LINKS

Strengthening links between technologies and society for European disaster resilience

D9.5 SECOND STATUS REPORT ON THE DEVELOPMENT AND DISTRIBUTION OF DISSEMINATION MATERIAL

STATUS REPORT

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EXECUTIVE SUMMARY

About the project

LINKS "Strengthening links between technologies and society for European disaster resilience" is a comprehensive study on disaster governance in Europe. In recent years, social media and crowdsourcing (SMCS) have been integrated into crisis management for improved information gathering and collaboration across European communities. The effectiveness of SMCS on European disaster resilience, however, remains unclear, due to the use of SMCS in disasters in different ways and under diverse conditions. In this context, the overall objective of LINKS is to strengthen links between technologies and society for improved European disaster resilience, by producing sustainable advanced learning on the use of SMCS in disasters. This is done across three complementary knowledge domains:

- Disaster Risk Perception and Vulnerability (DRPV)
- Disaster Management Processes (DMP)
- Disaster Community Technologies (DCT)

The project will develop a framework through an iterative process and bring together 15 partners and two associated partners across Europe (Belgium, Denmark, Germany, Italy, Luxembourg, the Netherlands) and beyond (Bosnia & Herzegovina, Japan) to understand, measure and govern SMCS for disasters. The LINKS Framework consolidates knowledge and experiences on the uses of SMCS into useful products for relevant stakeholders. It will be developed and evaluated through five practitioner-driven European cases representing different disaster scenarios (earthquakes, flooding, industrial hazards, terrorism, drought), cutting across disaster management phases and diverse socioeconomic and cultural settings in four countries (Denmark, Germany, Italy, the Netherlands). Furthermore, LINKS sets out to create the LINKS Community, which brings together a wide variety of stakeholders, including first-responders, public authorities, civil society organisations, business communities, citizens, and researchers across Europe, dedicated to improving European disaster resilience through the use of SMCS.

About this deliverable

This deliverable provides an overview of the dissemination and exploitation activities carried out until M36 of the LINKS project. It focuses on the final LINKS' results and target groups and on the key messages at the project level. In adopting the results-based and target group-based approach, the deliverable reports the conducted communication and dissemination activities, organised in relevant channels, materials, and events. Furthermore, it highlights how these activities contributed to LINKS' impact. Overall, in this period, LINKS achieved positive outcomes for implementing communication and dissemination activities, establishing meaningful interactions with many stakeholders.

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LIST OF ACRONYMS

Acronym / Abbreviation	Description
DEC	Dissemination, Exploitation, Communication
LCC	LINKS Community Center
LCW	LINKS Community Workshop
SMCS	Social Media and Crowdsourcing
TG	Target Group

LIST OF LINKS PARTNERS ACRONYMS

Acronym	Description
VU	VRIJE UNIVERSITEIT AMSTERDAM
UCPH	KØBENHAVNS UNIVERSITET
UNIFI	UNIVERSITÀ DEGLI STUDI DI FIRENZE
SIC	SAFETY INNOVATION CENTER GGMBH
UCC	KØBENHAVNS PROFESSIONSHØJSKOLE
FRB	FREDERIKSBERG KOMMUNE
HBR	HOVEDSTADENS BEREDSKAB
SCIT	SAVE THE CHILDREN ITALIA ONLUS
DPPI SEE	DISASTER PREPAREDNESS AND PREVENTION INITIATIVE FOR SOUTH EASTERN EUROPE
FEU	FEDERATION OF THE EUROPEAN UNION FIRE OFFICER ASSOCIATIONS A.S.B.L.
DHPOL	DEUTSCHE HOCHSCHULE DER POLIZEI
ST	SITECH SERVICES OF CHEMELOT
EOS	EUROPEAN ORGANISATION FOR SECURITY
LCU	LINK CAMPUS UNIVERSITY
PDT	PROVINCIA DI TERNI – SERVIZIO PROTEZIONE CIVILE
VRZL	VEILIGHEIDSREGIO ZUID-LIMBURG
CRESD	KOBE UNIVERSITY CENTER FOR RESILIENT DESIGN

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DEFINITION OF KEY TERMS

Term	Definition[1]
Communication	Taking strategic and targeted measures for promoting the project and its results to a multitude of audiences, including the media and the public, and possibly engaging in a two-way exchange.[2]
Dissemination	The public disclosure of results by any appropriate means, including by scientific publications in any medium.[2]
Exploitation	The utilisation of results in further research activities other than those covered by the project, or in developing, creating and marketing a product or process, or in creating and providing a service, or in standardisation activities.[2]
Outcome	Changes in behaviour, relationships and activities, resulting from results. This includes the uptake or use of the project's results by different target groups.[3]
Result	What is produced within the project, usually in the form of results within deliverables.[3]

[1] LINKS Glossary: https://links-project.eu/glossary/
[2] Ala Mutka K. (2020). Dissemination and Exploitation in Horizon 2020. Retrieved December 16, 2020 from: https://ec.europa.eu/research/participants/data/ref/h2020/other/events/2017-03-01/8_result-dissemination-exploitation.pdf

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1. INTRODUCTION

This deliverable provides an overview of the communication and dissemination activities conducted for the distribution of the LINKS project results realised until M36. Communication and dissemination activities in LINKS are closely connected, since the information about the overall project objectives and activities (which is the aim of communication) ensures the public disclosure of the results with the appropriate target groups (which is the aim of the dissemination activities). Moreover, dissemination activities are directly connected to the exploitation activities, whcih contribute to maximising the impact of the project. In this context, this deliverable seeks to provide information about the communication of LINKS results (section 3), but also about making results available to the target groups (section 4).

Deliverable D9.2 (Updated LINKS Dissemination, Exploitation and Communication Strategy) defined the updated plan of the dissemination, exploitation, and communication (DEC) of the project, by laying out objectives, target groups, modes of implementation and expected impacts. This deliverable (D9.5) is connected to D9.2; it is the second report of the dissemination activities planned in D9.2.

In section 2, we define the LINKS results and link them to the target groups more interested by that specific result, as well as the LINKS key messages defined at project level. Section 3 describes and evaluates the activities (carried out until M36) on communicating the LINKS results to the target groups, through the related channels, materials and events. Following the same outline on channels, materials and events, section 4, focuses on making the LINKS results directly available to the target groups. Section 5 illustrates how the activities contribute to the LINKS impacts. Lastly, the Conclusion notes the work for future dissemination activities.

Many important achievements can be reported for this period. Among them:

- a result-based approach has been adopted for the LINKS website;
- the Instagram page represents a good opportunity to communicate the results to civil society;
- visual communication materials have been implemented in the last months, focusing on the realisation of infographics and videos on all the results;
- the number of scientific publications on the LINKS results and the number of reads and downloads is excellent;
- LINKS has been presented in key specialised events and exhibitions, both organised by the United Nations for Disaster Risk Reduction and by the European Commission, disseminating the results to these crucial networks;
- LINKS has established a strong collaboration with the projects of the Social Resilience Cluster (e.g. through participation in events, creation of policy outcomes, etc.).

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2. FINAL LINKS RESULTS, TARGET GROUPS AND KEY MESSAGES

This section outlines key information at the basis of the next sessions, by focusing on the final list of the LINKS results and on the target groups, as well as on the overall key messages linked to the project results. In Table 1, the final list of the LINKS results is provided, as emerged from the work across the project. For each result, the list of the main target groups who are using/will use them is provided.

Table 1: Description of final LINKS Results

RESULTS	TARGET GROUPS
Including Citizens Handbook: it touches upon four main thematic areas: increasing awareness, mobilising people, making accessible information and engaging with volunteers. It provides a set of tools (e.g. guidelines and checklists) in different formats that can be relevant to several target groups: from volunteers to minor or vulnerable groups.	Practitioners, Policy and Decision Makers, Researchers, Local Communities, Businesses
Technologies Library: it gathers and structures information about existing social media and crowdsourcing technologies to grasp the overwhelming market and to guide the selection and application of these technologies. For practitioners, it provides a highly needed overview of the market, gathers and structures the relevant information about these technologies and thus guides the selection and the application of suitable technology for disaster Management.	Practitioners, Policy and Decision Makers, Researchers, Businesses
Guidelines Library: gathers and structures existing guiding documents (guidelines, legal documents) that support the implementation and use of social media and crowdsourcing in LINKS's target audiences. While the library targets disaster management organisations, it also contains documents intended for use by researchers, businesses, citizens or others interested in using SMCS in their crisis communication.	Practitioners, Policy and Decision Makers, Researchers
Use Cases Library: it collects experiences of how SMCS has been used or can be used in the real world. This will allow the stakeholders to find answers to specific questions, e.g.: What technologies have organisations used to gather and analyse social media data in a disaster? What technologies were used for crowdsourcing in the flooding in 2021 in Germany? How do other DMOs organise their processing of data from social media? Did someone have a valuable idea to help disabled people using social media during a heatwave?	Practitioners, Policy and Decision Makers, Researchers
Feel Safe: it is an online platform with two aims: 1) to provide educational material to engage children in disaster preparedness activities, 2) to promote knowledge and good practice in Europe around children's rights during emergencies and participation in emergency management. The website contains specific resources on SMCS, digital education and earthquake impact mitigation. The	Practitioners, Policy and Decision Makers, Researchers, Civil Society, Local Communities

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RESULTS	TARGET GROUPS
leading target group is represented by "School Teachers, Education Community and Practitioners organisations for disaster management". This product's ultimate beneficiaries are children aged 9-14 years.	
Resilience Wheel: it supports initial discussions and assessments on how social media and crowdsourcing may support and challenge disaster management processes within and across organisations. It simplifies the complexity of managing disasters through technology into a set and subset of factors through which the link between disaster management and technology can be understood.	Practitioners, Policy and Decision Makers, Researchers, Businesses
LINKS Framework: a framework to help disaster management organisations focus on what is important when considering the application of Social Media and Crowdsourcing in disaster management processes. It supports strategic thinking in relation to two main themes: 'Engaging with Citizens' and 'Improving Communication'.	Practitioners, Policy and Decision Makers, Researchers, Civil Society, Local Communities
LINKS Community Center: the online platform providing a user-friendly access to the LINKS results and a means to exchange knowledge and experiences.	Practitioners, Policy and Decision Makers, Researchers, Civil Society, Local Communities, Businesses

Table 2 specifies the final key messages at the project level.

Table 2: LINKS Key Messages

KEY MESSAGES
1. LINKS provides user-friendly products to assist stakeholders working in disaster risk reduction, in using social media and crowdsourcing to improve communication and engagement with citizens.
2. The LINKS Community Center is a one-stop-shop for knowledge and resources for using social media and crowdsourcing in disasters.
3. The LINKS Community Center is an open, web-based platform that gives access to technologies, guidelines, use cases, and further resources for applying social media and crowdsourcing in disaster risk management.
4. The LINKS Framework helps to guide relevant stakeholders to focus on what is important when using social media and crowdsourcing to improve communication and engagement with citizens in all phases of disasters.

Before going in depth with the description of the specific carried out activities in the next sections of the document, a synthesis of the state of the art of all the activities is provided in Table 3. This synthesis considers the quantitative and qualitative indicators defined in Table 4 and Table 5 of the D9.2 (that correspond to the Annex I and Annex II of this deliverable). Please consider the following scheme for the employed icons:

- : on track;
- : request of an additional effort;

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- : not implemented.

Table 3: Status of Implemented Communication and Dissemination Activities

CHANNELS, MATERIALS, EVENTS	STATE OF THE ACTIVITIES
LINKS AND PARTNERS' WEBSITES	A continuous update of these channels is carried out. The contents are particularly focused on the results and products of the project.
LINKS AND PARTNERS' SOCIAL MEDIA	A continuous update of these channels is carried out. The Instagram page of the project, addressed to the civil society, has been realised. Contents are focused on the results and products of the project and aim at the LINKS Community objectives.
NEWSLETTER AND PRESS RELEASE	The number of newsletters realised by the project is on track. The contents are focused on the main results and activities of the project. The articles realised are also shared through the social media channels and provides information for the realisation of press releases spread through appropriate magazines.
ONLINE REPOSITORIES	Research repositories and repositories addressed to experts (sharing useful materials and results) are constantly updated.
LEAFLETS	Two leaflets are realised, the first describing the overall project (and translated in the 5 languages of the project), the second describing the LINKS Framework.
ARTICLES IN INFORMATIVE/ SPECIALISED MAGAZINES	LINKS results are appropriately published in informative and specialised magazines.
INFOGRAPHICS/VIDEOS	Visual communication of the project, with the realisation of infographics and videos illustrating the main results of the project and their benefits for the target groups, has become particularly important in this phase of the project.
SCIENTIFIC PUBLICATIONS	Scientific papers on the main topics of the project have been realised and published following the Open Access format.
POLICY OUTPUTS	The first policy output on 'Targeting Communication' has been produced. Additional policy outputs are being considered.
INFORMATIVE EVENTS	Need to increase the participation to more informative events, to demonstrate/understand the impacts of the results on the civil society and local communities.
SPECIALISED EVENTS AND EXHIBITIONS	LINKS has been presented during the main specialised events and exhibitions, both organised by European Commission, UNDRR, and experts' fields events. A joint participation with the other EU projects has been established.
SCIENTIFIC CONFERENCES	LINKS has been presented during the main scientific conferences, especially in the field of social sciences.
EXISTING NETWORKS EVENTS	A strong collaboration with the other EU projects has been established.
LECTURES AND TRAININGS	LINKS has been presented during many lessons and training programs, especially by the academic partners of the project.
INTERACTIVE WORKSHOPS	The organisation of interactive workshops (LCWs) is on track.

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Key Takeaways from this Section

- The final key results of the project have been defined (Table 1).
- The final key messages at the project level have been developed (Table 2).
- In general terms, the channels, material, and events for communication and dissemination of the LINKS results are employed as planned in D9.2. An additional effort is required for informative events, but the Consortium is still working on this issue.

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3. COMMUNICATION OF LINKS RESULTS

This section focuses on the communication activities implemented through channels, materials and events carried out by the LINKS Consortium and the individual partners, to inform different target groups about the project's results. Table 4 shows the communication activities realised through channels, materials, and events. These will be specified in more detail in the sections below.

Table 4: LINKS Results: Communication Channels, Materials, and Events

RESULTS	CHANNELS	MATERIALS	EVENTS
Including Citizens Handbook	LINKS and Partners' Websites (UNIFI, SCIT), LINKS and Partners' Social Media, Newsletter and Press Release	Leaflet, Articles in Magazines and Blogs (e.g. Reliefweb, UmbriaJournal, etc.)	Events with schools, events with teachers
Technologies Library	LINKS and Partners' Websites (SIC), LINKS and Partners' Social Media, Newsletter and Press Release	Leaflet, Articles in Magazines and Blogs (e.g. Reliefweb, PreventionWeb, etc.)	Informative events
Guidelines Library	LINKS and Partners' Websites (SIC, UCPH), LINKS and Partners' Social Media, Newsletter and Press Release	Leaflet, Articles in Magazines and Blogs (e.g. Reliefweb,	Informative events
Use Cases Library	LINKS and Partners' Websites, (SIC) LINKS and Partners' Social Media, Newsletter and Press Release	Leaflet, Articles in Magazines and Blogs (e.g. Reliefweb, PreventionWeb, etc.)	Informative events
Feel Safe	LINKS and Partners' Websites (SCIT), LINKS and Partners' Social Media, Newsletter and Press Release	Leaflet, Articles in Magazines and Blogs (e.g. Reliefweb, PreventionWeb, Emergenza 2.0, etc.)	Events with schools, events with teachers
Resilience Wheel	LINKS and Partners' Websites (UCPH, UCC), LINKS and Partners' Social Media, Newsletter and Press Release	Leaflet, Articles in Magazines and Blogs (e.g. Reliefweb, Emergenza 2.0, PreventionWeb)	Informative events
LINKS Framework	LINKS and Partners' Websites (VU), LINKS and Partners' Social Media, Newsletter and Press Release	Leaflet, Articles in Magazines and Blogs (e.g. CORDIS EU, PreventionWeb, etc.)	Informative events
LINKS Community Center	LINKS and Partners' Websites (SIC), LINKS and Partners' Social Media, Newsletter and Press Release	Leaflet, Articles in Magazines and Blogs (e.g. Reliefweb, PreventionWeb, etc.)	Informative events

3.1 Communication Channels

In this sub-section we describe the communication channels used by the LINKS Consortium, as well as by individual partners, to communicate the LINKS results and activities.

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3.1.1 LINKS and Partners' Website

The LINKS website plays a central role in the communication of LINKS' activities and results. The LINKS website represents an important touchpoint to share information about the results and the related activities (i.e.: continuing the publishing of the approved deliverables, making available the published papers on the results, sharing news on the activities related to the implementation of the results, informing about the events, etc.). In the section 'LINKS results'[3], the users can access useful information about the LINKS results and access links to the actual results on the LCC – LINKS Community Center, by navigating them by target groups (Figure 1) or by type of results (Figure 2).

Figure 1: LINKS Results on the LINKS Website – Navigation per Target Group

[3] LINKS Results: https://links-project.eu/results/

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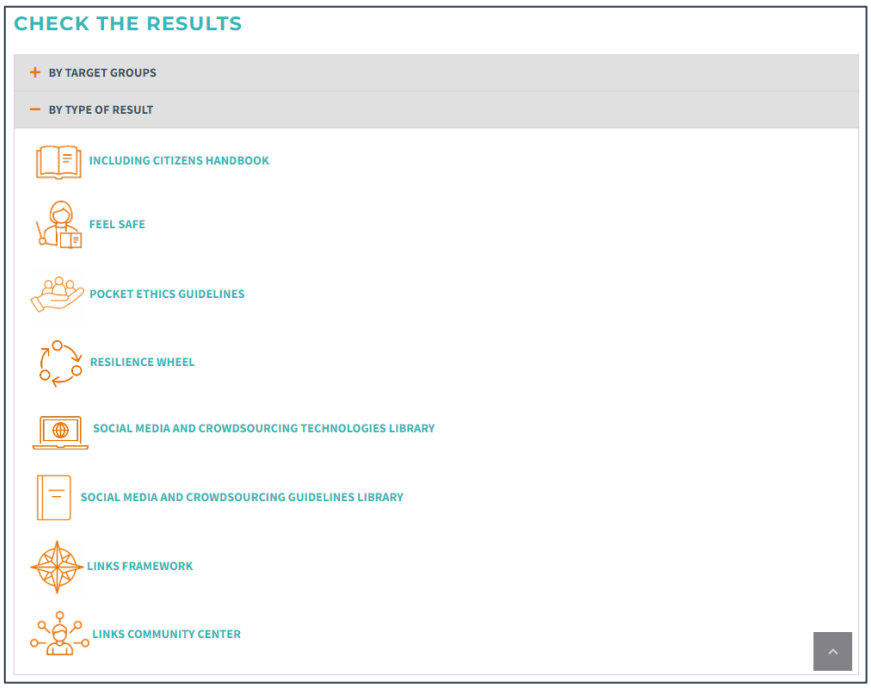
Figure 2: LINKS Results on the LINKS Website – Navigation per Type of Result



As shown in Figure 1, users can only access the information on the LINKS results useful to one specific target group, with a description including the benefits the results can give to them. Figure 2 demonstrates how users get access to the description of each result, with the publication of communication and dissemination materials that allow to have a more precise knowledge of the result (e.g.: videos, infographics, publications, deliverables, presentations, etc.). Figure 3 shows an example related to the result 'Including Citizens Handbook'.

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Figure 3: 'Including Citizens Handbook' Page on the LINKS Website

LINKS partners websites are also being used to increase the visibility of the project and of the related results reaching relevant stakeholders. All the LINKS partners have used their institutional websites with these objectives. A set of common instructions were provided by WP9 and the partners have adapted them to the individual communication strategies. In general terms, the use of these channels is fundamental to make the LINKS results available to the partners' networks and also to direct people to the official channels of the project (especially the social media channels and the LCC). One example is represented by the COPE - Copenhagen Center for Disaster Research, whose frequent publications on the LINKS activities and results has been important to communicate the results with all the stakeholders who already know and collaborate with this center. Apart from the

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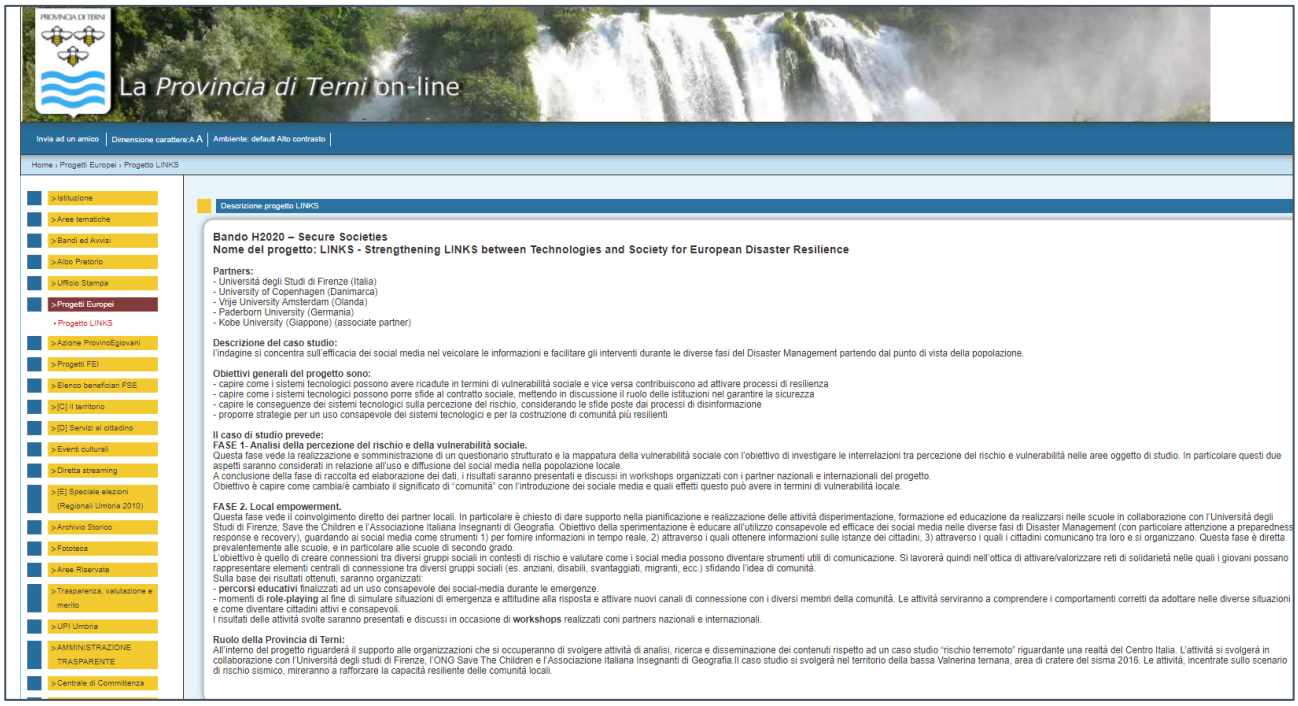
publication of a general description of LINKS, good practices of the use of the partners' websites include:

- publishing a description of the role of the individual members in the implementation of the results;
- sharing the links to the main channels of the project, publishing a summary of the participation in events of dissemination of results;
- disseminating the results in local languages (not only English, but also Italian, German, Dutch and Danish);
- publishing the activities carried out under the LINKS Cases.

On this last point, a good example is the description shared on the website of the Provincia di Terni, which includes a description of the objectives and results of the Italian LINKS Case[4] (see Figure 4).

Figure 4: Description of LINKS results on the website of a LINKS partner website (PDT)



Also, the LINKS associated partners have shared, through their website, their involvement in the LINKS project. Figure 5 article describes the engagement of Kobe University in the project[5].

[4] Provincia di Terni: http://cms.provincia.terni.it/on-line/Home/ProgettiEuropei/ProgettoLINKS/articolo13047.html
[5] Kobe University: https://www.office.kobe-u.ac.jp/ipiep/materials/KU_Research_Highlights_2021.pdf

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Figure 5: Description of LINKS results on the website of a LINKS Associated partner (CRESD)

International Collaboration

MIRAI collaborates with various international partners including Gadjah Mada University (Indonesia), Chengdu University of Technology (China) and Hanoi Medical University (Vietnam).

Recently, MIRAI have started to collaborate with the University of California, Berkeley, which conducts earthquake simulations for the entire city of San Francisco. Kobe and UC Berkeley agreed to organise annual workshops entitled 'Kobe PEER Workshop' during the period from 2020 to 2025 in order to explore grand designs for societies in the 22th century.

There are also several members of the MIRAI projects who are engaged in highly active collaborations with European institutions and researchers. A research team led by Professor Akihiko HOKUGO from the Graduate School of Engineering has been involved in a research project for disaster studies entitled 'LINKS- Strengthening links between technologies and society for European disaster resilience' awarded funding from the EU Horizon 2020 programme's Secure Societies (SU-SEC) section.

Professor Hiroshi OKUMURA, the dean of Graduate School of Humanities has taken the initiative to establish a research consortium for caltual heritage studies with colleagues in japan, Hungary and UK, of which the Graduate School of Humanities is also a member. One of their aims is collaboration through HORIZON Europe.

MIRAI envisions the disaster-resistant cities of 100 or even 1000 years in the future. To realize this mission, we encourage our researchers to collaborate with overseas institutions.

3.1.2 LINKS and Partners Social Media Channels

The LINKS social media channels are also being used to communicate the LINKS activities and results. In addition to the channels created with the beginning of LINKS (Facebook - 'LINKS EU Project' and Twitter - '@LINKS_EUProject'), the Instagram page ('LINKS EU Project') has been realised. General social media channels address different target groups. The most important aspect is that if the Facebook and Twitter pages are oriented also to a more professional audience (Practitioners, Businesses, and Researchers), the Instagram page intends to address only civil society and local communities (therefore the used style is more friendly and accessible, see Figure 6). The LINKS Consortium systematically shares posts on the different results of the project, emphasising the main characteristics and the benefits for the target groups to whom they are addressed, as well as a link to the LINKS website or to the dedicated section on the LCC. The implementation of supporting visuals, customised for the social media channels, has been fundamental to create clear messages. Figure 7 shows an example from the Facebook page on the LCC result.

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Figure 6: LINKS Instagram Page

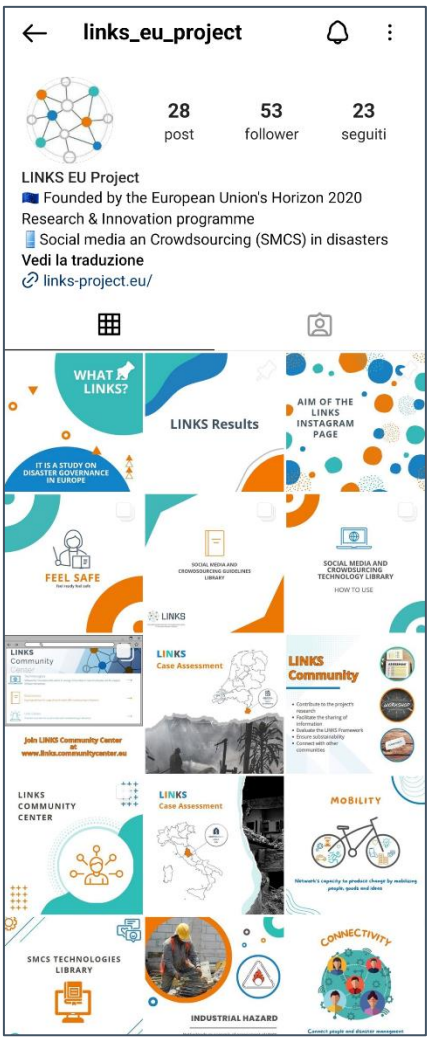

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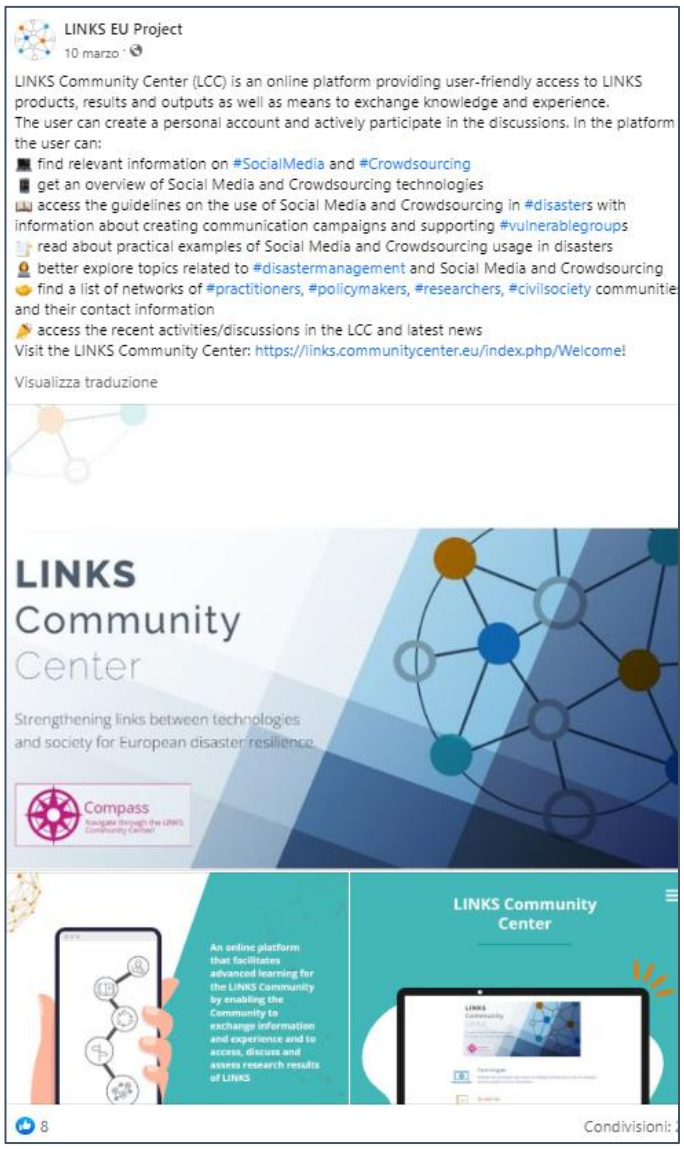
Figure 7: LCC Communication on the LINKS Facebook Page



A structured social media plan, making use of all the LINKS social channels has been developed, and is updated monthly. An intensive use of the LINKS social media pages has been done in the occasion of key events (e.g. BOSAI Forum, EENA 2023, CERIS events, that will be presented in the next sections). An average of 2-3 posts per week are shared through the social channels, in line with our plan in D9.2. The numbers of the followers are good Facebook: 265, Twitter: 854, Instagram: 58) considering the KPIs provided in Table 5 of D9.2, and reported as a reminder in the Annex I of this deliverable. Due to the fact that the project results have been consolidated, not only the numbers of the followers have increased, but also their interaction with the posts is going well. Figure 8, for example, provides data regarding one month, from the beginning of April to the beginning of May 2023. This positive trend is evident each month and it contributes to the diffusion of the visibility of the LINKS results in the appropriate communities.

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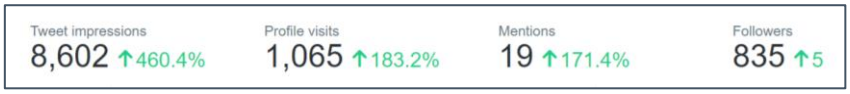
Figure 8: Profile Visits, Mentions and Followers on Twitter



Many activities have been carried out to ensure an appropriate visibility of the results in the social media channels. Among them: creation of interactive posts (e.g. through short surveys aiming at creating an interactive dialogue with the stakeholders on LINKS results), strengthening of the use of the visuals which summarise the key elements of each results, validation of the contents with partners and key stakeholders before the publication, mention of key stakeholders, partners, and projects, etc. For key contents, sponsored posts have been shared too, to give visibility to specific aspects of the project. Moreover, all the LINKS social media channels contribute to higher engagement of the LINKS website. For example, from the data of the Facebook page, 53% of the readers of the 'Feel Safe' on the LINKS website come from the LINKS Facebook page.

An important element is represented by the differentiation of the contents between different channels. As anticipated, the most important one is represented by the use of a different typology of visuals for Instagram compared to Facebook and Twitter, since this channel, due to the characteristics of the target who accesses it, requires a more accessible language and specific visuals.

In general terms, the use of the LINKS social media has been crucial, representing a way to give visibility to both the pages of the individual results on the LINKS website (see 3.1.1) and to the events where LINKS results have been presented. Indeed, some of the participants in these events learned about the events accessing the social media channels. One example is the 'LINKS Webinars series', in relation to which an intense social media campaign has been carried out with a direct impact on the increase of relevant participants. Furthermore, direct contacts with several stakeholders (such as the Green Project Expo and 30 Days 30 Ways UK) started via the LINKS social channels. A positive element is that LINKS posts (the ones related to some key activities of the project) have been shared also by the social channels of REA (Research European Agency), contributing to an even larger outreach – and impact – of the project.

As for the partners' websites and the partners' social media channels, individual strategies have been implemented according to the activities described in Table 6 of D9.2, where the roles of the leader of DEC activities as well as of the individual product owners are identified. From the DEC Activity Report, the tool created to give the LINKS partners the possibility to easily report their dissemination and communication activities, it emerges that especially the result owners and the LINKS partners involved in the LINKS cases made intensive use of the social media channels. At M36 an average of 15 posts per partner has been shared. A common practice is that the individual members belonging to each partner institution have shared the posts. This is a good example, since it showcases activities and results to stakeholders and networks that otherwise would not have access to such information.

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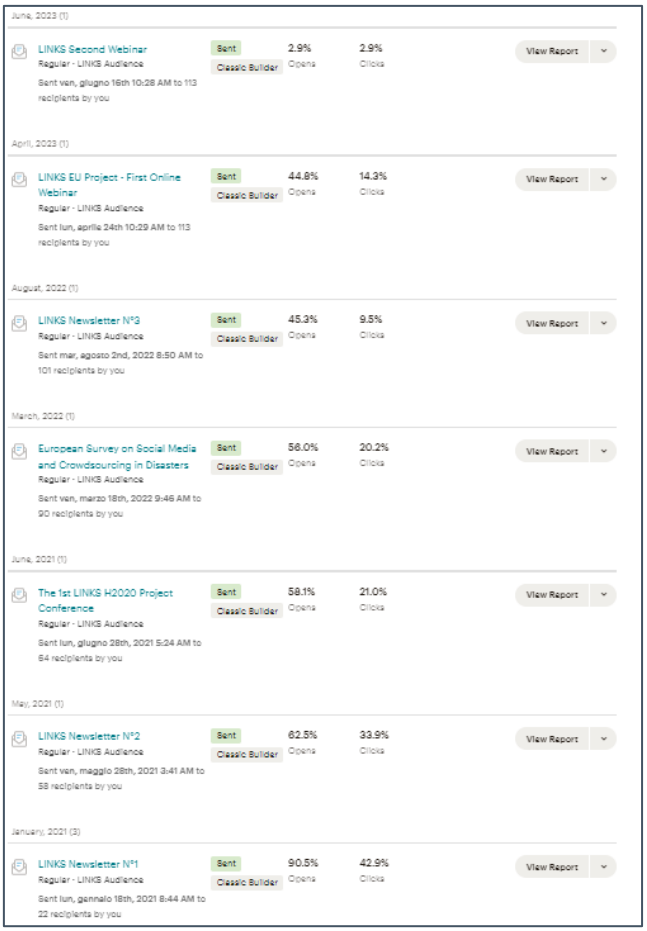
3.1.3 Newsletters and Press Releases

At M36, 7 newsletters have been sent. They are included in the Figure 9.

Figure 9: LINKS Newsletter Engagement



Different typologies of newsletter have been realised, which are:

- traditional newsletter, with an average of 7-8 articles structured to give visibility to the different results and link them to the specific products and/or to other communication materials;
- promotion of key events organised by the LINKS Consortium to present the results;
- promotion of the LINKS Community, following WP8.

At M36 LINKS has 113 subscribers to the newsletter, on track with the numbers provided in the DEC strategy. Moreover, Figure 9 demonstrates a good engagement of the subscribers, due to the percentage of users who opened the email.

In line with the result-oriented and target group-oriented approach, the newsletter aims to give visibility to the relevant results (and related activities) and make the different target groups aware of them. For example, the section 'Strategic Planning for the Use of Social Media and Crowdsourcing

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in Disasters: Updates on the LINKS Framework'[6] is addressed to the practitioner target group. While in the section 'A Snapshot on how Social Media and Crowdsourcing are currently used by Disaster Management Organisations in Europe: the First Results from the LINKS Cases'[7] is addressed also to the local communities target group.

The articles for the newsletter are connected also with other LINKS channels, such as the LINKS social media (because they are also shared through them) and the LINKS website (since they represent the basis for the publication of the news on the website). Moreover, as emphasised in D9.2, newsletters are directly connected with the press releases, since the articles realised for the newsletters represented the basic contents for each press release. Indeed, press releases are shared through more than 150 news contacts, including relevant ones which give visibility to the LINKS results in important media partners (e.g. PreventionWeb, Crisis Response Journal, Giornale della Protezione Civile, etc.).

Finally, it is important to report that the LINKS results have also been included in many additional newsletters, from the other projects of the 'Societal Resilience Cluster' and the LINKS partners. Safety Region included the LINKS activities and results in two newsletters (in March and in May 2023)[8], sharing it with several people from the general public, professionals, business owners, and government partners.

3.2 Communication Materials

This sub-section describes communication materials used to distribute the LINKS results.

3.2.1 Leaflets

The first leaflet was completed in M7 (with an update in M23) and it gave an overview of all the project activities, results, and related project. In M33 a second leaflet was created. It focused on the two main results of LINKS: the 'LINKS Framework' and the 'LINKS Community Center'. The aim of this leaflet was to give an overview of the main characteristics of the LINKS Framework and its related products, and provide to access them. This leaflet was distributed during many events (especially the BOSAI Forum 2023 and the EENA Conference 2023). In Figure 10, the second LINKS leaflet.

[6] Strategic Planning for the Use of Social Media and Crowdsourcing in Disasters: Updates on the LINKS Framework: https://links-project.eu/strategic-planning-for-the-use-of-social-media-and-crowdsourcing-in-disasters-updates-on-the-links-framework/

[7] A Snapshot on how Social Media and Crowdsourcing are currently used by Disaster Management Organisations in Europe: the First Results from the LINKS Cases: https://links-project.eu/a-snapshot-on-how-social-media-and-crowdsourcing-are-currently-used-by-disaster-management-organizations-in-europe-the-first-results-from-the-links-cases/.

[8] VRZL Newsletter: https://gemeentestein.m1.mailplus.nl/archief/mailing-442484.html, https://vrzl.email-provider.eu/web/g57wy9qf0o/myypqf15qa/n06wgij5k0/3lt38xjm2s

Figure 10: Second LINKS Leaflet

3.2.2 Articles in Magazines and Blogs

LINKS is present in many scientific and non-scientific articles in publications, primarily online and mostly focused on disasters, security, digital technologies, digital and social transformation and smart territories. The articles published in these different magazines and articles have been realised starting from the press releases sent to them, or journalists have autonomously realised the articles starting from the contents LINKS shared through other channels (e.g. a post shared on the LINKS social media channels, the participation in events, etc.). Different typologies of magazines and blogs, with different purposes and addressed to different targets, have been used. Following, a short overview:

- Institutional media, aimed specifically at policy makers. A great visibility of LINKS has been given through the CORDIS EU Research results platform, which has dedicated two articles to LINKS (July 2021 and September 2022), focusing on how to exploit the potential of social media and crowdsourcing for disaster resilience at the European level (see Figure 11[9]).

[9] CORDIS EU Research Results: https://cordis.europa.eu/project/id/883490/news

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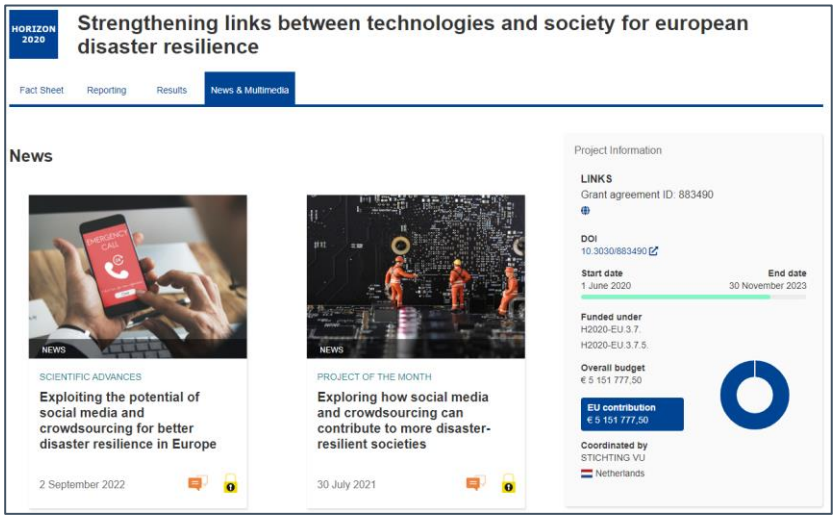
Figure 11: Articles on LINKS published in the CORDIS EU Platform



- Professional magazines and blogs, aimed specifically at practitioners. The 'ReliefWeb",[10] for example, an online magazine dedicated to disaster management, has created a page dedicated only to LINKS, where all the news related to the project are published, especially the part on the Libraries and the Resilience Wheel. An important channel of visibility in Italy is also represented by the official web magazine of the Italian Civil Protection Agency, 'Sistema Protezione Civile', which has shared news related to the activities within the Italian LINKS Case. Moreover, a strong collaboration has been made with the 'PreventionWeb' platform, the official channel of the 'United Nation for Disaster Risk Reduction', which allows to directly share news and articles on the LINKS results and events during key moments of the project: a particular attention has been given in this case to the work done within the WP4. The Italian blog 'Emergenza 2.0' represents an important tool for professionals, since it aims at sharing contents focused on the results and activities related to the Italian LINKS Case;
- Local media (e.g.: 'TerniToday', 'Tuttoggi', 'UmbriaJournal', 'LeMuseNews'), focus on the main results and activities within the LINKS Cases, especially oriented to civil society and local communities. Especially Italian local media has shared LINKS-related news, focusing on the Umbria Region activities;
- Research blogs (e.g. the one of the 'Resilience Institute') explain the academic part of the project;
- Popular magazines (e.g.: 'EnergyUp.tech') explain complex topics (as the ones of LINKS) in an accessible way, addressing both a large audience (civil society) and a specialised one (practitioners and researchers). For example, they made accessible the work on how to include citizens and on the technologies used for disasters;

[10] ReliefWeb: https://reliefweb.int/organization/links#organization-details

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- Blogs of the LINKS sister projects (e.g.: ENGAGE, RESILOC, BuildERS, STRATEGY, COVINFORM, etc.), including the newsletters of these projects (e.g. the newsletter of the FIRE-IN project of September 2022, CORE project in May 2023, etc.)

About 100 articles are being posted online, which is an excellent result. For the different blogs and magazines, diverse styles and contents have been used, to emphase how a specific result or activity can be of interest to one target group.

3.3 Communication Events

Communication events include informative events addressed to a broader audience. In this sub-section a description of the informative events is provided.

3.3.1 Informative Events

This category includes events organised to inform civil society about the results specifically for them. Particular attention has been given to the results realised under WP2, and so the main partners involved are the University of Florence and Save the Children Italy. Special attention is given to engaging minors in disaster prevention and demonstrating the use and capabilities of digital technologies in disaster management. For example, in October 2022, UNIFI and SCIT took part in the Italian Congress organised by the AIIG (Associazione Italiana Insegnanti di Geografia) where they presented 'Feel Safe' (one of the products in the LINKS Framwork) to a group of 60 teachers over three different sessions. This has also been an opportunity to collect feedback on the usability of this product and suggestions on how to make it more effective. 'Feel Safe' has also been presented in April and May 2023 during two events organised by the Italian Civil Protection Agency: 'La Protezione Civile incontra la cittadinanza' ('Civil Protection meets citizens') and '25 anni dalla frana di Sarno. Esercitazione di Protezione Civile' ('25 years since the Sarno landslide. Civil Protection exercise') has represented two important occasions to demonstrate children how they should behave during an emergency and how they can actively contribute.

LCU has involved the civil society in many activities as well. For example, in April 2022, during an interactive workshop with high school students titled 'Communicate with digital media - Communicate through social media in emergency situations', an analysis of the needs of young people in the use of SMCS in disaster management processes was conducted, which has contributed to the definition of a list of requirements for the 'Including Citizens Handbook'. Figure 12 shows some results from questions about the pros and cons of accessing information during an emergency through social media channels.

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Figure 12: Results from an Event with High School Students in Italy

In the coming months, LINKS partners will mainly be involved in informative events, primarily focused on the local level (with a connection with the LINKS Cases).

Key Takeaways from this Section

- The LINKS website pages dedicated to the LINKS results (navigable by target groups and/or results in itself) represents a fundamental step for communicating LINKS results.
- LINKS established excellent results in communicating results through its social media. The Instagram page represents a good opportunity to communicate them to civil society.
- The connection between the project newsletter, the press releases, the LINKS social media, and the articles and blogs represents a good opportunity to use the same contents produced during the project on different channels, with the objective of increase the impact of the communication activities on the LINKS results.
- Visual communication activities have been strongly implemented in the last months. For example, the LINKS leaflets are focused on the specific LINKS results (especially on the LINKS Framework).
- The support to partners in conducting LINKS communication activities has increased. As a result, partners have reinforced the communication of their findings to their networks.
- A good number of informative events have been carried out. These activities will increase in the last months of the project.

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4. DISSEMINATION OF LINKS RESULTS

This section focuses on the activities implemented to make the results available to the target groups. In other words,the dissemination activities implemented through channels, materials and events carried out by the LINKS Consortium and the individual partners. Table 5 shows the dissemination activities realised through channels, materials, and events. These will be specified in more detail in the sections below.

Table 5: LINKS Results: Dissemination Channels, Materials, and Events

RESULTS	CHANNELS	MATERIALS	EVENTS
Including Citizens Handbook	Professional Social Media Channels, LCC, Zenodo, CMINE, etc.	Infographics and videos, Scientific Publications, Policy Output	CERIS2023, RESIFEST, RISKPacc Workshop, BuildERS Final Conference, AIIG Conference 2023, Accessibility Days2022, EGU2023, SSPCR2022, LINKS Webinars, LCW
Technologies Library	Professional Social Media Channels, LCC, Zenodo, CMINE, etc.	Infographics and videos, Scientific Publications	CERIS2023, EENA2023, IDDRR2022, ENGAGE KI-CoP Workshop, Research for Civil protection, SafetyCamp2022, LCW
Guidelines Library	Professional Social Media Channels, LCC, CMINE, etc.	Infographics and videos, Scientific Publications	CERIS2023, EENA2023, ENGAGE KI-CoP Workshop, COPE Socials 2022, LCW
Use Cases Library	Professional Social Media Channels, LCC, CMINE, etc.	Infographics and videos,	CERIS2023, EENA2023, LCW
Feel Safe	Professional Social Media Channels, LCC, CMINE, etc.	Infographics and videos, Scientific Publications	EENA2023, IDDRR2022, CERIS2022, RESIFEST, AIIG Conference 2023, LCW
Resilience Wheel	Professional Social Media Channels, LCC, CMINE, etc.	Infographics and videos, Scientific Publications	CERIS2022, COPE Socials 2022, LCW
LINKS Framework	Professional Social Media Channels, LCC, CORDIS, etc.	Infographics and videos, Scientific Publications, Policy Output	EENA2023, BOSAI Forum2023, NEEDS2022, LCW
LINKS Community Center	Professional Social Media Channels, LCC, Zenodo, CORDIS, etc.	Infographics and videos, Scientific Publications	CERIS2023, EENA2023, BOSAI Forum2023, Research for Civil Protection, NEEDS2022, LCW

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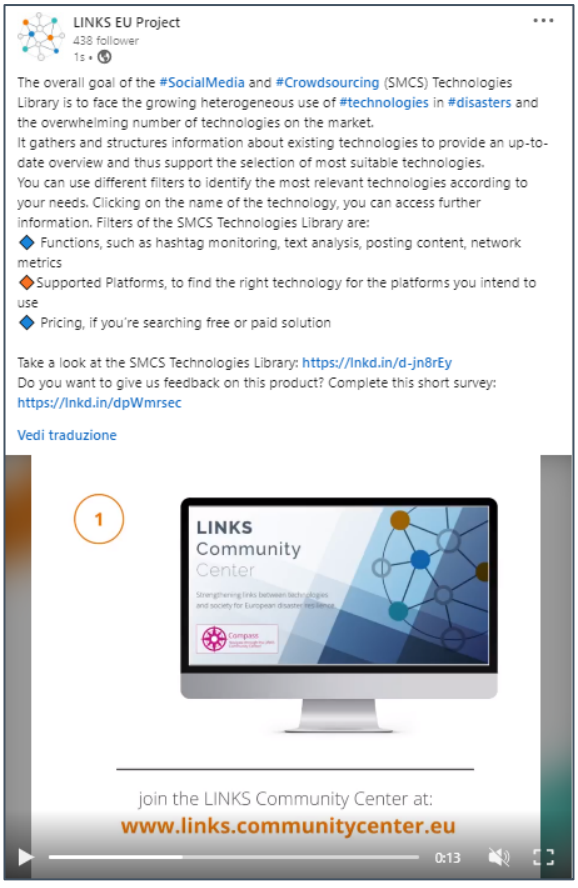
4.1 Dissemination Channels

In this sub-section, we describe the dissemination channels used by the LINKS Consortium and by individual partners to disseminate the LINKS results.

4.1.1 Professional Social Media Channels

In section 3.1.2 a description of the activities carried out through the traditional social media channels (i.e.: oriented to a broader audience) has been provided. This section reports the activities conducted through the LINKS professional social media channels. They are used to disseminate the LINKS results since they are directly addressed to practitioners, policy makers, businesses, and researchers. Indeed, these channels are LinkedIn ('@LINKS EU Project'), ResearchGate and Academia (the latter two are primarily addressed to researchers). On the one side, specific posts on the different results of LINKS, emphasising the main characteristics and the benefits for the professional audiences have been created for the LinkedIn social media account. The implementation of supporting visuals has been fundamental to create clear messages. Figure 13 shows an example from the LinkedIn page: a customised video has been shared showing how to use the 'Technologies Library'.

Figure 13: Dissemination through the LINKS LinkedIn Page



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The post shown in Figure 13 is an example of the typology of posts shared through LinkedIn, which are much more than the Facebook, Twitter and Instagram posts, oriented not only to give visibility to the results but to shorten the distance between the results and the addressed target groups. A structured social media plan has been developed. The page is used intensively every time there is a key event (e.g. BOSAI Forum 2023, EENA 2023, CERIS 2023). An average of 2-3 posts per week are shared. The LINKS followers' number on LinkedIn is excellent compared to the KPIs provided in Table 5 of D9.2 (which corresponds to Annex I of this deliverable), since they are equal to 461. Due to the fact that the project results have been consolidated, not only the number of followers have increased, but also their interaction with the posts is going well. Figure 14, for example, demonstrates that from May 2022 to May 2023, the LinkedIn page had more than 741 reactions to the posts, contributing to the visibility of the LINKS results in the relevant communities.

Figure 14: Reactions on LinkedIn

Translation: Data for period 2nd May 2022 – 1st May 2023: 741 reactions, 10 comments, 95 posts diffusion

On the other side, ResearchGate and Academia channels have been employed, creating appropriate LINKS pages presenting the academic papers realised by the LINKS Consortium, explaining the scientific outputs and methods of the project. Unfortunately, in March 2023 ResearchGate management decided that the 'Project' function, which included the description of research projects, was eliminated. For this reason, LINKS is currently only present in Academia.

Finally, it is important to notice that the results owners and the LINKS partners involved in the LINKS Cases made an intensive use of the professional social media channels. A commeon practice is that individual members of each partner institution shared the messages: and this is good, as it increased the visibility of results and events in networks and among stakeholders not only connected to the institutions, but also to their people.

4.1.2 Online Repositories and LINKS Community Center

Online repositories contain materials presenting the results available to different communities. Table 5 lists the repositories used within LINKS, chosen as the most important channels to consider in disaster resilience at the European level.

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Table 6: Online Platforms and Repositories used in LINKS Dissemination

PLATFORM/REPOSITORY	ACTIVITIES
CMINE - Crisis Management Innovation Network[11]	• Continuous interaction with the Societal Resilience Cluster • Presentation of the LINKS results to the interested community of 2000 members • Discussion about LINKS updates and results through the specific LINKS group • Promotion of the events presenting LINKS results
UNDRR – United Nations Sendi Framework Voluntary Commitments	• Visibility to the way LINKS is contributing to the SENDAI Framework priorities, describing the general objectives of the project as well as presenting the way all the LINKS products are contributing at the local levels in the LINKS Cases
CORDIS - Community Research and Development Information Service[12]	• Presentation of one factsheet illustrating the project description, objectives, and participants • Publication of materials (15 deliverables, 3 publications, 2 news)
DRMKC - Disaster Risk Management Knowledge Centre[13]	• Publication of the completed deliverables, news and events • Space of discussion and interaction for the policy outputs implementation
Zenodo[14]	• The main storage place for scientific publications and LINKS updates

Special attention should be paid to the CMINE platform. As already mentioned in the table, it represents the main channel of communication of the 'Societal Resilience Cluster' (previously 'DRS-01 Cluster'), which nowadays includes 8 Horizon projects (LINKS, ENGAGE, BuildERS, RESILOC, RISKPACC, CORE, Mediate, Paratus) working on the topic of disaster resilience. This cluster has completed many activities and has many ongoing projects, described in the different sections of this deliverable. These activities have been implemented with the objective of demonstrating how all the EU projects funded under the same call can have a strong impact on the societal plan. The additional networks in which LINKS is involved can be found on the LCC[15].

The platforms are particularly addressed to practitioners and policy makers (except for Zenodo, which is addressed mainly to researchers), as they bring together stakeholders active in crisis management and try to link scientific findings to policy. Generally, we are satisfied with the use of these platforms. Two good examples are the attention gained by LINKS in DRMKC which increased traffic to the LINKS channels (especially website and social pages) and the data on the publications stored in Zenodo that shows that has been downloaded by almost 100% of the viewers – which is

[11] CMINE: https://www.cmine.eu/topics/21875/feed.
[12] CORDIS: https://cordis.europa.eu/project/id/883490.
[13] DRMKC: https://drmkc.jrc.ec.europa.eu/.
[14] Zenodo: https://zenodo.org/.
[15] LINKS Networks: https://links.communitycenter.eu/index.php/Overview_of_Networks

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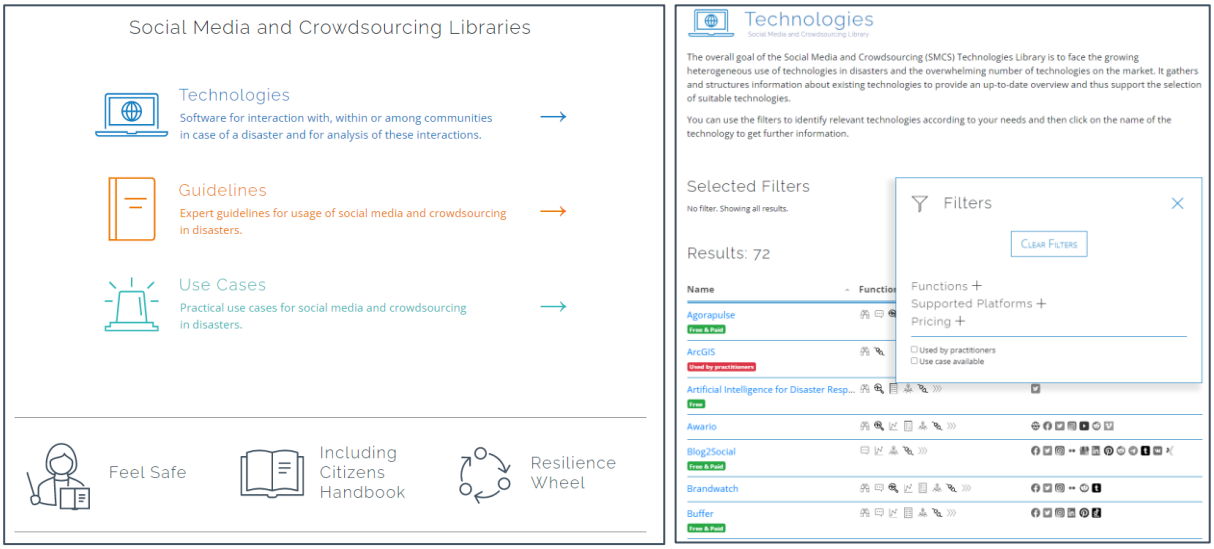
considered as an exceptional achievement. Regarding Zenodo, it is considered one of the most important platforms to share project results in the releant research communities. As elaborated in section 4.2.2, the research outputs of the project (especially the scientific papers) are also present in additional research platforms (such as: Scopus, ScienceDirect, Springer, SemanticScholars, etc.).

LCC – LINKS Community Center[16] is at the same time one of the most important LINKS outcomes as a platform used to make the results available to stakeholders. Playing a central role in creating a community relying on the LINKS results, special attention is paid to its promotion through all the different LINKS channels. Figure 15 shows how the results are presented in the LCC and how users can interact through them, with specific focus on the Technologies Library.

Figure 15: Dissemination through the LINKS Community Center



The LINKS Framework plays a central role in this regard. Indeed, being a central component of the LINK Community Center, it offers a gude to the users on what they exactly have to consider when they intend to apply social media and crowdsourcing in disasters. Without going in depth on its specific functions, what is important to emphasize here is that, a strategic thinking tool, it guides users in achieving exactly what they need, becoming a useful tool to dissimenate the LINK results.

4.2 Dissemination Materials

In this sub-section we describe the dissemination materials used by the LINKS Consortium and by individual partners to disseminate the LINKS results.

[16] LCC: https://links.communitycenter.eu/.

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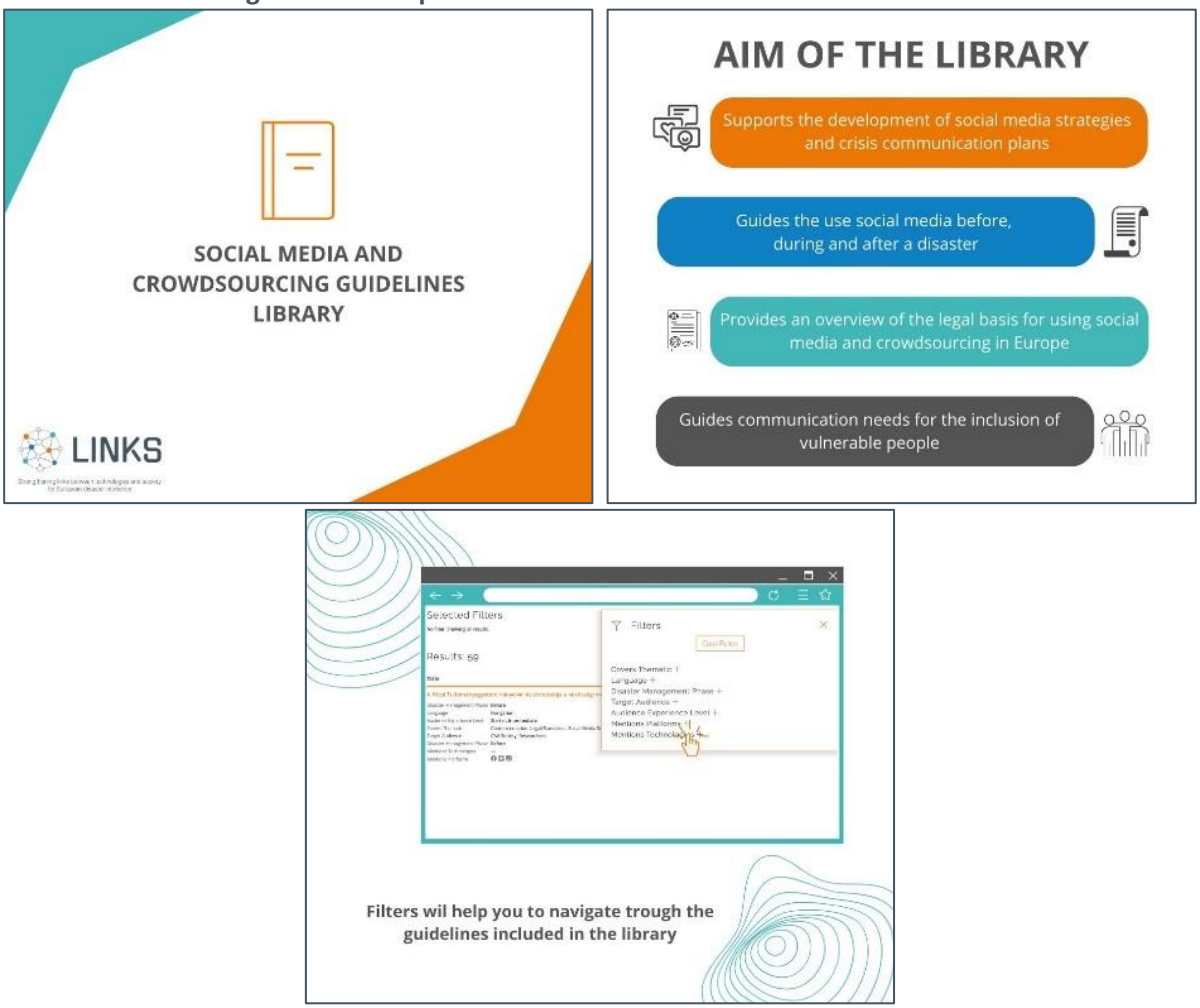
4.2.1 Infographics and Videos

The use of visual elements to make the results more accessible has increased in the last two years of LINKS. To create coherent dissemination materials, a 'LINKS Toolkit' containing visual basic elements to use for the creation of visuals, has been put together. Visuals have been created for different channels, such as deliverables, presentations, leaflets, papers, etc. to summarise the key aspects of the results. Figure 16 gives an example of visuals for the LINKS social media channels.

Figure 16: Example of visuals for the LINKS social media channels



In LINKS, infographics, the more elaborate visuals that summarise the project's key findings in a comprehensive and accessible way, play an important role in disseminating the results. A total of 8 infographics have been created, one for each result. Figure 17 shows two examples of infographics, the first for 'Feel Safe' and the second for the 'Technology Library'. As shown, the infographics have a similar structure, with the same key points: focus on the problem, description of the LINKS solution to the described problem, description of the benefits of the solution for the target groups, the inclusion of a quote from one (or) more stakeholder(s), links and resources to know more about that result (both oriented to the LINKS website and the LCC). The infographics are published online

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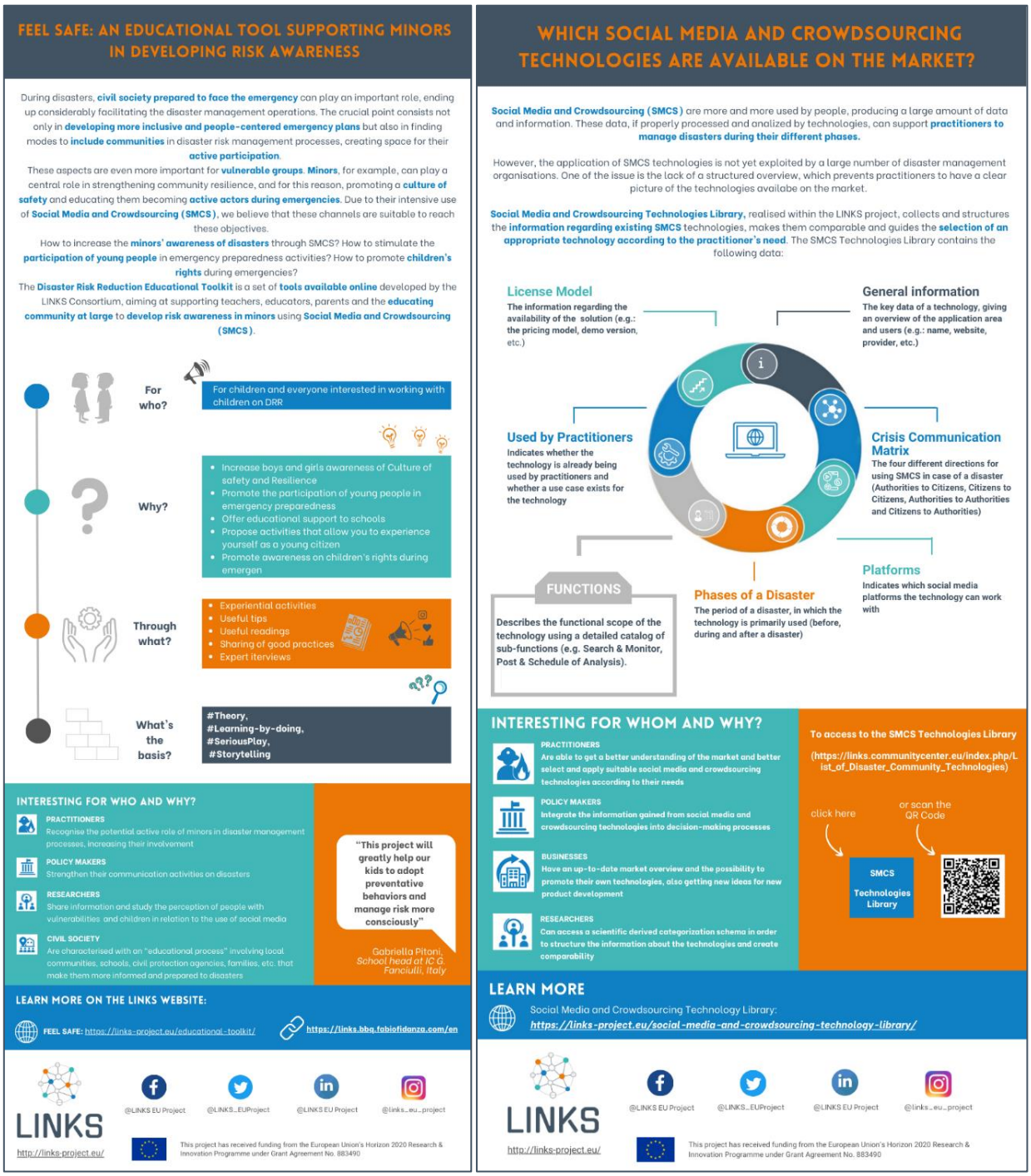
and used during events to give participants an accessible overview of the results when presenting them.

Figure 17: Examples of Infographics on the LINKS Results



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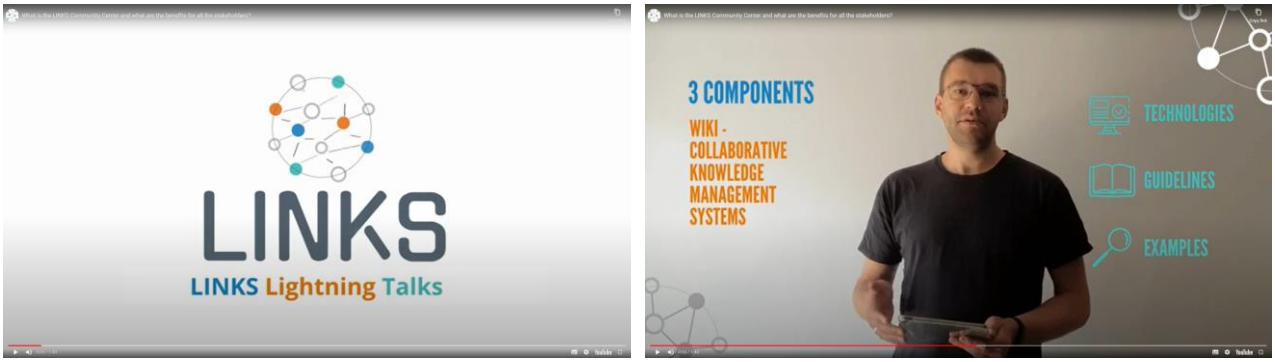
At the moment of writing this report, LCU is also working with those responsible for the LINKS Cases on the realisation of 5 infographics based the individual cases, as well as 5 videos for the cases.

Videos have also been created on the LINKS results, the LINKS key terms (as explained in the D9.4 'First Status Report on the Development and Distribution of Dissemination Materials'), and 8 'LINKS Lightning Talks' have been completed. They consist in short of speeches explaining key results of the project. Figure 18 shows an example of this type of videos. The videos are published on the LINKS YouTube channel and shared via the main social media channels. They are also used as support material in presentations and training.

Figure 18: Example of 'LINKS Lightning Talks' videos



Additional videos related to the events where LINKS results have been presented are available online. Among them: a presentation of LINKS at the World BOSAI Forum 2023[17], a presentation of LINKS at the EENA 2022[18], a presentation of LINKS at the EFDRR 2022 event[19].

4.2.2 Scientific Publications

Scientific publications are particularly focussed on researchers. Table 7 lists the main scientific publications completed within the 36 months of the LINKS project.

Table 7: Scientific Publications on LINKS

PUBLICATION	DESCRIPTION	DATA (source)
Clark N. et al., *Exploring the impacts of social media and crowdsourcing on disaster resilience*. Open Research Europe 2021, 1:60[20] *PAPER IN SCIENTIFIC JOURNAL*	Overview of the LINKS research. Key gaps, needs, best practices, and themes cross the knowledge domains of Disaster Risk Perception and Vulnerability, Disaster Management Processes and Disaster Community Technologies are identified	• 116 views, 43 downloads, 4 citations (Open Research Europe) • 19 views, 56 downloads (Zenodo)

[17] Presentation of LINKS at the World BOSAI Forum 2023: https://www.youtube.com/watch?v=OoJpQgWEsBU
[18] Presentation of LINKS at EENA2022: https://www.youtube.com/watch?v=Sh9Ta2HLwiQ&list=PLAuBrNEvppxF5hsE4KiePOIjz7GeYPSBC&index=16
[19] EFDRR 2022 event: https://www.youtube.com/watch?v=L3mBLjuPOAg
[20] Open Research Europe publication: https://open-research-europe.ec.europa.eu/articles/1-60

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Clark N. et al., *Strengthening Disaster Resilience through Social Media and Crowdsourcing*. ISCRAM - Information Systems for Crisis Response And Management 2021 Poster Presentation (2021) *ACADEMIC POSTER*	Overview of the LINKS research. Key gaps, needs, best practices, and themes cross the knowledge domains of Disaster Risk Perception and Vulnerability, Disaster Management Processes and Disaster Community Technologies are identified	105 views (LINKS Website)
Habig T. et al., *A Consolidated Understanding of Disaster Community Technologies*, 18th ISCRAM - Information Systems for Crisis Response And Management 2021 Conference Proceedings[21] *PAPER IN CONFERENCE PROCEEDINGS*	Overview of technologies for SMCS within disasters to improve community resilience (Disaster Community Technologies)	24 views, 22 downloads (Zenodo)
Morelli S. et al., *Framing Disaster Risk Perception and Vulnerability in Social Media Communication: A Literature Review*. Sustainability. 2022; 14(15):9148[22] *PAPER IN SCIENTIFIC JOURNAL*	Overview of the results of the literature review on how social media can impact on disaster risk perception and vulnerability and how these two aspects are interconnected	3 citations (Scopus)
Baron N., & Andersen, N. B. *Citizen-to-Citizen Risk Communication in a Context of Low-Level Risk Awareness*. Abstract from NEEDS 2022 Conference[23] *ABSTRACT FOR ACADEMIC CONFERENCE*	Focus on the problems regarding risk awareness in	*no data available*
Boersma et al., *Exploring the potential of local stakeholders' involvement in crisis management. The living lab approach in a case study from Amsterdam*, IJDRR[24]	Overview of the outcome of research into the potential of local stakeholders' involvement in crisis management in two Amsterdam neighborhoods	2 citations, 33 readers (ScienceDirect)
Bonati S. et al., *Unravelling Dynamics of Vulnerability and Social Media Use on Displaced Minors in the aftermath of Italian Earthquakes*. International	Overview of the challenges to which displaced minors must deal with in post-disaster settings, following a series of large earthquakes which struck central Italy in 2016 and 2017	*no data available*

[21] ISCRAM publication: https://idl.iscram.org
[22] Sustainability publication: https://www.mdpi.com/2071-1050/14/15/9148
[23] https://www.ucviden.dk/da/publications/citizen-to-citizen-risk-communication-in-a-context-of-low-level-r
[24] IJRRR publication: https://www.sciencedirect.com/science/article/pii/S2212420922003983

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Journal of Disaster Risk Reduction. 2023; 89:103632[25] *PAPER IN SCIENTIFIC JOURNAL*		
Nardini O. et al., *Social Media, Vulnerability, and Risk Perception: Three Main Points for Geological Disaster Management*. EGU General Assembly 2023 Poster Presentation (2023) *ACADEMIC POSTER*	Overview of the project, with a particular reference to the risk perception and vulnerability according to the LINKS approach	*no data available*
Wolbers J., et al. *A Decade of Netcentric Crisis Management: Challenges and Future Development*. Disaster Management and Information Technology. Public Administration and Information Technology, vol. 40 (2023)[26] *PAPER IN SCIENTIFIC JOURNAL*	Focus on the problems regarding the distribution of information across organisational and professional boundaries with a specific focus on the Netherlands	56 accesses (Springer)
Nielsen A. et al., *Discover the dynamics: An intersectional analysis of overt and hidden vulnerabilities to flood risk in urban Denmark*, Landscape and Urban Planning, vol. 237 (2023)[27] *PAPER IN SCIENTIFIC JOURNAL*	Presentation of the analytical framework for understanding and assessing vulnerabilities in societies like Frederiksberg	*no data available*
Fonio C. et al., *Innovation in Crisis Management,* UK Routledge *BOOK*	This book deals with how to measure innovation in crisis management, drawing on data, case studies, and lessons learnt from different European countries. Focus on LINKS	*-not in open access-*

Eleven publications in the first 36 months of the project are considered an excellent result compared to the KPIs included in the strategy (see Annex I). These publications are realised following the requirement of the European Commission, respecting the rules of open access ('gold' open access, considering that the databases through which they are made available are freely accessible). Scientific publications are also made available via the LINKS website, the online repositories (e.g. Zenodo, SemanticScholar, ResearchGate, ScienceDirect, etc.), including at the national level (e.g.

[25] IJDRR publication: https://www.sciencedirect.com/science/article/abs/pii/S2212420923001127
[26] DMIT publication: https://link.springer.com/chapter/10.1007/978-3-031-20939-0_5#citeas
[27] Landscape and Urban Planning, publication: https://www.sciencedirect.com/science/article/pii/S0169204623001184?via%3Dihub

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Narcis, NL; UC Viden, DK). Publications are distributed via the LINKS social media and all channels of the individual partners. All the scientific publications report the grant information (*This project has received funding from the European Union's Horizon 2020 Research & Innovation Programme under Grant Agreement No. 883490*).

The number of citations is still low due to the publications' normal process of scientific impact, which requires a certain period of time it takes a certain period of time for a paper to become known and cited in the scientific community; however, we can provide a qualitative evaluation, considering how the LINKS scientific contributions have been cited. In general terms, what is emphasised are the following aspects:

- emphasis on the 'human' dimension in technological innovations in disaster managment;
- references to the definition of the concepts elaborated in LINKS (e.g., the 'disaster community technology' definition);
- reference to the interconnection between 'vulnerability' and 'risk perception' and what is the impact of social media and crowdsourcing in this field, demonstrating how the LINKS results are contributing also at the theoretical level.

Additional scientific publications realised by the LINKS Consortium and directly connected with the LINKS activities and outputs are under evaluation or already accepted. Among them:

- Graziani F., *Feel Safe as a means to improve minors's digital skills and disaster resilience*, Quaderni di Comunità, 2/23;
- Graziani F., *Vunerabilità e Innovazione nei contesti di emergenza. Il caso di Feel Safe e dei progetti dalla parte dei bambini* (translation: *Vunerability and Innovation in emergency contexts. The case study of Feel Safe)*, Sicurezza e Scienze Sociali 2/23;
- Opromolla A., et al. *Processi comunicativi e di comunità in eventi catastofici. Un'analisi della popolazione italiana* (*Communication and community processes in disaster events. An analysis on the Italian polulation*), Sicurezza e Scienze Sociali 2/23;

At this point, it is relevant to emphasise that in February 2023 LINKS launched a call for papers for a special issue on 'Governing the uses of Social Media and Crowdsourcing in Crisis Management' in the 'Risk Hazards & Crisis in Public Policy Journal'[28]. The aim is to link the work of the LINKS Consortium with what other researchers are conducting at the international level. At the moment of writing, the LINKS members are involved in the evaluation of the draft articles Therefore, additional information on this will be provided in the next deliverable (D9.6 'Third status report on the development and distribution of dissemination materials'). This call represents a good opportunity to also disseminate our results to the scientific community.

[28] RHCPP Call for Papers: https://onlinelibrary.wiley.com/page/journal/19444079/homepage/call-for-papers/socmed-crowdsourcing

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4.2.3 Policy Outputs

LINKS has completed one policy output so far. It is related to the work conducted in the WP3, and it focuses on 'Targeting Communication', how to use SMCS technologies to improve communication to target the relevant groups. It is addressed to disaster management organisations and policy makers.

In the following months, additional policy outputs are being considered in areas around:

- Engaging with Citizens;
- Credibility, Reliability and Validity in disaster communication.

Moreover, LINKS is leading a Policy Working Group with the other projects of the 'Societal Resilience Cluster' to establish joined policy outputs. The first meeting was held in person in Toulouse on 15 May 2023.

4.3 Dissemination Events

LINKS partners presented the project and its findings at several events and conferences to professional and scientific audiences. Compared to the report presented in D9.5, the number of events had notably increased, achieving a solid impact. The work of all the partners of the LINKS Consortium has been crucial in identifying the most important opportunities and giving a results-based approach to the presentation. In line with the strategy defined in D9.2, five types of events can be distinguished:

- specialised events and exhibitions (section 4.3.1), which are the ones organised by third parties and especially oriented to practitioners and policy makers;
- events directly organised by LINKS (section 4.3.2);
- scientific conferences (section 4.3.3);
- lectures and trainings (section 4.3.4);
- interactive workshops (section 4.3.5).

An important aspect to consider is that in this section only the events that took place from M20 (January 2022) to M37 (June 2023) are reported, since those belonging to the previous period were already included in D9.5. These events have represented the opportunity to strengthen the visibility of the results in appropriate communities and networks.

4.3.1 Specialised Events and Exhibitions

This category includes many sorts of events. They are addressed to experts and insiders on the topics of crisis management, social media and crowdsourcing, technologies for disasters, etc.

The first type of specialised event includes participating in activities organised by the United Nations for Disaster Risk Reduction's initiatives. The participation in these events represented a good occasion to demonstrate how LINKS results contribute to the United Nations for Disaster Risk

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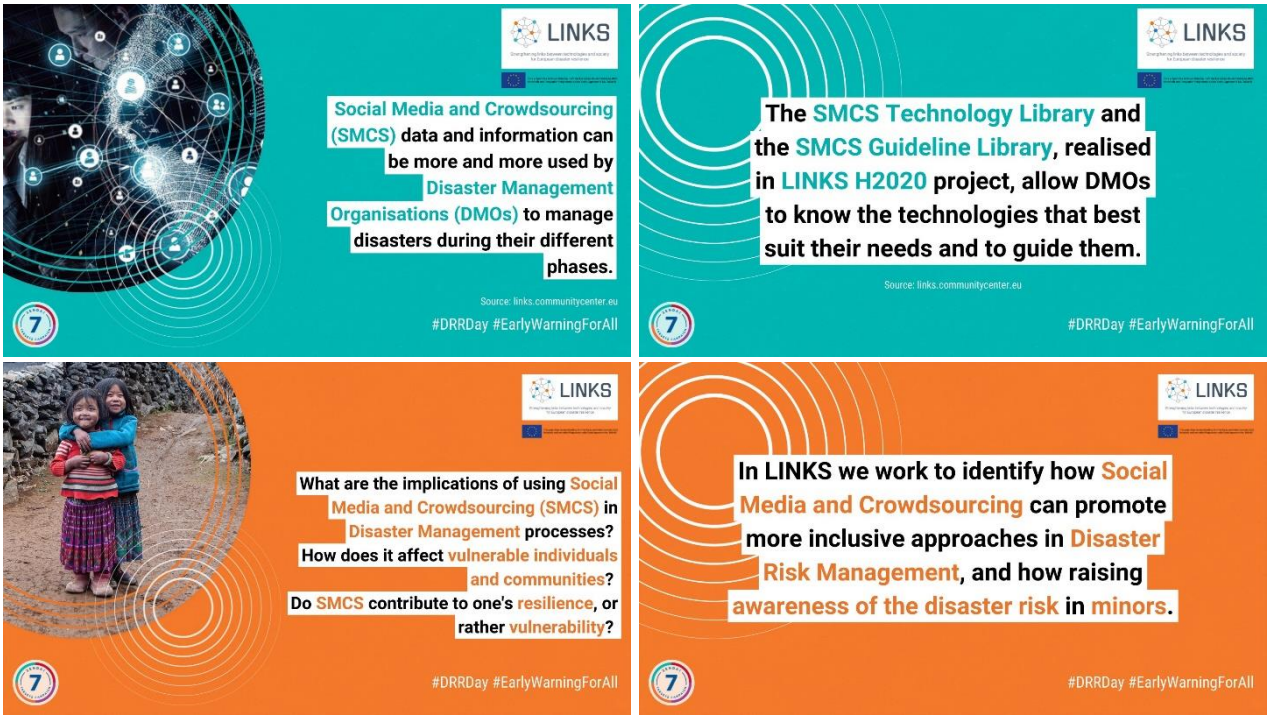
Reduction's objectives, and to raise awareness about topics of interest. Among them the International Day of Disaster Risk Reduction (Oct. 2022). It concerned the participation to the Twitter campaign launched with the aim of emphasising the centrality of people in the disaster management processes (with the intention to provide credible information and to focus on vulnerability) and gained high attention from experts and projects in the disaster risk reduction field (for example, it obtained more than 30 sharing and retweets, and considerably increasing followers) and allowed us to communicate concretely how LINKS results contribute to the disaster risk reduction field. As demonstrated in Figure 19, the results disseminated during this event have been 'Technologies Library' and 'Feel Safe'.

Figure 19: Social Media Campaign for IDDRR 2022



The second type of specialised events include the ones organised by the European Commission and by its entities, especially the CERIS - Community for European Research and Innovation for Security. Table 8 shows the main CERIS events where LINKS has been presented.

Table 8: LINKS Participation in EU Events

ORGANISATION	EVENT - DATE	TGS INVOLVED	ACTIVITIES
CERIS	European Forum on Risk Governance and Societal Resilience (May 2023)	Practitioners, Policy Makers, Local communities	• Opened the event with an introduction presenation of the SRC cluster objectives and aims. • Hosted a panel involving city managers and cluster projects on *communication with citizens,* focusing on risk communication and

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ORGANISATION	EVENT - DATE	TGS INVOLVED	ACTIVITIES
			targeted communication considering different needs and communication channels • Presented and validated LINKS results at the dedicated booth
CERIS	CERIS Disaster Resilient Societies Week (Dec. 2022)	Practitioners, Policy Makers, Local communities	• Status update on LINKS to CERIS community. • Policy Roundtable with sister projects and DGs.
DRMKC	6th DRMKC Annual Seminar (Nov. 2022)		• Addressing challenges such as compound, concurrent and cascade events which need to be included in risk analysis or the communication challenges in risk management, among others
CERIS	Disaster Resilient Societies Cluster Conference (Nov. 2022)[29]	Practitioners, Researchers, Policy makers, Local communities	• Presentation of how LINKS results, together with sister projects ENGAGE, Resiloc, BuildERS, CORE, Paratus and Mediate, are contributing to build more disaster resilient societies (Fig.20), fostering a policy-oriented discussion with policy makers and academics • Contributed to policy roudtable session with relevant DGs (DG ECHO, Council of Europe)
CERIS, DG HOME	Disaster Resilient Societies Cluster Conference (March 2022)	Practitioners, Policy makers	• Presentation of the Resilience Wheel in the panel 'Societal Resilience', making evident how social media and crowdsourcing can be used in European disaster risk management operation integrate citizens and vulnerable groups in disaster management processes • Presentation of FeelSafe during the session 'Co-creating resilient communities with citizens at the center of decision-making in disaster risk management', discussing on how social media and crowdsourcing can integrate citizens and vulnerable groups in disaster management processes

[29] CERIS - Disaster Resilient Societies Cluster Conference: https://home-affairs.ec.europa.eu/whats-new/events/ceris-disaster-resilient-societies-cluster-conference-2022-11-07_en

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Figure 20: CERIS – Disaster Resilience Society Cluster Conference

Another important event belonging to this second type of events is represented by the Social Media for Disaster Risk Management: Researchers meet Practitioners' of in June 2022[30]. This event has been organised by the European Commission DRMKC - Disaster Risk Management. Knowledge Centre and it represented an occasion for the VU to present an early version of the LINKS Framework, focusing on how the strategic planning entry point may be of added value for practitioners.

Within this typology of events also events organised by other European projects can be considered. They are:

[30] DRMKC event: https://drmkc.jrc.ec.europa.eu/events-news/all-news#news/432/details/21902/2nd-workshop-social-media-for-disaster-risk-management-smdrm-researchers-meet-practitioners-

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- RESIFEST – Resilience Festival[31], organised by RESILOC project in Oct. 2022 aimed to provide emergency managers and civil society the opportunity to discuss about resilience and Civil Protection. LINKS has been presented during two sessions: the 'Participation and Emergency Management' session, focused on risk awareness perception, were Save the Children Italy spoke of the importance of increasing a culture of prevention, preparedness, and resilience especially in minors, presenting 'FeelSafe'. The second session was the workshop 'From emergency management to community resilience: European best practices and lessons learnt on the management of wildfires'. It encourages emergency experts and professionals to share experiences and practices, giving FEU the opportunity to talk about improving communication with vulnerable people, so presenting 'Including Citizens Handbook' and the 'LINKS Framework';
- 1st Awareness Workshop organised by RiskPACC project[32] (June 2022) has represented an occasion for UNIFI and EOS to present the LINKS activities and results aimed at identifying how to reduce the risk perception gaps;
- ENGAGE KI-CoP Workshop[33] (April 2022), where the SMCS Technologies Library has been presented and discussed with the other partners;
- finally, at the final conference of the BuildERS project (March 2022), UNIFI presented reflections based on the interviews and literature review in LINKS, starting from the question:'What are the effects of using social media and crowdsourcing on vulnerability in disasters?'UNIFI presented the elaborated model of vulnerability that underpins the definition of the 'Inclusive Citizens' Handbook'.

In relation to the events organised with ther other EU projects, it is important to mention all the meetings organised with the aim to plan joint activities, discuss the project impact and evaluate exploitation opportunities between all the projects.

Another positive opportunity was created by Safety Innovation Center, that organised the event 'LINKS meets INSPIRE' in November 2022. During the event they put together partners of LINKS with the partners of a National project they conduct called 'INSPIRE', funded by the Ministry of Economic Affairs, Industry, Climate Protection and Energy of the State of North Rhine-Westphalia. The two projects met with great mutual interest. INSPIRE offered inspiration for the concrete implementation for some of the activities envisaged by the LINKS partners in the next project phase.

The third type of specialised events includes the ones organised by third parties in disasters, crisis management and crisis communication. Table 9 summarises information regarding these events.

[31] RESILOC event: https://www.resilocproject.eu/resifestgo-resilience-festival-in-gorizia/
[32] 1st Awareness Workshop RiskPACC: https://www.riskpacc.eu/2022/06/30/riskpacc-1st-awareness-workshop/
[33] ENGAGE KI-CoP Workshop: https://www.project-engage.eu/event/first-in-person-ki-cop-workshop/

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Table 9: Specialised Events and Exhibitions organised by Third Parties

EVENT (DATE)	PARTNER(S)	TG(S) INVOLVED	ACTIVITIES
vfdb 2023 (May 2023)	FEU	Practitioners	• Presentation of the overall project
Accessibility, Vulnerability and Mobilization: What prospects for the use of social media in disaster management? (May 2023	UNIFI, PDT, SCIT	Researcher, Practitioners	• Discussion on the way social media can be used in the pre-warning and early warning phases; social media as cutting-edge tools for risk mitigation and for increasing citizen awareness; necessity to bring citizens closer to information and not the other way around; lack of staff trained in communication via social media in Italy is a limitation to the use of digital channels
EENA Conference 2023 (April 2023)	FEU, LCU, SCIT, SIC	Practitioners, Businesses	• Presentation and validation of Technologies Library, Guidelines Library, Use Cases Library, and FeelSafe (see images of the booth in Fig. 21) • Presentation of FeelSafe during the session 'Including Citizens in Disaster Management'
Meeting organised by Danish Health Authorities (April 2023)	UCC	Policy makers	Oral presentation on how to reach and include citizens
Meeting organised by Nordic Emergency Management Organisations (April 2023)	UCC	Policy makers	Oral presentation on how to reach and include citizens
Meeting organised by DEMA – Danish Emergency Management Agency (April 2023)	UCC	Policy makers	Oral presentation on how to reach and include citizens
World BOSAI Forum 2023 (March 2023)[34]	VU	Practitioners, Policy Makers, Researchers	Presentation of how LINKS results are contributing towards the Sendai Framework priorities and gathering feedback from the experts attending from around the surrounding regions of Sendai, including planning activities with associate partners from Kobe University (CRESD)
JOIFF Industrial Emergency Services Management Conference 2023 (March 2023)	FEU	Practitioners	Presentation of the overall project

[34] World BOSAI Forum 2023: https://worldbosaiforum.com/2023/en/program/

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EVENT (DATE)	PARTNER(S)	TG(S) INVOLVED	ACTIVITIES
vgbf Conference (March 2023)	FEU	Practitioners	Presentation of the overall project
'Research for Civil Protection' organised by the Federal Office of Civil Protection and Disaster Assistance – BBK (Jan. 2023)	SIC	Practitioners, Researchers	Presentation of the LINKS Community Center and of the Technologies Library, to demonstrate how to shorten the distance between researchers and practitioners in the field of security
FEU General Council (Nov. 2022)	FEU	Practitioners	Update on the overall project activities
LCU meeting with Vietnamese delegation	LCU	Policy makers	Presentation of LINKS to a delegation of Vietnamese policy makers
Together Safe Around Chemelot (Samen Veilig Rondom Chemelot) kick off program (Oct. 2022)	VRZL	Policy Makers, Civil Society, Researchers, Businesses	Presentation of the LINKS project results and potential collaboration with other specific projects
TEDxHyderabad (Sept. 2022)	UCPH	Policy Makers, Local Communities, Civil Society, Businesses	Presentation of the how the LINKS results contribute to social inclusion in disasters
FEU General Council (June 2022)	FEU	Practitioners	Update on the overall project activities
Serbian Embassy in Copenhagen event (June 2022)	UCPH	Policy Makers, Researchers	Presentation on LINKS
Accessibility Days (May 2022)	UNIFI, LCU	Businesses	Workshop with accessibility and design experts to analyse accessibility and inclusivity of applications used for communication during emergencies, to identify how to build more inclusive interactive solutions
EENA Conference 2022 (April 2022)	FEU, LCU, SIC	Practitioners, Businesses	• Presentation of the LINKS project as a whole and the results of the BuildERS project • Presentation of Technologies Library during the session 'Strengthening the engagement of civil society'
Safety Camp (April 2022)	SIC	Practitioners, Businesses	Presentation and validation of the requirements of the Technologies, Use Cases, and Guidelines Libraries
3rd Digital Week of the DGSMTech (Nov. 2021)	SIC	Practitioners	Presentation of the LCC to experts of civil protection

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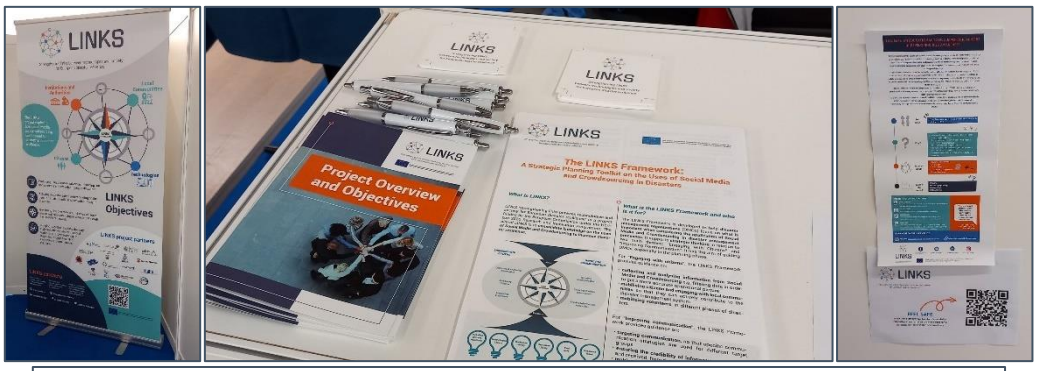
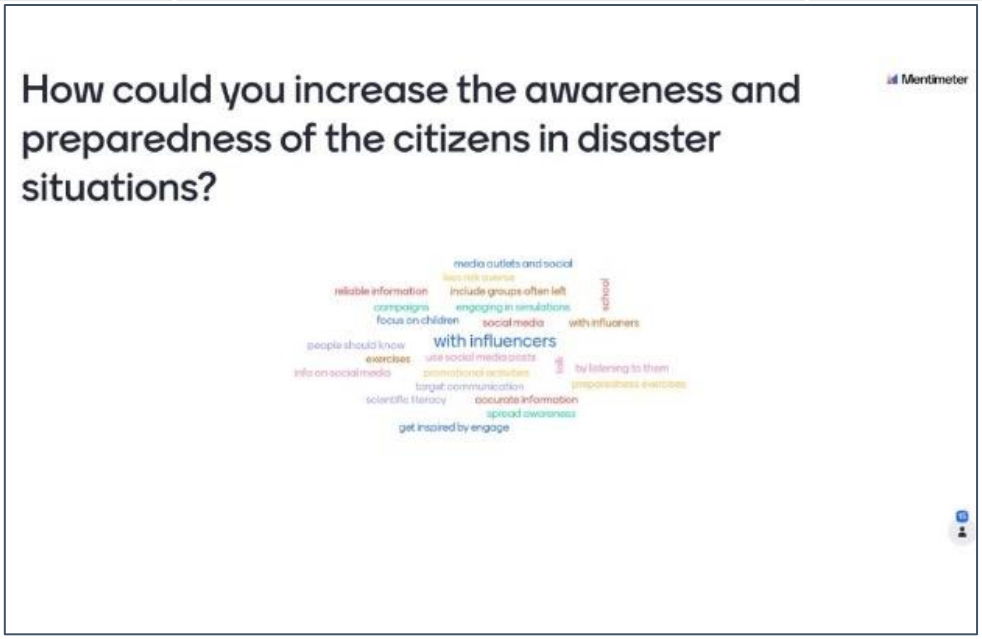
Figure 21: EENA 2023 – Images from the Booth and Results of LINKS Products Validation





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4.3.2 Scientific Conferences

In June 2023, UNIFI participated to the AIGAA (Associazione Italiana di Geologia Applicata e Ambientale) Conference 2023, presenting the 'Including Citizens Handbook'. In May 2023, UNIFI presented the poster 'Social Media, Vulnerability, and Risk Perception: Three Main Points for Geological Disaster Management' during the EGU – European Geosciences Union General Assembly 2023[35]. The poster explains the concepts of 'vulnerability' and 'risk perception' and how they are interconnected, taking into account how social media and crowdsourcing can be used to provide real time information and suggest appropriate behaviour (see Fig. 22).

[35] EGU – European Geosciences Union General Assembly 2023: https://meetingorganizer.copernicus.org/EGU23/EGU23-7967.html

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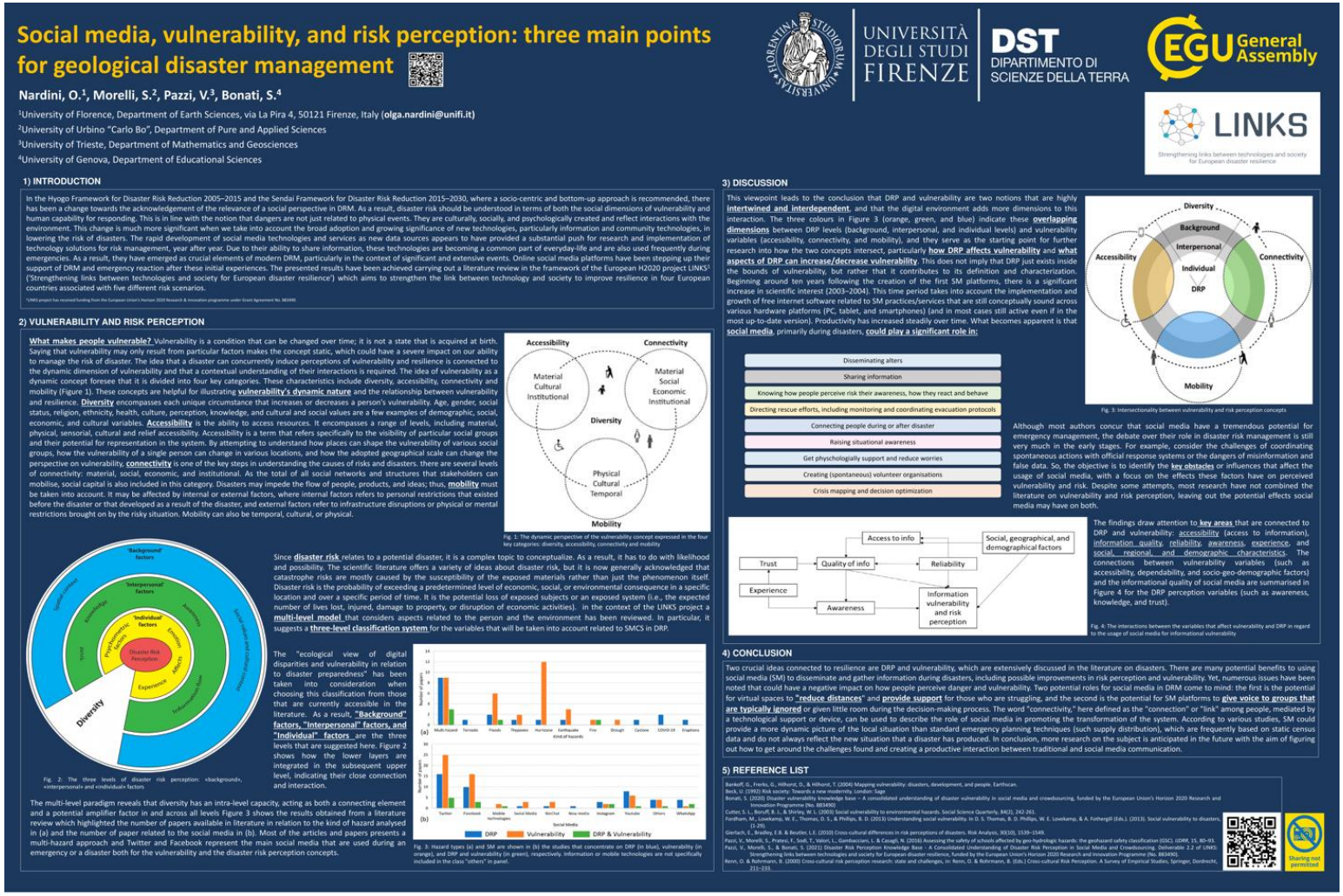
Figure 22: Poster presented at the EGU – European Geosciences Union General Assembly 2023



Social media, vulnerability, and risk perception: three main points for geological disaster management

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1) INTRODUCTION

In the Hyogo Framework for Disaster Risk Reduction 2005–2015 and the Sendai Framework for Disaster Risk Reduction 2015–2030, where a socio-centric and bottom-up approach is recommended, there has been a change towards the acknowledgement of the relevance of a social perspective in DRM. As a result, disaster risk should be understood in terms of both the social dimensions of vulnerability and human capability for responding. This is in line with the notion that dangers are not just related to physical events. They are culturally, socially, and psychologically created and reflect interactions with the environment. This change is much more significant when we take into account the broad adoption and growing significance of new technologies, particularly information and community technologies, in lowering the risk of disasters. The rapid development of social media technologies and services as new data sources appears to have provided a substantial push for research and implementation of technology solutions for risk management, year after year. Due to their ability to share information, these technologies are becoming a common part of everyday-life and are also used frequently during emergencies. As a result, they have emerged as crucial elements of modern DRM, particularly in the context of significant and extensive events. Online social media platforms have been stepping up their support of DRM and emergency reaction after these initial experiences. The presented results have been achieved carrying out a literature review in the framework of the European H2020 project LINKS[1] ('Strengthening links between technologies and society for European disaster resilience') which aims to strengthen the link between technology and society to improve resilience in four European countries associated with five different risk scenarios.

[1]LINKS project has received funding from the European Union's Horizon 2020 Research & innovation programme under Grant Agreement No. 883490.

2) VULNERABILITY AND RISK PERCEPTION

What makes people vulnerable? Vulnerability is a condition that can be changed over time; it is not a state that is acquired at birth. Saying that vulnerability may only result from particular factors makes the concept static, which could have a severe impact on our ability to manage the risk of disaster. The idea that a disaster can concurrently induce perceptions of vulnerability and resilience is connected to the dynamic dimension of vulnerability and that a contextual understanding of their interactions is required. The idea of vulnerability as a dynamic concept foresee that it is divided into four key categories. These characteristics include diversity, accessibility, connectivity and mobility (Figure 1). These concepts are helpful for illustrating **vulnerability's dynamic nature** and the relationship between vulnerability and resilience. **Diversity** encompasses each unique circumstance that increases or decreases a person's vulnerability. Age, gender, social status, religion, ethnicity, health, culture, perception, knowledge, and cultural and social values are a few examples of demographic, social, economic, and cultural variables. **Accessibility** is the ability to access resources. It encompasses a range of levels, including material, physical, sensorial, cultural and relief accessibility. Accessibility is a term that refers specifically to the visibility of particular social groups and their potential for representation in the system. By attempting to understand how places can shape the vulnerability of various social groups, how the vulnerability of a single person can change in various locations, and how the adopted geographical scale can change the perspective on vulnerability, **connectivity** is one of the key steps in understanding the causes of risks and disasters. there are several levels of connectivity: material, social, economic, and institutional. As the total of all social networks and structures that stakeholders can mobilise, social capital is also included in this category. Disasters may impede the flow of people, products, and ideas; thus, **mobility** must be taken into account. It may be affected by internal or external factors, where internal factors refers to personal restrictions that existed before the disaster or that developed as a result of the disaster, and external factors refer to infrastructure disruptions or physical or mental restrictions brought on by the risky situation. Mobility can also be temporal, cultural, or physical.

Fig. 1: The dynamic perspective of the vulnerability concept expressed in the four key categories: diversity, accessibility, connectivity and mobility

Fig. 2: The three levels of disaster risk perception: «background», «interpersonal» and «individual» factors

Since **disaster risk** relates to a potential disaster, it is a complex topic to conceptualize. As a result, it has to do with likelihood and possibility. The scientific literature offers a variety of ideas about disaster risk, but it is now generally acknowledged that catastrophe risks are mostly caused by the susceptibility of the exposed materials rather than just the phenomenon itself. Disaster risk is the probability of exceeding a predetermined level of economic, social, or environmental consequence in a specific location and over a specific period of time. It is the potential loss of exposed subjects or an exposed system (i.e., the expected number of lives lost, injured, damage to property, or disruption of economic activities). in the context of the LINKS project a **multi-level model** that considers aspects related to the person and the environment has been reviewed. In particular, it suggests a **three-level classification system** for the variables that will be taken into account related to SMCS in DRP.

The "ecological view of digital disparities and vulnerability in relation to disaster preparedness" has been taken into consideration when choosing this classification from those that are currently accessible in the literature. As a result, **"Background" factors, "Interpersonal" factors, and "Individual" factors** are the three levels that are suggested here. Figure 2 shows how the lower layers are integrated in the subsequent upper level, indicating their close connection and interaction.

The multi-level paradigm reveals that diversity has an intra-level capacity, acting as both a connecting element and a potential amplifier factor in and across all levels Figure 3 shows the results obtained from a literature review which highlighted the number of papers available in literature in relation to the kind of hazard analysed in (a) and the number of paper related to the social media in (b). Most of the articles and papers presents a multi-hazard approach and Twitter and Facebook represent the main social media that are used during an emergency or a disaster both for the vulnerability and the disaster risk perception concepts.

Fig. 3: Hazard types (a) and SM are shown in (b) the studies that concentrate on DRP (in blue), vulnerability (in orange), and DRP and vulnerability (in green), respectively. Information or mobile technologies are not specifically included in the class "others" in panel.

3) DISCUSSION

This viewpoint leads to the conclusion that DRP and vulnerability are two notions that are highly **intertwined and interdependent**, and that the digital environment adds more dimensions to this interaction. The three colours in Figure 3 (orange, green, and blue) indicate these **overlapping dimensions** between DRP levels (background, interpersonal, and individual levels) and vulnerability variables (accessibility, connectivity, and mobility), and they serve as the starting point for further research into how the two concepts intersect, particularly **how DRP affects vulnerability** and **what aspects of DRP can increase/decrease vulnerability**. This does not imply that DRP just exists inside the bounds of vulnerability, but rather that it contributes to its definition and characterization. Beginning around ten years following the creation of the first SM platforms, there is a significant increase in scientific interest (2003–2004). This time period takes into account the implementation and growth of free internet software related to SM practices/services that are still conceptually sound across various hardware platforms (PC, tablet, and smartphones) (and in most cases still active even if in the most up-to-date version). Productivity has increased steadily over time. What becomes apparent is that **social media**, primarily during disasters, **could play a significant role in:**

- Disseminating alters
- Sharing information
- Knowing how people perceive risk their awareness, how they react and behave
- Directing rescue efforts, including monitoring and coordinating evacuation protocols
- Connecting people during or after disaster
- Raising situational awareness
- Get phychologially support and reduce worries
- Creating (spontaneous) volunteer organisations
- Crisis mapping and decision optimization

Fig. 3: Intersectionality between vulnerability and risk perception concepts

Although most authors concur that social media have a tremendous potential for emergency management, the debate over their role in disaster risk management is still very much in the early stages. For example, consider the challenges of coordinating spontaneous actions with official response systems or the dangers of misinformation and false data. So, the objective is to identify the **key obstacles** or influences that affect the usage of social media, with a focus on the effects these factors have on perceived vulnerability and risk. Despite some attempts, most research have not combined the literature on vulnerability and risk perception, leaving out the potential effects social media may have on both.

The findings draw attention to **key areas** that are connected to DRP and vulnerability: accessibility (access to information), information quality, reliability, awareness, experience, and social, regional, and demographic characteristics. The connections between vulnerability variables (such as accessibility, dependability, and socio-geo-demographic factors) and the informational quality of social media are summarised in Figure 4 for the DRP perception variables (such as awareness, knowledge, and trust).

Fig. 4: The interactions between the variables that affect vulnerability and DRP in regard to the usage of social media for informational vulnerability

4) CONCLUSION

Two crucial ideas connected to resilience are DRP and vulnerability, which are extensively discussed in the literature on disasters. There are many potential benefits to using social media (SM) to disseminate and gather information during disasters, including possible improvements in risk perception and vulnerability. Yet, numerous issues have been noted that could have a negative impact on how people perceive danger and vulnerability. Two potential roles for social media in DRM come to mind: the first is the potential for virtual spaces to **"reduce distances"** and **provide support** for those who are struggling, and the second is the potential for SM platforms to **give voice to groups that are typically ignored** or given little room during the decision-making process. The word "connectivity," here defined as the "connection" or "link" among people, mediated by a technological support or device, can be used to describe the role of social media in promoting the transformation of the system. According to various studies, SM could provide a more dynamic picture of the local situation than standard emergency planning techniques (such supply distribution), which are frequently based on static census data and do not always reflect the new situation that a disaster has produced. In conclusion, more research on the subject is anticipated in the future with the aim of figuring out how to get around the challenges found and creating a productive interaction between traditional and social media communication.

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In January 2023, SIC participated in the BBK Expert Congress 'Research for Civil Protection', presenting the LCC (and especially the Technologies Library). It was a good opportunity to bring together scientists from all disciplines working in the field of civil protection and to initiate promising discussions with potential research partners in future research projects based on the LINKS results. One of the key conferences where LINKS has been presented is the NEEDS - Northern European Emergency and Disaster Studies Conference 2022 (Nov 2022). A specific panel was organised together with RESILOC project partners. Its title was 'Operationalizing Disaster Resilience at Local Levels', focusing on the impact of the LINKS results in the local cases (see Figure 23), taking the opportunity to discuss these activities with other European policy experts from DG ECHO, the Council of Europe, and scientists. Topics of the panel were:

- 'How can we account for context/diversity in the assessment of local disaster resilience with a forward-looking perspective?',
- 'What is the future role of citizens in Disaster Resilience - Informing vs involving citizens (or local stakeholders) in DRM?',
- 'How to operationalise (or formalise) informal procedures, processes, and strategies across institutions?',
- 'What about the implementation of technologies for risk awareness and preparedness: accessibility vs operationalisation?'

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Figure 23: NEEDS Conference 2022 – Panel on 'Operationalizing Disaster Resilience at Local Levels'

Regarding the NEEDS Conference, for the 2023 LINKS has organised a new panel titled 'The Role of Social Media in Disaster Risk Management'. It is shown in Figure 24.

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Figure 24: NEEDS Conference 2023 – Panel on 'The Role of Social Media in Disaster Risk Management'

In September 2022, SIC participated to the '9th BMBF Symposium on European Civil Security Research', presenting a scientific poster on three research projects conducted by this partner. For LINKS, they presented the LCC, disseminating it with potential users and researchers on civil security.

Then, in July 2022, UNIFI participated to two events: the SSPCR - Smart and Sustainable Planning for Cities and Regions Conference 2022, presenting the Including Citizens Handbook during the special event 'Climate Justice in future cities: geographical perspectives for inclusive urban resilience and adaptation' and the 'Geography and Technology' Conference organised by the 'Società di Studi Geografici', presenting the work 'Alternative or complementary? A critical mapping of the practices of crowdsourcing to respond to emergencies in Italy'.

In May 2022, UCPH participated to the '7th NEST Conference', presenting the Resilience Wheel.

Finally, LCU has participated in many scientific conferences dedicated to the sociology of communication and cultural processes. For example, in June 2022 during the SISCC (Società

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Scientifica Italiana di Sociologia, Cultura, Comunicazione) Conference 'Qualcosa è cambiato? La trasformazione dei saperi?' the LINKS project has been presented during a specific session dedicated to crisis communication. In October 2022 the project has been presented during the ECREA 2022 – '9th European Communication Conference' and during 2 specific sessions dedicated to the use of communication channels in crisis situations. In October 2022 the LCU presented a research on the use of the communication channels during the earthquakes in Italy, at the 16th Crisis Management Days, organised by the University of Applied Sciences Velika Gorica. Some LINKS results (especially 'Feel Safe') have been presented in their potential. Finally, in January 2023 the same research has been presented during the Congress of the Italian Association of Sociology 'I luoghi del vivere quotidiano. Accessibilità, accoglienza, ambiente, anima'.

4.3.3 Events organised by LINKS

The LINKS Consortium has organised many events to present the results. Among them, the 'LINKS Webinars cycle' is one of the most important. Under the 'Societal Resilience Cluster – Disaster Resilience for Communities', it aims to explore the utilisation of social media and crowdsourcing as bridging mechanisms within local communities during all stages of a crisis. It focuses on for researchers, practitioners, policymakers, businesses and citizens who actively work with, are directly influenced by and/or are interested in areas related to SMCS and crisis and disaster management. It also provides insight into how these tools can be used to promote effective citizen participation. It comprises three webinars, which are:

- 'The Role of Social Media in Disaster Resilience: Establishing Bridges Between Authorities and Citizens', which took place in May 2023;
- 'Leveraging the Crowd: How Social Media and Crowdsourcing are Supporting Disaster Risk Management for Compound Disasters', which took place in June 2023;
- 'Integration of Social Media Information with Legacy Platforms', which will take place in October 2023.

The first webinar was a good opportunity to discuss how social media can bridge communication gaps between local authorities and citizens during times of crisis. The webinars involved more than 50 participants, who, inspired by the contents shared by the experts, started an interesting discussion on the topic (in Figure 25, the posters of the first and second webinar).

The 'LINKS Webinars cycle' has replaced what in the strategy (D9.2) we have indicated as 'LINKS Conference': indeed, we have imagined that a series of appointments, more widespread over time, rather than a single commitment once a year would have produced a more significant impact.

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Figure 25: 'LINKS Webinars cycle' – Poster of the First and Second LINKS Webinars

Additional events organised directly by the LINKS Consortium are the following:

- Site visit to Netherland (April 2022) addressed both to LINKS partners and external experts from Netherlands working in Crisis management, such as the Netherlands Red Cross and Amsterdam Fire Deptartments;
- Joint event with the RESILOC project, bringing together practitioners and researchers from both projects to introduce both projects, and our core interests in the two practitioners cases. For LINKS, the discussion was around the LINKS Framework and potential ways the results from the two projects (including policy outputs) might be merged;
- Disaster Preparedness and Prevention Initiative for South Eastern Europe (DPPI SEE) workshop (June 2022) consisted in a two-day meetings cycle including a series of meetings aimed at discussing local experiences around risk communication and crowdsourcing, and test some LINKS results with DPPI SEE members from more than 10 member states working in disaster management;
- Webinar 'COPE Socials: Strengthening links between technologies and society for European disaster resilience' (August 2022), organised by the Copenhagen Center for Disaster Research (COPE), where UCPH and UCC participated to present the LINKS objectives and results, with a particular focus on how social media, and crowdsourcing are integrated

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parts of disaster governance in the four countries of the project, with reference to the use of the 'Resilience Wheel' and of the 'Including Citizens Handbook'[36];

- Site visit to the Chemelot Chemical Plant (Jan. 2023). It has been addressed to practitioners and its aim was to discuss how LINKS results can be integrated in the work of the emergency practitioners at Chemelot.

Figure 26: COPE Socials Event

4.3.4 Lectures and Trainings

LINKS has been presented in many courses by the academic partners of LINKS, conveying specific messages to researchers and students. Their aim is to spread the main results to future experts in the fields of secure societies and digital communication.

The training had a strong impact, not only from the quantitative point of view but also from the qualitative one. Some examples:

- one of the students of LCU has decided to do her Master thesis in 'Digital Transformation' on the definition of methodologies to identify the impacts of a research project. She chose LINKS as one of her case studies. Later she got a contract to work on communication activities for LINKS;
- one of the students from LCU, following the lectures, decided to better explore the Italian scenario on earthquake in her thesis in 'Visual and Digital Media Culture', by conducting surveys and interviews with Italian citizens and experts. It becomes her Bachelor Degree thesis;
- a total of three students of Link Campus University did their internship on LINKS;

[36] COPE Socials: https://cope.ku.dk/news/2022/strengthening-links-between-technologies-and-society-for-european-disaster-resilience/

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- three VU students from the Master in 'Culture, Organisation and Management' Programme completed their thesis in relation to the LINKS Dutch case. One of them decided to join the project working with VU and VRZL;
- Students from 'The Risk and Emergency Management Programme' at UCC have been taught about the findings from LINKS project on their mandatory courses on 'Risk and Crises Communication', especially regarding the findings in the Danish case. In addition, a broader group of students across programmes have worked with the Danish LINKS case in a interdisciplinary course regarding how to cooperate across sectors in a case of cloudburst at Frederiksberg.

4.3.5 Interactive Workshops

Workshops represent one of the most important opportunities to make project results available, due to the possibility of enabling a constructive dialogue with the target groups and receiving first-hand feedback to test and validate the results. Table 10 shows the main characteristics and results of the most important interactive workshops carried out until M36, the LCW – LINKS Community Workshops. Even if a more extensive description of their results is presented in the deliverables of WP8 (D8.4 'First LINKS Community Workshops and LINKS Advisory Committee Report'; D8.5 'Second LINKS Community Workshops and LINKS Advisory Committee Report'), here it is important to identify the way they contribute to the dissemination activities.

Table 10: LINKS Community Workshops Results

NAME OF PARTNERS (DATE)	STAKEHOLDERS INVOKVED	RESULTS
UNIFI, SCIT (Nov. 2021)	Practitioners (SASU), policy and decision-makers (Regione Umbria), local communities (Comuni di Arrone e Montefranco), Civil societies (Save the Children)	1st introductory workshop used to create a network of local stakeholders and to collect information regarding their needs and expectations on the use of SMCS in disasters.
DHPol (Feb. 2022)	Practitioners (DHPol)	Experiences in the uses of SMCS and DCT as well as the needs of the practitioners for the use of SMCS. The LCW allowed the organisers to assess which particular tools and guidelines are already known and used, which gave further data for the development of the Technology Library and of the Guidelines Library.
FRB, HBR, UCC, UCPH (March 2022)	Practitioners (Frederiksberg Utility Company)	Initial workshop for practitioners in FBR and HBR. Presentation of preliminary results of cross case and dialogue between practitioners to create a network of local stakeholders and to collect information regarding their needs and expectations.

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SIC (April 2022)	Practitioners (PSAP and DGSMTech e.V.)	The use of SM during a heat wave in the city of Paderborn. Discussion with members of the district and the fire brigade of Paderborn as well as the German Society for the Promotion of Social Media and Technologies in Civil Protection. In this LCW the participants developed and discussed key elements of a SM strategy to prepare for an upcoming heat wave.
SIC (April 2022)	Practitioners (PSAP and DGSMTech e.V.)	Focus on requirements for SMCS technologies to support the work of disaster management organisations. The feedback from the LCW was used to validate the importance of the Technologies Library and helped develop the product through the discussion on potential applications of SMCS to disaster management.
DHPol (May 2022)	Practitioners (DHPol)	Presentation of the first outcomes from the interviews and the survey. Discussion with participants about the project and its outcomes, what they think about the use of SMCS during emergencies, especially its advantages and challenges.
SIC (May 2022)	Practitioners (DHPol)	Presentation about DCTs. The practitioners were eager to learn more about the SMCS Technologies Library and the existing SMCS technologies used during emergency situations. In particular, the participants suggested ways of improving the Technologies Library through a restructuring the information on the technologies included.
Sitech, VRZL, GGD-ZL (May 2022)	Practitioners (Meditta, Zuyderland Hospital, and GGD-ZL.)	The LCW focused on the needs of healthcare professionals and those with a vested interest in the LINKS industrial case. The primary goals of the workshop were to explore the health-care professionals' needs, how health care professionals can bring themselves and others to safety, and in what way LINKS can provide support for the cause.
UNIFI, SCIT, PDT (May 2022)	Practitioners (Civil protection of Terni)	Intergenerational discussion with teachers and students who provided valuable feedback on the structure and usefulness of the Feel Safe product.
FRB, HBR, UCC, UCPH (June 2022)	Practitioners (National Police), policy and decision-makers (Danish health authority)	Workshop structured around the theme: use of SMCS for prevention and during a crisis situation. The organiser presented the preliminary results from the Danish case and conducted group conversations about how to use SMCS to strengthen communication between citizens and public authorities and first responders and what barriers need to be addressed.
ST, VU, VRZL (Nov. 2022)	Practitioners, Policy and decision-makers	Investigating the information needs of school directors and students in case of an emergency. Citizen handbook + educational toolkit.
FRB, UCC, UCPH (Feb. 2023)	Practitioners (HBR), researchers (University of Copenhagen)	Collaboration on the use of new methods to integrate crowd sourcing and strengthen the focus of the needs of the citizens in crises. Gained valuable feedback on Resilience Wheel.

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Key Takeaways from this Section

- The use of professional social media (e.g. LinkedIn and Academia) has been fundamental to disseminate the LINKS results to the users (especially practitioners and researchers).
- Online platforms and repositories constitute excellent channels to make the results directly available to the target groups. Now that research results have taken more shape, LINKS' dissemination activities are increased.
- The LINKS Community Center is playing a central role in making all the LINKS results directly available for target groups.
- Infographics and videos are appreciated for their objective of synthetically present the key aspects of the LINKS results. The use of visual dissemination materials is taken into consideration also for the results from the LINKS Cases.
- The number of scientific publications on the LINKS results and the number of reads and downloads is excellent. The realisation of an *ad hoc* call for papers on the LINKS topics allows to get in touch with the international community of researchers working on similar activities.
- One policy output, addressed to policy makers, has been realised. Additional policy outputs will be published as a joint activity with the Societal Resilience Cluster.
- LINKS has been presented in key specialised events and exhibitions, both organised by the United Nations for Disaster Risk Reduction and by the European Commission, disseminating the results to these crucial networks.
- LINKS has established a strong collaboration with the projects of the Social Resilience Cluster (e.g. through participation in events, creation of policy outcomes, etc.).
- The participation to third parties' events, especially addressed to practitioners and policy makers, has increased. One of the most important events is the EENA Conference (both in 2022 and in 2023).
- Training activities were carried out by all the LINKS research partners. They are planned to continue and expand in the last phase of the project.
- Many presentations at scientific conferences have been provided. In Nov. 2022 a specific panel during the NEEDS Conference 2022, focused on the LINKS topics, has been realised.
- Thanks to the 'LINKS Webinars Cycle' LINKS can disseminate the results through online meetings.
- Interactive workshops are the most valuable opportunity to make the results available to the key stakeholders – and to preliminary test them.

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5. CONTRIBUTION OF DEC ACTIVITIES TO LINKS IMPACTS

As shown in D9.2, LINKS works to ensure that the results are exploited appropriately. In doing that, LCU has established a strong connection with the LINKS product owners and with the case coordinators teams, responsible for to ensure the use of the results in the 5 LINKS Cases. This has also been possible thanks to the work of the 'LINKS Impact Task Force'. It includes EOS, FEU, LCU, SIC, UNIFI, and VU. The general scope is to ensure that the partners work by following a result-based approach so that the results will reach the identified target groups and can be used by them. The dissemination, exploitation, and communication activities are functional to this purpose since their aim is to contribute to realising the different types of impacts of the project. Considering the specific roles, LCU and VU drive and monitor all the overall process; EOS manages the LINKS Community aspects; FEU works to identify relevant stakeholders and networks, SIC is responsible for the definition of the appropriate strategy of use of the LCC; and UNIFI is responsible for the societal impacts of the project.

The focus is on defining activities aimed at ensuring specific scientific, societal and economic impacts (Table 11).

Table 11: Scientific, Societal, and Economic Impacts of LINKS

Type	Impacts
Scientific	• Fostering multidisciplinary knowledge on the application of SMCS in disaster risk management, to improve the impacts of SMCS in the management of disasters. This includes a novel way of study SMCS by the research community
Societal	• Narrowing the gap between researchers, practitioners, policy makers and communities, by sharing knowledge on SMCS in disasters • Improving disaster resilience at the local level through SMCS by empowering practitioners and policy makers to make more informed decisions on the use of SMCS in all phases of DRM. • Improving information and communication for citizens and the inclusion of diverse people and groups (e.g., for languages, cultures, abilities, etc.) in all the phases of DRM.
Economic	• Increasing knowledge about the benefits of technologies for disaster communities in improving efficiency in disaster management processes. This will help strengthen their attractiveness both for technology providers and disaster management organisations.

For this reason, the overall exploitation strategy of the LINKS results (whose final version will be given in D9.3 'Updated LINKS dissemination, exploitation and communication strategy 2') has required special attention over the last year. The application for the service 'Portfolio of Research and Innovation Results' – 'MODULE C: Assisting projects to improve their existing exploitation

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strategy' of the Horizon Results Booster service[37] has provided useful materials and a structured methodology to this activity. This methodology consisted of the following steps for each result:

- Identification of the main features of the result, with the market analysis of the target and of the early adopters, the identification of the alternative solutions and competitors, definition of the UVP – Unique Value Proposition, definition of the 'Use Model' (so, how the result is reaching / will reach the target groups);
- Identification of the risks associated with the exploitation of the result and of the possible mitigation measures;
- Definition of the roadmap, with the identification of actions to be executed 3-6 months after the end of the project (e.g. finding funding opportunities, communication activities, marketing strategies, etc.) with the related costs and revenues.

The definition of specific impact-based indicators (with the related means of evaluation) has been provided in Table 4 of D9.2 (and reported in this document in Annex II). In Table 12, we give evidence on how LINKS, especially through the DEC activities described in this deliverable, reaches the defined impacts. The assessment is especially provided in relation to the LINKS local cases scenarios, as described in D6.3. The focus is, therefore, on how the results are generating impact at the local level, influencing the different target groups involved.

Table 12: LINKS Impacts at Cases Level

[37] Horizon Results Booster – PDES Service: https://www.horizonresultsbooster.eu/ServicePacks/Details/6

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TARGET GROUPS	ACTIVITIES	IMPACTS
Practitioners	CASE 1 – ITALY: Interactive workshops on FeelSafe and Including Citizens Handbook; site visits	• Increase of the awareness of the approach of citizens inclusion and of the potential application of the products at the local level. • Practitioners (i.e. techinicians and administration office, civil protection) were involved in an online survey about the Accessibility part of the Including Citizens Handbook. They were asked to evaluate the consistency of the therotical part and the efficacy of the guidelines related to accessibility problems. • 12 actors took part in an online round table (organized by UNIFI, PDT and with the participation of SCIT) on issues related to accessibility and mobilization of citizens in disasters. The participants were: civil protection, administration office, techinicians, researchers, and private business. It also included the presentation of the Handbook and the platform Feel Safe. It provided the opportunity to increase the familiarity with the LINKS products. • Improved understanding around children's rights to both participate in DRR and be protected during an emergency as a vulnerable group. In this regard, practitioners gained a better knowledge of concrete ways to use social media and digital education to promote activities on child centered DRR. • Increase of the knowledge and inspiration on chemical risk prevention/response for working with children, thanks to the visit to Chemelot Site in The Netherlands and to the Risk Factory.
	CASE 2 – THE NETHERLANDS: Expert interviews, surveys, Site visits; LCWs for schools, businesses, healthcare institutions and local citizens; ongoing networking activities with (governmental, DRM and project) partners; growing ambassadors network; hosted & attended risk & crisis communication events; provided LINKS product owners with feedback; weekly teams meeting and bi-monthly brainstorm sessions.	• Increased knowledge of the Use Cases Library, SMCS Technology Library, SMCS Guidelines Library and how to practically apply the learnings in the field. • Helped create traction for the uses of the LINKS community center among DRM practitioners. • Increased knowledge on how to improve crisis & risk communication through social media and crowdsourcing based on the needs and challenges established in the field through LCWs. • Learnt more about the different ways in which children can be engaged to learn about risks through the use of technological/ demonstrative tools. For example, during the site visit to the risk factory and through the learnings of Feel Safe. • Increased the number of practitioners who became part of the LINKS Community Center. • Improved understanding of how to communicate risks more effectively in the field. • Improved private and public partner relations. • Improved citizen relations with the surroundings, in part due to increased face to face dialgue as a result of LCWs. • Increased the risk awareness regarding chemical incidents. • Explored the knowledge gaps in the field and uncovered DRM technologies suitable in filling these gaps. • Increased dissemination of safety guidelines. Guidelines that describe what to do in the event of a chemical related incident.

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		• Increased risk awareness among the participants of the different LCWs and those in the participants' networks by word-of-mouth. • Improved the direct communication with the citizens in the surroundings of Chemelot (in the municipalities Beek, Stein & Sittard-Geleen) as a result of the LCWs.
	CASE 3 – GERMANY (Drought): Site visits; formal and informal meetings with experts; participation in events and conferences; application of technologies, interviews. workshops	• Strengthening knowledge of technologies to manage disasters and which technologies can approach their specific needs by e.g. presenting and discussing the SMCS Technologies and Use Cases Library at practitioner-oriented conferences like the EENA Conference or the Annual Conference of the Association for the Promotion of German Fire Protection. • Local practitioners (e.g. fire department Paderborn, police of Paderborn, city and district of Paderborn) were involved in demonstrating the types of valuable information social media can provide for disaster management and what type of information a use case should include. • Increase knowledge on how use cases can provide inspiration on their work Increase of the technical competences and improvement of the SMCS Technologies Library. • Fostering of discussions and potentials with different kind of stakeholders (e.g. the German Society for the Promotion of Social Media and Technology in Civil Protection (DGSMTech e.V.), the Federal Office of Civil Protection and Disaster Assistance (BBK), or different kind of Virtual Operation Support Teams (VOSTs)) about the integration of SMCS in disaster management organizations to manage disaster situations like droughts. • Increased the number of practitioners who became part of the LINKS Community Center.
	CASE 4 – DENMARK: Site visits; interactive workshops on the Including Citizens Handbook and Resilience Wheel	• Increase knowledge on how use cases can provide information (using technologies to improve communication) to their work. • Increase familiarity with the Including Citizens Handbook, being inspired on how to apply it in risk awareness and voluntarism. • Increase knowledge of the concepts of preparedness and citizens involvement and how SMCS can improve them. • Improvement and simplification of the Resilience Wheel. • Increase knowledge of the project by practitioners and academics. • Fostering of discussion with practitioners and eacademics of the Resilience Wheel
	CASE 5 – GERMANY (Terrorism): interactive workshops; feedback sessions; events; interactive workshop on Resilience Wheel	• Definition of specific disaster scenarios for application of the Libraries. • Increase knowledge of the usefulness of the Guidelines Library, Use Cases Library, Including Citizens Handbook. • Increasing understanding on how the Guidelines Library, the Use Cases Library, and the Including Citizens Handbook can meet their specific needs. • Improvement and contribution to the SMCS Use Cases Library.

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Policy and Decision Makers	CASE 2 – THE NETHERLANDS: LCWs, networking sessions; brainstorming sessions; partners 'meetings	• Increase awareness on what is missing in the local schools in terms of preparation in case of disasters. • Development of skills on how to co-create strategies and approaches for safety guidelines and local settings and needs. • Creation of local networks centred on security issues.
Civil Society and Local Communities	CASE 1 – ITALY: workshops with children, meeting with teachers; testing sessions; events	• Integration of Feel Safe in the Italian schools of the Umbria Region starting next school year, especially integrating it in the existing disaster risk reduction activities in the schools. • Design and development of a tool (Feel Safe) to enhance educators' capacity to conduct DRR activities with children with a focus on technology and social media use. • Increase knowledge from citizens of their potential role in disaster situations. • Increase knowledge about how to use social media channels in disaster situations. • Increase of the engagement of children of the secondary school Fanciulli. • Test of Feel Safe and dissemination of LINKS project to the Italian Association of Geography Teachers in Florence.
	CASE 2 – THE NETHERLANDS: LCWs	• Increased the risk awareness of local businesses.Increased the risk awareness of local schools.Increased the risk awareness of local healthcare institutions.Increased the risk awareness of the citizens living in the Lindenheuvel and Limbricht area.Provided feedback for those who attended the LCWs, in improving their emergency action plans.Established a large social network of ambassdors in the surrounding of Chemelot (in the municipalities of Beek, Stein & Sittard-Geleen).Created a safe space and two way discussion during the LCWs.Shared about chemical risks and the roles and responsibilities of the different public orgganizations involved during chemial incidents, but also leant from particpants how we, the practitioners, can improve our risk and crisis communication in the field.Provided the product owners of Feel Safe with feedback on their product, exploring the possibilities with schools to test out the Feel Safe product in the new school year. • Increased the understanding of what SMCS is and how SMCS can be used in disaster situations.
Researchers	CASE 3 – GERMANY (Drought): site visits, events, conferences	• Availability to collaborate with other research projects on similar topics (e.g. participation at the KI-CoP Community of the sister project ENGAGE). • Increase of inspiration from LINKS and creating opportunities for new project applications. • Transfer of knowledge about the SMCS Technologies, the market of technologies and the SMCS Use Cases Library. • Stimulation of discussions on SMCS technologies through participation in scientific conferences and publication of a paper to the ISCRAM conference and to the Civil Protection Congress 2023 from the Federal Office of Civil Protection and Disaster Assistance (BBK). • Increased the number of researchers who became part of the LINKS Community Center.

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Businesses	CASE 3 – GERMANY (Drought): events, workshops, interviews	• Increased the number of businesses who became part of the LINKS Community Center. • The interests of technology providers (e.g. Ubermetrics and PublicSonar) are addressed as they can integrate the use of their technology in a use case and directly hyperlink the pages. Availability to contribute and collaborate in strengthening the Technologies Library.

The table above provides an overview of some of the key activities and impacts on the specific Target Groups in the project at the case levels. However, it is important to highlight is that the COVID-19 pandemic has greatly influenced the project: for the first two years of the project specific activities (such as workshops, conferences, and networking, in the cases and beyond) related to exploitation and impact were delayed or not able to be carried out in person. This impacted the projects ability to establish a large user group from the beginning to ensure the uptake of project results. LINKS is now in the process of making up for that lost time by focusing intensively on establishing the community of users and ensuring expolitaiton and impact of the results outside of the consortium in the final months of the project.

Key Takeaways from this Section

- Practitioners recognise the importance of the LINKS results in their work, especially to find new ways to communicate with citizens in disaster management processes
- Policy makers recognise the importance to implement strategies to involve local communities by using the LINKS results
- Civil society and local communities increase their knowledge on how to use social media channels in disaster situation and recognise their potential active role in disaster situations
- Researchers are inspired by the LINKS results and consider the possibility on working on similar research topics
- Businesses recognise the usefulness of the LINKS products and are willing to contribute to strengthening them.

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6. CONCLUSION

This document is the second status report, based on a qualitative and quantitative assessment, on the implemented dissemination activities in LINKS until M36.

In Section 2, we summarised the key messages at the project level and provided the final description of the LINKS results. Section 3 focused on the activities implemented to *communicate* the key results to the target groups, whereas section 4 revolved around the activities oriented to *disseminate* them. In doing so, we established the basis for activities concerned with exploitation. In general, we can assume to have reached great results. Section 3, for example, argues that channels (the LINKS website, the social media channels, the newsletter, and the press releases), materials (leaflets and articles in magazines and blogs), and the participation to informative events allowed to reach excellent results - both in terms of numbers of stakeholders involved, but also in their engagement. Similarly, Section 4 demonstrated that online platforms and repositories, as well as the professional social media, are excellent channels to make the results directly available to the target groups. In terms of materials, the impact of publications on specialised journals measured by the number of articles read and downloaded is excellent. Moreover, LINKS has invested heavily in implementing visual materials (especially infographics) to better disseminate LINKS results. Many specialised events, aimed at different categories of users, also served the purpose of bringing these target groups into direct contact with the results.

Overall, the dissemination of LINKS results raises awareness among target audiences of the importance of using social media and crowdsourcing technologies to improve risk perception, perceptions of vulnerability and disaster management processes.

In the final period of the project, now that the results have been released and the final strategy for their use has been defined (the final version will be presented in D9.3 'Updated LINKS dissemination, exploitation and communication strategy 2'), LINKS will dedicate a particular importance to the following activities:

- strengthening the visual communication of LINKS, realising videos and factsheets (especially focused on the 5 LINKS Cases);
- strengthening the presence of LINKS at the local level, establishing and implementing a strategy for events and meetings at the local level;
- implementing a social media strategy aiming at strengthening the LINKS Community around the LINKS products;
- continuing realing contents for the LINKS website;
- consolidating the exploitation strategy of all the products and continuing ensuring the use of the results by the target groups, also providing a strategy ensuring the sustainability of the project after its end.

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ANNEX I: KPIS AND TARGETS AT M30 AND M36

DEC CHANNELS AND EVENTS	KPIS	TARGETS (M30)			TARGETS (M36)			MEANS OF MONITORING (FREQUENCY)
		Poor	Good	Excellent	Poor	Good	Excellent	
LINKS and Partners Websites	LINKS website visitors per month	<120	120-170	>170	<150	170-200	>200	WordPress Analytics (monthly)
	LINKS website page views per month	<120	120-170	>170	<150	170-200	>200	
	LINKS website posts published per month	<2	2-3	>3	<3	3-4	>4	
	Partners website posts published	<3	3-4	>4	<5	5-6	>6	
LINKS and Partners Social Media and Professional Social Media	Total LINKS FB followers	<220	220-270	>270	<270	270-320	>320	Facebook, Twitter, LinkedIn, ResearchGate, Instagram Analytics (monthly)
	LINKS FB reactions per post	<4	4-5	>5	<5	5-10	>6	
	LINKS FB posts per month	<2	2-3	>3	<4	4-5	>5	
	Total LINKS TW followers	<320	320-470	>470	<470	470-600	>600	
	LINKS TW reactions per post	<6	6-10	>10	<10	10-15	>15	
	LINKS TW posts per month	<3	3-4	>4	<5	5-6	>6	
	Total LINKS LIn followers	<220	220-270	>270	<270	270-320	>320	
	LINKS LIn reactions per post	<6	6-10	>10	<10	10-15	>15	
	LINKS LIn posts per month	<2	2-3	>3	<4	4-5	>5	
	Total LINKS RG followers	<22	22-27	>27	<27	27-35	>35	
	Total LINKS Instagram followers	<50	50-100	<100	<70	70-120	>150	
	LINKS Instagram posts per month	<1	1	>1	<2	2	>2	
	Partners posts shared on social media	<5	5-10	>10	<10	10-15	>15	
Newsletter	Total n° of newsletter realised	<4	4-5	>5	<5	5-6	>6	MailChimp dashboard (bi-monthly)
	Total n° of subscribers	<70	70-120	>120	<120	100-170	>170	
Press Releases	Total n° of press releases	<3	3-4	>4	<5	5-6	>6	Publication on the LINKS website (bi-monthly)

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DEC CHANNELS AND EVENTS	KPIS	TARGETS (M30)			TARGETS (M36)			MEANS OF MONITORING (FREQUENCY)
		Poor	Good	Excellent	Poor	Good	Excellent	
Articles in Informative and Sector Magazines and Blogs	Total n° of articles realised Articles per partners	<25 <1	25-35 1-2	>35 >2	<35 <2	35-40 2-3	>40 >3	DEC - Dissemination, Exploitation and Communication Activity Report (bi-monthly)
Events	Total participations in external (informative and sector) events N° of participants involved (per event) Total participation in scientific conferences Total n° of events organised by the partners Total n° of LINKS Conferences organised N° of participants involved in LINKS Conference Total participations in EC events Total participation in UNDRR events	<12 <10 <4 <1 <1 <20 <4 <4	12-23 10-20 4-5 1-5 1-2 20-40 4-5 4-5	>23 >20 >5 >5 >2 >40 >5 >5	<15 <15 <6 <3 <2 <30 <5 <5	15-25 20-25 6-7 3-10 2-3 30-50 5-6 5-6	>25 >25 >7 >10 >3 >50 >6 >6	DEC Activity Report, Proceedings, list of participants (monthly)
Online Repositories and LINKS Community Center	Total n° of online repositories involved Updating of online repositories (monthly) LCC members LCC interactions	<5 <1 <10 <10	5-6 1 10-20 10-20	>6 >1 >20 >20	<6 <1 <30 <30	6-7 1 30-70 30-70	>7 >1 >70 >70	DEC Activity Report (monthly)
Infographics	Total n° of infographics realised	<4	4-5	>5	<10	10-15	>15	DEC Activity Report (monthly)

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DEC CHANNELS AND EVENTS	KPIS	TARGETS (M30)			TARGETS (M36)			MEANS OF MONITORING (FREQUENCY)
		Poor	Good	Excellent	Poor	Good	Excellent	
Video	Total n° of videos realised (and shared on YouTube) Total views on YouTube	<3 <50	3-4 50-100	>4 >100	<5 <100	5-10 100-200	>10 >200	YouTube statistics (monthly)
Leaflets	Total n° of leaflets realised	<1	1-2	>2	<2	2-3	>3	DEC Activity Report (monthly)
Scientific Publications	Total n° of scientific papers Total citations per publication	<2 <2	2-3 2-3	>3 >3	<5 <4	5-6 4-5	>6 >5	DEC Activity Report (monthly)
Policy recommendations	Total n° of policy recommendations planned	<1	1-2	>2	<2	2-3	>3	DEC Activity Report (monthly)
Projects and Networks connected	Total n° of related projects connected Total n° of external networks involved	<5 <5	5-7 5-6	>7 >6	<7 <6	7-10 6-10	>10 >10	DEC Activity Report (monthly)
Training and Lectures	Total n° of lectures Total n° of students involved Total n° of training sessions	<6 <45 <3	6-7 45-55 3-4	>7 >55 >4	<7 <50 <10	7-10 50-60 10-20	>10 >60 >20	DEC Activity Report (monthly)
Interactive workshops	Total n° of interactive workshops organised LINKS Community Workshop organised N° of participants per workshop	<3 <2 <10	3-5 2-3 10-20	>5 >3 >20	<5 <3 <20	5-20 3-10 20-70	>20 >10 >70	Dissemination, Exploitation and Communication Activity Report (monthly)

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ANNEX II: LINKS IMPACTS, IMPACT-BASED INDICATORS AND MEANS OF EVALUATION OF LINKS

IMPACTS	IMPACT-BASED INDICATORS	MEANS OF EVALUATIONS
SCIENTIFIC: Fostering multidisciplinary knowledge on the application of SMCS in disaster risk management, to improve the impacts of SMCS in the management of disasters. This includes a novel way of study SMCS by the research community *Results that contribute:* • Including citizens Handbook, Pocket Ethics Guidelines, Resilience Wheel (high) • Educational Toolkit, SMCS Technology Library, Guidelines about the usage of SMCS technologies, LINKS Framework, LINKS Community Center (medium)	• Number of researchers (coming from different fields) declared their scientific knowledge on the LINKS topics increased • Use of LINKS scientific contributions in external academic contributions • Use of LINKS scientific contributions in multidisciplinary fields • Number of external researchers involved in LINKS activities • Number of LINKS spin-off research projects approved • Number and typology of course/curriculum implemented on LINKS topics • Number of students working on LINKS-related topics	• Publication monitoring procedures • Citations of the academic contributions realised • Engagement of students on the LINKS topics • Implementation of LINKS outputs into courses and curriculum • Analysis of the types/numbers of LINKS Community members engaging in LINKS activities • Project proposals submitted and approved • Feedback received during the scientific events • Feedback received during lectures/training sessions on the LINKS topics
SOCIETAL: • Shortening the divide between researchers, practitioners, policy makers and communities, by sharing the knowledge related to SMCS in disasters	• Number of practitioners and policy makers declared their knowledge on the LINKS topics increased • Number of local communities' members and civil society declared their knowledge on the LINKS topics increased	• Feedback collected during the meetings with children • Feedback collected during the LINKS Community Workshops • Feedback collected during the LINKS Advisory Committee meetings

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• Improving the disaster resilience at the local level through SMCS by enabling practitioners and policy makers to take more informed decisions about the use of SMCS in all the phases of DRM • Improving information and communication for citizens and the inclusion of diverse people and groups (e.g. for languages, cultures, abilities, etc.) in all the phases of DRM *Results that contribute:* Including citizens Handbook, Educational Toolkit, Pocket Ethics Guidelines, Resilience Wheel, SMCS Technology Library, Guidelines about the usage of SMCS technologies, LINKS Framework, LINKS Community Center (high)	• Number of practitioners and policy makers become familiar with the LINKS products • Effective application of the LINKS products in the local communities • Number of practitioners, policy makers and local communities declared the LINKS products useful in their practices/in their local contexts • Number of practitioners, policy makers and local communities available in the future to apply LINKS products in their practices/in their local contexts • Actual/Future application (/integration in already available practices) of the LINKS products to improve communication on disaster topics (including vulnerable groups and children) • Actual/Future application of the LINKS products (/integration in already available practices) to increase citizens and volunteers engagement in disasters • Number of stakeholders who have decided to become part of the LINKS Community	• Feedback collected during the LINKS Cases assessments • Analysis of the types/numbers of LINKS Community members engaging in LINKS activities • Analysis of communication/dissemination activities: • engagement through LINKS social media (e.g.: followers, reactions, sharing) • engagement through the newsletter (typology of subscribers) • engagement through events (number and typology of participants, feedback received, activated collaborations, etc.) • interaction with similar projects (e.g.: joint participation in events, joint exploitation activities, etc.)
ECONOMIC: Increasing the knowledge about the benefits of disaster community technologies in improving efficiency in disaster management processes. This will contribute to strengthening its attractiveness both for	• Number of businesses and disaster organisation declared their knowledge about disaster technologies increased • Number of organisations declared useful the Technology/Guidelines Library	• Feedback collected during the LINKS Community Workshops, LINKS Advisory Committee, and other activities

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technology providers and disaster management organisations. *Results that contribute:* • Including citizens Handbook, SMCS Technology Library, Guidelines about the usage of SMCS technologies, LINKS Community Center (high) • LINKS Framework (medium) • Educational Toolkit, Pocket Ethics Guidelines, Resilience Wheel (low)	• Number of organisations declared they are using Technology/Guidelines Library • Number of organisation/businesses represented in the Technology Library	• Analysis of the types/numbers of LINKS Community members engaging in LINKS activities

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ANNEX III: LINKS EXPECTED IMPACTS (RESULTS & ACTIVITIES, M36)

A summary of the progress towards the expected impacts until M36 are below. More details can also be found in D1.3 Progress Reports 2 (Clark, 2022).

LINKS EXPECTED IMPACTS	LINKS RESULTS AND RELATED ACTIVITIES
EI-1: Comparative analysis of the European diversity in terms of risk-perception amongst citizens, and of vulnerabilities	Literarature review on vulnerability and risk perception, with its methodology (research questions and methods) has been realised and connected to the other two knowledge bases. It has been presented through appropriate academic channels and applied at the LINKS Case level.
EI-2: Comparative analysis of different approaches to adapt to, and be prepared for risks in different countries (both within and outside the European Union), and among communities in precarious socio-economic conditions	Literature review on vulnerability and risk perception, disaster technologies and disaster management processes confirm the great diversity in using SMCS to be prepared for risks in terms of socio-economic conditions, cultural and institutional difference, informal and ad hoc approaches among institutions, as well as the need of sharing and learning. The realised methodologies included methods which compare the same aspects across the different LINKS Cases and to focus on the peculiarities of each case in relation to the knowledge basis.This will allow to a certain degree, a country and community dependent analysis, that can be used by other research projects. Moreover, the consolidation of the LINKS Framework gives practitioners the possibility to find the right solutions on the basis of the different Countries conditions. Finally, the establishment of the LINKS Community, which will be strengthen in the last months of the project, allows to emphasise also after the end of the project the local dimension of the risk preparedness issues.
EI-3: Advances through the cross-fertilisation of concepts resulting from the collision of different ways of thinking and of different approaches developed by various partners in the proposals	The LINKS Framework, which is now arrived at its second version, can be considered the convergence point among the different knowledge bases, disciplines, and professional needs, co-createad among different stakeholders in the project.
EI-4: Improved information exchanges among different actors involved, including first responders, local authorities, schools, and citizen representatives	Different actors (researchers, policy makers, practitioners, local communities, etc.) are established within the LINKS Cases. Many activities have been established to create connections (e.g. workshops, roundtables, site visits, etc.). At the project level this has been possible especially through the application of the LINKS Community Workshops. The involvement of shools is particularly important for the Italian LINKS Case (where also che 'Feel Safe' product is

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LINKS EXPECTED IMPACTS	LINKS RESULTS AND RELATED ACTIVITIES
	applied), as well as in the Dutch Case a particular focus is on local communities authorities (where also the 'Resilience Wheel product is applied).
EI-5: Identification of existing tools and guidelines for an improved prevention (including risk understanding and communication), preparedness (including training involving citizens), alert systems and their recognition by citizens, responses using citizen's competencies and local knowledge, and recovery	In the LCC the LINKS products specifically aiming at improve prevention and preparedness are present. Among them: the SMCS Technologies Library, which allows to identify the technologies oriented to prevention and preparedness. Also the 'Including Citizens Handbook' and 'Feel Safe' specifically aim at these objectives.
EI-6: Field-validation of different approaches related to different disaster risks involving the above actors, in representing urban and non-urban environments, including in areas where precarious socio- economic conditions prevail	Field validation has been carried out in the first and second case assessments, including the application of different methods within different environments.
EI-7: Intensive sharing, among communities, of good practices and of learnings resulting from citizen-scientist interaction	The citizen-science approach in LINKS is embedded it the case assessments, and the involvement from local actors. The first round of assessments had a strong focus on disaster management organization and authorities, but many activities in this period have also involved interactions with other stakeholders including the civil society. For instance, workshops with schools in the Italian and Dutch cases, and focus groups with citizens on local risk perceptions and communication practices in the Danish case.
EI-8: A consolidated, common European understanding of disaster resilience	The LINKS knowledge bases have established in this period a consolidate understanding of how SMCS can contribute to disaster resilience, at social, institutional and technical levels. That knowledge wasintegrated into useful products and are currently in a process of improvement consisting of refinement, internal and external evaluation. This also includes making the products available as potential solutions for different needs of stakeholders through the LINKS Framework.

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