
	Erftverband	ABSOLUT	Project partner
	Kreisbauernschaft Köln Rhein-Erft-Kreis	ABSOLUT	t.b.a.

After finalizing the process of open-access publishing all the model results we plan to approach our stakeholders (see Table above) again for another round of feedback for final improvements. Besides finalizing work on the results we will put more effort into further distribution of our findings. Two very important outputs scheduled towards the end of the project are scientific articles about the Danube Model and ABSOLUT results.

## 5.6.4 IP Scanning and development plans

As pointed out above, there are limitations for distributing the Danube Model (software and run-time data) as such, but the ABSOLUT model and all simulation results generated for DIRECTED will be made freely available and lay the foundation for post-project developments.

The IP situation with the Danube Model: The SWIM part is copyrighted by PIK, and a non-distribution policy implemented by the original developer, Valentina Krysanova, is very likely to stay forever; there are also institutional concerns about IP rights of former code contributors (PIK externals) prohibiting open licensing.

CaMa-Flood is principally the IP of Dai Yamazaki and his team at the University of Tokyo albeit relaxed licenses apply for using the code and the necessary raster maps distributed in parallel. Additional high-resolution maps needed for downscaling the flood heights to street level are only distributed on a personal basis with individual usage restrictions. We could obtain these special maps for the Danube basin only for applications inside DIRECTED, and distributing recurrence flood maps based on them is restricted to a single interval (our choice: 100 years).

In contrast to the Danube Model the ABSOLUT code is freely distributed from an OA repository under the GNU software license (<https://doi.org/10.5281/zenodo.4468608>).

We will ensure any modelling results achieved in DIRECTED will be published open access through the Data Fabric and - in addition to that - through online repositories with unlimited future availability. Any scientific articles presenting our research will also be published under OA conditions and advertise the access to the modelling results.

Major development perspectives for the years following the project's funding period are outside and inside the scientific community. We will communicate our findings to non-scientific stakeholders to adjust their business activities regarding CCA and DRR. For instance, insurance companies may alter their premiums for building insurance based on the flooding probability maps and trends projected by the Danube Model, and farmers, confronted with the ABSOLUT results, may innovate their production management - shifting sowing and harvesting seasons, implementing new forms of tilling and crop rotations (catch crops) - for enhanced soil water preservation or by cropping other, less water demanding and more heat-resistant plant species.

Both models will be maintained further in scientific activities at PIK as they had been before the start of DIRECTED in different research and innovation projects. The further development of modules within the CaMa-Flood code will be communicated to the

developing community at the University of Tokyo, starting with the second international CaMa-Flood meeting to be held in Reading, UK, in September 2026. Some of our developments are hopefully to be adopted into the official code and hence serve the global flood modelling community.

A scientific use of Danube Model results for the Sava River in Croatia will be made in the SERIOUS project about bridge scour caused by high river runoff velocities hosted by the University of Zagreb, and over the following years it could translate into practical restoration efforts for obtaining better resistance against flood events in bridges along that river.

The crop yield model ABSOLUT has already been advertised recently at various scientific conferences and will be further put into the limelight through a scientific paper presenting the scenarios computed for DIRECTED; this shall be published in 2026. The model has already been applied at the Warsaw University of Life Sciences (see <https://doi.org/10.1016/j.agwat.2022.108107>), and the probability for further applications with other crop yield research groups around the world is high.

To summarize, active exploitation actions for 2025/2026 are:

- Publishing the results of the Danube Model simulations through the Data Fabric
- Publishing the results in parallel via the EU Open Research Repository
- Presenting the results at the EGU General Assembly 2026
- Providing the SERIOUS project (U Zagreb) with customized DM outputs
- Presenting the model development at the 2nd CaMa-Flood user conference (Sept. 2026)
- Publishing a scientific paper on model developments and the flood risk assessment
- Communicating the DM materials to our stakeholders (insurance sector via G&Co.)
- Publishing further results of the ABSOLUT crop yield model through the Data Fabric
- Publishing the complete crop yield projections independently via the EU Open Research Repository
- Publishing a scientific paper about the ABSOLUT results
- Keeping our stakeholders updated about this and the crop yield projections data availability

## 5.7 Damage Cost and Adaptation Model – DCAM (DTU)

DamageCost (in Danish: “SkadesØkonomi”) is a free and open-source QGIS software for economic climate risk assessment in Denmark. The tool was originally developed as an

ArcGIS plugin by DTU in collaboration with three Danish municipalities as part of a project funded by Innovation Fund Denmark (the strategic research council of Denmark). Later (see below) the tool was migrated to QGIS and the user interface was redesigned for basic GIS users and thereby made available for independent use in Danish municipalities. Currently, the tool contains economic damage cost curves corresponding to 7 different socio-economic sectors while indicators are provided for a further 3 sectors; these are constantly improved and extended.

## 5.7.1 Report on business development to date

In the early stages of DIRECTED, the original code of DamageCost model was significantly updated (improved input, output functionalities, and user interface), migrated to QGIS and became a community model offered through the OS/2 Public Digitalization Community in Denmark under the name “OS/2 SkadesØkonomi”. This migration together with minor updates was funded by external sources facilitated by the Association of Danish municipalities and carried out by DTU in collaboration with a small Danish software development company.

OS/2 is a community of Danish public authorities, which maintains working groups developing free and open-source software in Denmark. The focus is on use in the public sector, but the software is free, open-source and unrestricted for all applications. Membership of OS/2 is voluntary. The OS/2 membership fee is set by the size of the member municipality and varies between 25.000 DKK and 34.000 DKK annually. The OS/2 Community is actively responsible for and funds the maintenance of some of the community models. Others like DamageCost are updated on an ad hoc basis by the developers and does not receive OS/2 funding. As the main developer, DTU leads the working group on DamageCost, which also comprise selected members of Danish municipalities, the Association of Danish municipalities (which has taken a leading role in supporting the tool’s exploitation among Danish municipalities), and a few commercial actors. The DamageCost software is supplied as is without warranty or restrictions on use, so DamageCost can readily be used for all commercial and non-commercial applications. The code can be accessed via Github.

DTU maintains internal developer versions of OS/2 DamageCost but is not contractually obligated to provide updated versions of the model for general use, e.g. through the OS/2 Community. However, it is a key part of the strategy of DTU, and part of the internal strategy of the DTU Division for Climate Economic and Risk Management (DIRECTED partner), to contribute to society by delivering research-based insights and tools, including DamageCost. In this light, it is DTU’s ambition to continue to maintain and update the free and open-source OS/2 version of the model for commercial and non-commercial users for the foreseeable future. This is currently funded by DTU through national and EU-funded projects, and it is not

planned to change this funding model (e.g. that OS/2 will fund this directly in the future). It is currently discussed whether DTU will also offer a free live and online version of DamageCost to make the tool even more easily accessible to municipalities and other users.

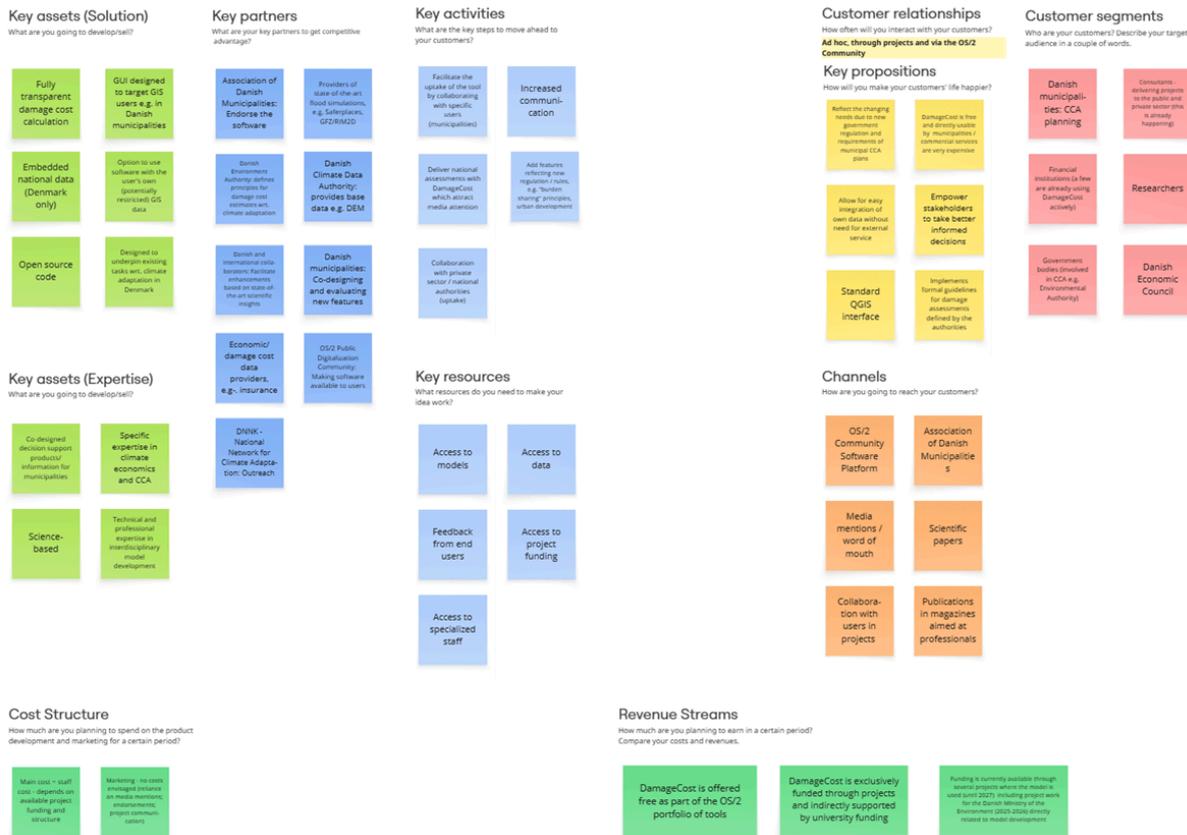
Already before the start of DIRECTED, the Association of Danish Municipalities strongly endorsed the use of DamageCost by the 98 municipalities in Denmark as means of complementing or replacing economic assessments provided on commercial terms by Danish consultancies. As part of this, DTU, the Association of Danish Municipalities and an SME called LNH Water organized a series of workshop all over Denmark over a 12-month period to promote the tool and help users install and test the tool locally. Representatives from about 2/3 of all Danish municipalities attended one or more of these workshops. Subsequently, DamageCost has been adopted and/or tested by several Danish municipalities and commercial users including consultants and financial institutions and used for economic damage cost assessments as part of, e.g. Climate Change Adaptation planning and stress testing. Over the course of 2023-2026 – in addition to the five RWL 1 municipalities (Roskilde, Lejre, Egedal, Frederikssund, and Halsnæs) - DTU is thus directly collaborating on projects involving DamageCost with municipalities in Vejle, Odense, Svendborg, Horsens, Haderslev, Aabenraa, and Esbjerg.

In 2024 and again in 2025, DTU has published a national damage costs assessment for Denmark using DamageCost, documenting the impacts of climate change relating to increasing risks of storm surges and cloudbursts. These activities were commissioned by the Realdania and CIP Foundations (private, philanthropic foundation), the Danish Insurance Association and the Danish Climate Alliance of Municipalities – and were closely related to the DIRECTED project. These publications have continued to attract considerable public media attention as well as attention from private sector organisations like the Danish Industry Association, public policymakers at all levels, and thereby served to promote the DamageCost tool itself. Numerical results were shared with all Danish municipalities. A third update of the national damage cost assessment will be published in 2026, and DTU is currently negotiating a contract for Sweden with If Insurance and a major Nordic bank.

## 5.7.2 Business Model Canvas

The Business Model Canvas shown below summarizes the present and future developments of the OS/2 DamageCost tool as outlined in previous sections. It is important to emphasize that in terms of broad exploitation, the tool is exclusively targeting a Danish audience as mediated through the OS/2 Public Digitalization Community, including non-commercial as well as commercial users and international consultants operating in Denmark. There are no plans for commercialisation, the code will continue to be made available as an open-source product. Hence, updates and maintenance of DamageCost relies entirely on external funding through dedicated project, research grants, internal financing, etc. It is also important to note that DamageCost is already well-known by the intended user community due to extensive communication, dissemination, demonstration and application activities, media mentions,

and endorsement by the Association of Danish municipalities and other organisations. It is currently one of only three tools that are made freely available to Danish municipalities; the other two being delivered by Danish national authorities, that is, the Coastal Planner (“Kystplanlægger”, Danish Coastal Authority) and KAMP (a GIS tool for provided by the Ministry of the Environment, which allows for combining public data and thereby can provide functionalities similar to a damage cost assessment tool). Both these tools are only meant for screening purposes with respect to Climate Change Adaptation in Denmark. At the same time, Danish and international consultants delivering services to the public sector (e.g. Danish municipalities) offer damage cost assessments as commercial services with far lower levels of transparency.



## 5.7.3 Case Study Development/ User development

Within DIRECTED, DamageCost is used exclusively in RWL 1 (Capital Region of Denmark). Within this Real World Lab, two workflows were co-developed with primary users (municipalities and local emergency management services), one of which features the DamageCost model as an impact assessment tool for Climate Change Adaptation and Disaster Risk Management:

To assess uncertainty, three different flood models are used as input to DamageCost (reflected also in the RWL 1 Data Fabric): Saferplaces (see section 5.4), RIM2D (see section 5.5), and SCALGO Live – a cloud-based model extensively used by Danish stakeholders and available to DTU on a free licence). For this purpose, the interface of the DamageCost model was enhanced to accommodate standardized flood maps.

All the three flood models were made to implement the same basic assumptions, e.g. the national Danish digital elevation model (DEM), building layers, climate projections from the Danish National Climate Atlas, etc.

Output from DamageCost is presented as a model mean and a spread.

DamageCost was used (together with Saferplaces, RIM2D, and SCALGO Live) in a forensic/narrative study, investigating the adaptation and governance that has taken place following the 2013 flood “Bodil” in Roskilde Fjord, which has served as a signature event for Climate Change Adaptation and Disaster Risk Management.

The damage cost curves from OS/2 Damage Cost were exported to and integrated into CLIMADA to accommodate the second workflow evaluated with RWL 1 users: appraisal of multicriteria adaptation options related to pluvial and coastal flood risk in Roskilde Fjord.

Finally, over the course of DIRECTED, the Roskilde Fjord area was for the first time classified as a high-risk area under the EU Flood DIRECTIVE. The area will also, from 2026, be the target of a new government-funded activity that will investigate whether a regional adaptation solution will be more effective than local solutions. As a result, users are likely to be more motivated and in more need of tools such as DamageCost than ever.

## 5.7.4 IP Scanning and development plans

DamageCost is an open-source code made available by the OS/2 Public Digitalization Community in Denmark. It is a plugin to QGIS, which is created and distributed under the GNU General Public License (GPL) with the current documentation provided under the GNU Free Documentation License, Version 1.3 or any later version. DamageCost does not make use of restricted code and can be downloaded via Github (<https://github.com/Skadesokonomi>).

As mentioned above, DTU maintains developer versions of DamageCost, but does not have any contractual obligation to maintain, update or further develop the software presented on the OS/2 community portal; the tool is delivered “as is” without warranty. Updates and further model developments happen irregularly and are contingent on project funding and dedicated staff being available.

A scientific publication with model documentation is currently under review for publication in the journal *Climate Services*. It is expected to be published in 2025.

New functionalities and improved damage cost curves are currently under development in the context of several Danish and international research and/or innovation projects, including DIRECTED:

Facilities to calculate and visualize the economic “burden sharing” principle implemented in Danish legislation in the coastal zone (i.e., the costs of Climate Change Adaptation are shared proportionally to the benefits of the protection).

An urban development module to allow the user to evaluate the costs and benefits of urban adaptation.

New and updated damage cost curves based on research commissioned by the Danish Ministry of the Environment, e.g. relating to infrastructure, production losses and natural values.

Support for interoperability with CLIMADA.

## 5.8 CLIMADA (ETH)

CLIMADA (CLIMate ADaptation) is a free and open-source software framework for climate risk assessment and adaptation option appraisal. Designed by a large scientific community, it helps researchers, policymakers, and businesses analyse the impacts of natural hazards and explore adaptation strategies. The model is well-suited to providing an open and independent perspective on physical risk, aligning with frameworks such as the TCFD (Task Force on Climate-related Financial Disclosures) and supporting the Economics of Climate Adaptation (ECA) approach.

### 5.8.1 Report on business development to date

Our work to date has centred on nurturing the CLIMADA open-source software ecosystem through active community engagement and continuous, feedback-driven development. Our core strategy revolves around structured interactions with users and developers, which directly informs our technical actions. These interactions include hosting a monthly Zoom call for news, developments, and Q&A, planning the yearly “CLIMADA Day” event for workshops and strategy, and conducting occasional, targeted discussions within scientific projects. Complementary to this, we have been managing the developer community and open-source

contributions via GitHub, along with the continuous improvement of our online documentation.

We have maintained a high level of direct conversation with potential and existing users through these established channels. The monthly Zoom calls allow us to deliver the latest updates and gather feedback during the Q&A sessions. More intensive engagement occurs through workshops and specific project meetings, where we focus on user-specific application challenges, such as handling large-scale data sets or integrating CLIMADA with other platforms. Furthermore, our planning for the annual CLIMADA Day ensures we dedicate a full event to extensive feedback sessions, setting the strategic direction for the following year based on broad community consensus.

The necessity of making changes as a result of talking to potential users is a core principle guiding our development cycle. For instance, frequent questions raised during the monthly Q&A sessions often highlight areas of confusion in the documentation, leading to immediate updates and additions to tutorials and FAQs. More fundamentally, feedback from the GitHub community and project-specific workshops has driven the main new developments.

## 5.8.2 Business Model

Maintained as a collaborative effort, CLIMADA is an open-source software anchored by the Weather and Climate Risk (WCR) group at ETH Zurich. The WCR group ensures its stability, covering continuous maintenance costs as part of their core budget, since CLIMADA is essential to their research. Further development is fuelled by specific scientific projects and the generous contributions of the open-source community. CLIMADA is fundamentally a public good; the group has no intention of building a commercial business out of this software. There is a large growing number of commercial and non-commercial ventures that are interacting with CLIMADA, including, MeteoSwiss, DWD, United Nations University (UNU), Network for Greening the Financial System (NGFS), EIOPA or Zurich Insurance. This large and diverse user community secures the long-term exploitation of the software.

## 5.8.3 Case Study Development/ User development

ETH applied CLIMADA directly in 2 of the RWLs in DIRECTED:

- RWL 1 - multicriteria adaptation options appraisal of pluvial and coastal flooding in Roskilde fjord
- RWL 3 - impact of winter storms on the Zala Region under climate change
- Furthermore, it was shown to the stakeholders from

- RWL 4 - how to use CLIMADA for bespoke adaptation option appraisal in the Erfurt Region.

User feedback from the RWL application was used to scope the requirements of users with regard to the output of the impact calculations and the adaptation option appraisal, as well as the dynamical interaction of the multi-criteria tool. This feedback triggered improvements in the output formats, e.g. standard export of NetCDF files, and the use of the multi-criteria tool, e.g., to provide standardized simplified templates for criteria. Moreover, the feedback from 52°North regarding the operational integration of CLIMADA into the Data Fabric reinforced our commitment to consolidate the core code for easier deployment.

Next to the works in the RWLs of DIRECTED, ETH interacted with several local and international stakeholders to continuously improve CLIMADA and its interoperability with other tools. As a result, in the period 2024-2025, over 100 pull requests were merged to add improvements and address more than 50 issues, more than 35 scientific articles using CLIMADA were published, and several Economics of Climate Adaptation studies were performed.

## 5.8.4 IP Scanning and development plans

All the CLIMADA code and results are released under the GPL-3.0 license. Thus, CLIMADA is free software, anyone can redistribute it and/or modify it under the

terms of the GNU General Public License as published by the Free Software Foundation, version 3.

Based on the learnings from the Data Fabric so far, in the coming year, the core code will be made leaner to allow for a seamless integration into operational services such as impact-based warning pipelines. This will allow the core elements to be deployed more directly on cloud infrastructure and be integrated into existing products. The large applicability of the software remains guaranteed with the continued support and development of the extended code in the so-called “petals” repository (which holds the several non-core extensions).

To summarize, active exploitation actions for 2025/2026 are:

- Make a CLIMADA release including all the code improvement regarding the multi-criteria tool and the time-dependent adaptation appraisal planner tool.
- Presenting the results at the EGU General Assembly 2026
- Publishing a scientific paper on the forensic approach to adaptation appraisal for the Copenhagen Region case study together with DTU model.

- Publishing a scientific paper on the multi-criteria use for adaptation appraisal for the Copenhagen Region case study together with DTU model.
- Organize two bi-annual CLIMADA-days conferences to engage with users, present new features, and obtain feedback.
- Make the CLIMADA core leaner for better integration into operational services.

## 5.9 Climate Connectivity Hub & Taxonomy (SEI)

The Climate Connectivity Taxonomy drives the climate information visualization tool, the [Climate Connectivity Hub](#), developed as part of the [MAIA](#)<sup>1</sup> and DIRECTED projects. The Hub provides a highly visual, interactive, and comprehensive overview of climate knowledge, and links to the organizations producing this knowledge. It searches terminology and keywords that are carefully curated for climate change and disaster risk communities. Making these fine-tuned searches possible is the new Climate Connectivity Taxonomy (CCT) which includes definitions of commonly used terms, enabling more linkages between topics, resources and organizations. The CCT aims to encourage a standardized approach to knowledge management connecting dispersed climate change knowledge, making it interoperable and reusable, facilitating access to a broad range of audiences. It drives data connections in the Hub and builds on [IPCC AR6 Glossary](#) and the [UNDRR-ISC Hazard Information Profiles](#). The Taxonomy serves:

**Researchers** seeking consistent terminology across studies and datasets.

**Data managers** and **website developers** who need to integrate climate vocabularies for enhancing content interoperability and discoverability.

**Tool developers** aiming to improve user experience with dynamic term definitions and metadata integration, as in the DIRECTED Data Fabric.

The CCT will enhance the DIRECTED Data Fabric by embedding definitions and metadata for key concepts in flood risk modelling, governance, and information interoperability directly within its interface (Figure x). This has already been experimented with and is being improved. The CCT will also be accessible via platforms such as [weADAPT](#) and the [Agora Community Hub](#), where it will function as an interactive glossary further amplifying its use.

A ‘language game’ piloted at the 7th European Climate Change Adaptation Conference invited stakeholders to suggest alternative labels, related terms, and contextual meanings for selected terms. Building on this, work is underway to integrate climate and disaster risk vocabulary relevant to RWL stakeholders into version 2 of the CCT through semantic analysis and stakeholder engagement.

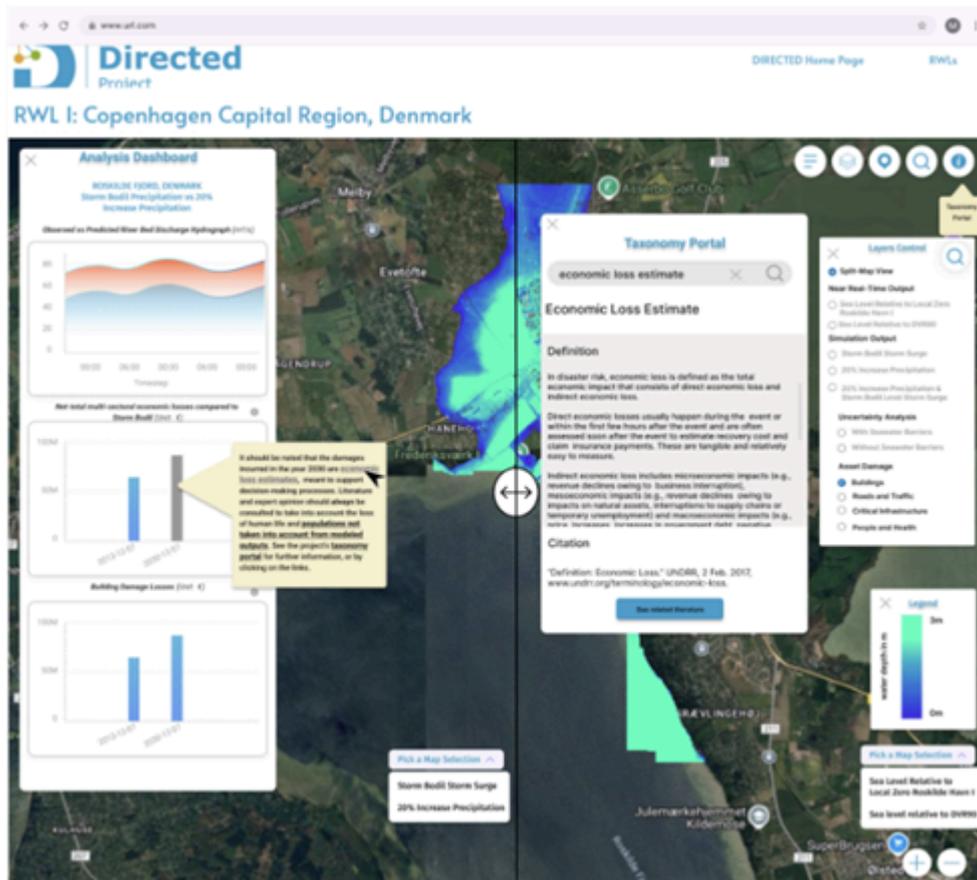


Figure 8: Example of use of Connectivity Hub & Taxonomy.

## 5.9.1 Report on business development to date

The ‘language game’ piloted at the 7th European Climate Change Adaptation Conference invited stakeholders to suggest alternative labels, related terms, and contextual meanings for selected terms. Building on this, work is underway to integrate climate and disaster risk vocabulary relevant to RWL stakeholders into version 2 of the CCT through semantic analysis and stakeholder engagement.

## 5.9.2 Business Model Canvas

Not yet developed.

## 5.9.3 Case Study Development/ User development

Through targeted workshops with Real World Labs we will map the expectations users place on risk models alongside the assumptions modellers make about user needs. Comparing these lived insights with existing taxonomy entries (which is underpinned by the IPCC Glossary, UNDRR HIPs) will expose synergies and mismatches, enabling us to produce clarified or novel definitions, context-specific synonyms and detailed scope notes. The outputs will support clearer knowledge exchange across actors, reduce semantic fragmentation, and improve the practical usability of the Climate Connectivity Taxonomy for diverse disciplines and organisations.

## 5.9.4 IP Scanning and development plans

Most IP development under the project is yet to take place.

The Hub is built on weADAPT and is therefore usable under the Creative Commons Attribution (CC-BY 4.0) licence. However, individual platform content shared on the Hub is subject to the individual platform licensing.

The first version of the open-source taxonomy is available here: [API](#) (v1, released June 2025)

# 5.10 Citizens VR Apps (Oasis Hub)

### Background

Oasis Hub is intending on harnessing the power of immersive technologies like VR, AR, and interactive storytelling - to revolutionize how we understand and respond to humanitarian, climate and disaster risk. By combining cutting-edge innovation with deep scientific insight, Oasis IRIS (Innovation, Resilience, Immersive, Storytelling) transforms complex data and information into emotionally resonant, visually intuitive experiences that empower action.

### Key Advantages

### **Immersive Understanding**

VR and AR simulations bring abstract humanitarian, climate and disaster risks to life and livelihoods, allowing users to experience future scenarios before they happen - deepening awareness and driving more informed decisions.

### **Data-Driven Storytelling**

We translate real-world science, modelled data and complex ideas into clear, compelling narratives - helping policymakers, NGO's, businesses, and communities grasp not just what might happen, but why it matters.

### **Cross-Sector Engagement**

Oasis IRIS bridges gaps between science, policy, and the public, creating tools that support collaboration across sectors - from climate adaptation planning to insurance innovation to Disaster Risk Management.

### **Rapid Visual Prototyping**

Our immersive tools allow stakeholders to test scenarios and solutions in real time, helping to visualise the impact of investments in resilience or the consequences of inaction.

### **Empathy & Behaviour Change**

Unlike traditional reports or maps, immersive experiences connect with people emotionally - making humanitarian, climate and disaster risks personal, memorable, and actionable.

### **The Problem** we are seeking to solve is:

Climate change, disasters, and humanitarian crises are accelerating in scale and frequency. Yet the communication of these risks - and the pathways to manage them - consistently falls short.

**Disaster managers and governmental authorities** often struggle to communicate preparedness in ways that resonate with communities. Technical warnings, reports, and guidelines are frequently ignored until it is too late.

**NGOs and civil society organisations** face challenges mobilising support and sustaining advocacy. Campaigns compete for attention in an overcrowded communications landscape, while traditional formats such as reports, websites, or short videos often fail to capture lived experience or urgency.

**Businesses and the finance sector** are under pressure to demonstrate resilience and ESG leadership. They hold vast responsibilities in terms of infrastructure, insurance, and investment, yet lack compelling tools to communicate risk and resilience strategies to stakeholders, employees, and the public.

**Funders and policymakers** are bombarded with technical detail and competing demands. Even when strong scientific evidence exists, it is rarely communicated in ways that inspire decisions, collaboration, or long-term investment.

**Research institutions and cultural bodies** hold essential knowledge and evidence, but their ability to translate it into public understanding and action is often limited by conventional formats.

The result is a persistent gap between knowledge and action:

Reports remain unread.

Data stays abstract.

Communities stay unprepared.

Funding and policy choices are delayed.

This communication gap costs lives, damages economies, and undermines resilience. Without new approaches that bridge science, empathy, and experience, the risks of climate and humanitarian crises will continue to outpace our ability to act.

Oasis IRIS bridges the gap between knowledge and action by combining immersive technology, science communication, and storytelling.

## 5.10.1 Report on business development to date

Oasis Hub began work on the VR App in the second half of the DIRECTED Project, alongside leading WP 6 on communications, dissemination, and exploitation. This section focuses on the delivery of the Citizens App.

At the start of the Project, the plan was to build on the Citizens App previously developed through the Oasis-CAIMAN Project, which enabled in-situ damage reporting after extreme events. However, feedback from the Real World Labs suggested that such Apps are often underused within municipalities, and that stronger value could come from pushing communications directly to citizens. In response, and in partnership with ARSTPC-ER, we pivoted to develop a Flood Safety App using existing static flood information designed to inform and protect the public and SaferPlaces visualised model.

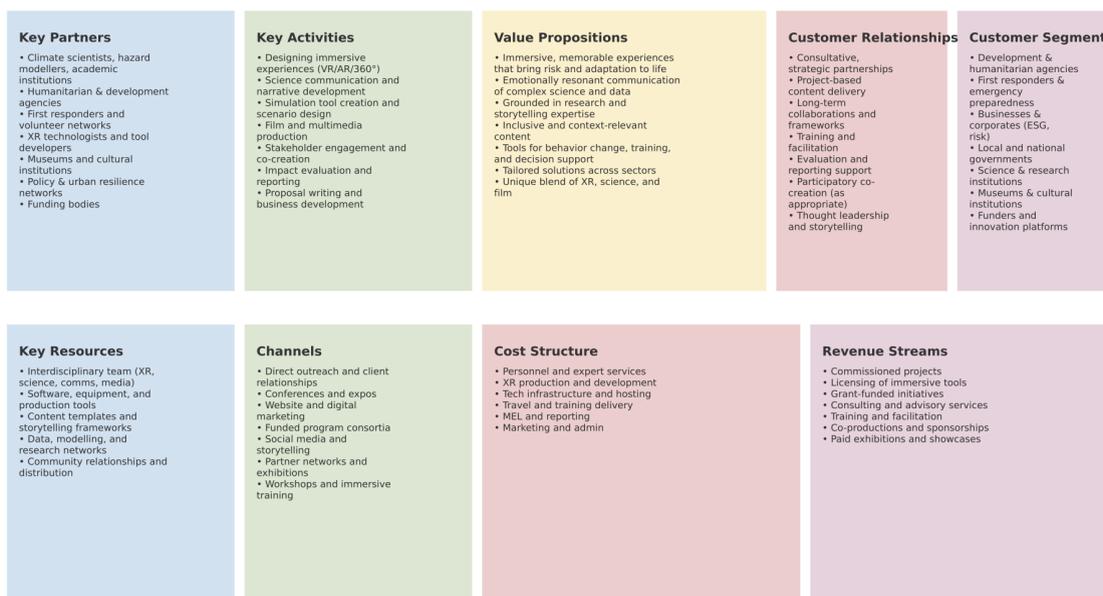
The result was the Emilia-Romagna Flood Safety VR App, which combines real-world insights into the severity of extreme floods with practical safety guidance: how to prepare before a flood, how to act during a flood, how to respond afterwards, and how climate adaptation can reduce future risks. It also includes recognition of the volunteers, professionals, and emergency services who work tirelessly to keep communities safe and support recovery.

The App was showcased at ECCA 2025, where it was tested with audiences to gather feedback on user experience, learning outcomes, and suggestions for improvement. Selected results are presented below.

In addition, ARSTPC-ER presented the App at REMTECH 2025 - targeting public services and is continuing to test it with internal stakeholders, including senior officials.

## 5.10.2 Business Model Canvas

### Business Model



Primary exploitation routes include:

- Direct service provision to regional and municipal authorities;
- Licensing to NGOs and educational bodies;
- Integration into civil protection training programmes;
- Inclusion in policy and awareness campaigns on disaster preparedness.

Oasis Hub plans to adopt the training VR app development into a part of our core business strategy. Long term sustainability will be achieved via service contracts, co-funded pilots, and potential inclusion in EU resilience initiatives.

## 5.10.3 Case Study Development/ User development

### Case Study: Emilia-Romagna Flood Safety VR App

#### Challenge

Traditional citizen Apps and static information leaflets are often underused, leaving communities without accessible, engaging guidance on how to prepare for and respond to floods. Emergency agencies need more effective ways to communicate risk and influence behaviour change.

#### Solution

The Emilia-Romagna Flood Safety VR App delivers immersive training that places people directly inside a realistic flood scenario. Instead of passively reading advice, users experience the urgency of rising water and learn how to:

- Prepare their homes and families before a flood
- Make safe decisions during an event
- Navigate the aftermath responsibly
- Understand long-term adaptation measures

The App also recognises the contribution of volunteers and emergency services, strengthening trust between citizens and institutions.

User Testing has shown very positive results:

Results of User Testing so far;

- **High engagement:** Tested with diverse audiences at ECCA 2025, participants described the App as “very effective,” “amazing,” and “a new way to understand what to do in an emergency.”
- **Emotional impact:** Several users reported that the experience helped them personally relate to flood risk - one said it helped her understand what her sister endured during the May 2025 floods.
- **Market relevance:** Suggestions highlighted strong demand for school programmes, citizen training, and expansion to other hazards such as wildfires and earthquakes.

#### Customer Value

- **Public agencies** gain a powerful communication and training tool to reach citizens.

- **Emergency services and NGOs** can use VR for volunteer training and preparedness drills.

### Next Steps 2025/2026

ARSTPC-ER has introduced the App to REMTECH 2025 and is testing it with senior public officials with the Agency. With refinement and scaling, the Flood Safety VR App has the potential to become a core tool for citizen safety training and resilience planning across Europe and beyond.

In 2025/ 2026 we are also discussing with ARSTPC-ER to create a Wildfire Safety App for Comacchio that focuses on local people and tourists.

Developing these two experiences enables us to build some core messages for flood safety and wildfire projects in the future.

In 2026 we will also show the App to other local authorities and undertake market research gauging interest in this type of VR experience for training publics, in particular vulnerable groups. We will begin to refine how to package such a service and a cost structure etc.

In addition, we will also test the potential interoperability of placing a flood analytics tool within a VR/ AR environment in conjunction with SaferPlaces.

## 5.10.4 IP Scanning and development plans

The IP from the build, storytelling and imagery of the Virtual Reality Apps remains with Oasis Hub. However, it should be noted that the Copyright on the information provided for the App remains with the client, in this case study with ARSTPC-ER.

Next steps for 2025/6 include:

- Evaluating feedback from public/ citizen showings of App by ARSTPC-ER
- Investigating the potential of working with ARSTPC-ER on a wildfire safety app for citizens
- Using the Flood Safety App as a prototype for further market research and awareness raising of the new product with local authorities and first responder organisations
- Development of sales pitch and process and costing structure for new product
- Development of go-market plan for the new product
- Initiate interest in uptake beyond the project
- Investigate further integration of SaferPlace 3D models formats into VR environment

- Presentation of App at European and multi-lateral events - firstly WMO Conference in Nov 2025

The Flood Safety App has rapidly reached TRL 8 and we will be pushing for TRL 9 by the end of the Project.

Impact potential beyond Oasis Hub core business offer improvement is: increased preparedness, improved communication efficiency, support for EU Climate Adaptation Mission and UK climate adaptation initiatives.

## 5.11 Next Steps for General Exploitation Planning across all Key Exploitable Results in 2025/2026

During the final implementation period of DIRECTED (2025-2026), the project will transition from prototype development and validation towards structured exploitation and uptake of its Key Exploitable Results (KERs). The following actions are planned to ensure that each result - whether a product, service, dataset, or methodological framework - is positioned for continued use and measurable impact beyond the project's lifetime.

### 1. Consolidation and Verification of KER Portfolio

All KERs identified within the project - including the Data Fabric, SaferPlaces Platform, Oasis Hub VR Applications, RIM2D, Risk-Tandem Framework, the Connectivity Hub and Taxonomy, Damage Cost and Adaptation Model, CLIMADA, the Danube Model and Absolut Models - will be reviewed and verified against the official Horizon Europe criteria for exploitable results.

This process will include:

Updating TRL assessments and confirming market or policy readiness levels.

Assigning responsible partners and confirming ownership and access rights.

Mapping each KER to its relevant exploitation route (commercial, non-commercial, open source, policy, or follow-on R&D).

Uploading final KER summaries to the Horizon Results Platform for visibility and traceability.

### 2. Preparation of Tailored Exploitation Roadmaps

Each KER lead will prepare a concise Exploitation Roadmap (1–2 pages) defining the post-project trajectory, partners involved, target users, and measurable indicators. These will feed into the Final Plan for Exploitation and Dissemination of Results (PEDR) due at project closure D6.5.

The roadmaps will include:

- Identified funding or investment needs.
- Planned pilot implementations, licensing, or service offerings.
- Mechanisms for ongoing maintenance, hosting, or governance (especially for open-source components such as the Data Fabric).

### **3. Establishment of an External Exploitation Review Panel (by March 2026)**

To strengthen objectivity and alignment with market and policy needs, DIRECTED will convene an External Exploitation Panel in March 2026.

The panel will comprise representatives from:

- The public sector (e.g., regional authorities, civil protection agencies).
- The private sector (insurance, climate-services, data or digital-twin industries).
- Research and innovation experts (e.g., Horizon Europe evaluators, EIC business coaches).

The Panel will:

- Review each KER's exploitation roadmap and provide independent feedback on market readiness, scalability, and impact potential.
- Advise on IP management and investment opportunities (where appropriate).
- Support matchmaking with potential adopters and follow-on funding instruments (e.g., EIC Accelerator, Copernicus Market Uptake, LIFE, or Digital Europe).
- Recommendations from this review will be summarised in an Exploitation Progress Note and used to refine the consortium's post-project collaboration framework.

### **4. Integration of Exploitation Monitoring into WP 6 and Project Closure**

WP 6 will continue to monitor exploitation progress across all KERs through:

Documentation of exploitation indicators (contracts, pilots, users reached, citations, etc.).  
Cross-linking with dissemination KPIs to evidence both reach and reuse.

At project end, these results will feed into a comprehensive Impact and Exploitation Summary, highlighting achieved outcomes, ongoing commercial or policy use, and partner-specific continuation plans.

## 5. Cross-Cutting Exploitation Themes for 2025–2026

**Interoperability and integration:** ensure that each technical KER (Data Fabric, models, SaferPlaces) remains interoperable and can be reused across future EU and national initiatives.

**Visibility and communication:** promote KERs via targeted publications, conferences, and online demonstrations.

**Investment-readiness:** identify KERs suitable for private investment or EIC follow-up and provide tailored support to partners pursuing scale-up including understanding EU investment routes/ partner potential.

**Sustainability:** define lightweight governance and maintenance structures for open-source assets to prevent obsolescence after project closure.

### Summary

By 2026, the consortium aims to demonstrate that each KER has a clearly defined exploitation path, supported by evidence of early uptake, a credible sustainability mechanism, and independent validation through the External Exploitation Panel. This structured approach ensures that DIRECTED's scientific, technological, and societal innovations continue to deliver value well beyond the project lifetime and contribute directly to the objectives of the EU Mission on Adaptation to Climate Change and the European Green Deal.

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# Partners

