



ENERGY SHIELD

Integrated Cybersecurity Solution for the Vulnerability Assessment, Monitoring and Protection of Critical Energy Infrastructures

INNOVATION ACTION

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W7 COMMUNICATION, DISSEMINATION & ECOSYSTEM DEVELOPMENT

D7.6 DISSEMINATION REPORT FINAL

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EXECUTIVE SUMMARY

This report provides a quantitative analysis of the impact of the dissemination activities performed by EnergyShield consortium members during the third year of the project. It illustrates the outcomes of dissemination plan and execution of both internal and external communication of the project results through a variety of channels.

The dissemination process itself is closely monitored within the EnergyShield project by means of surveys defined via ECAS (European Citizen Action Service) tool.

Overall, the strategy proposed has been proven efficient, the progress for most of the assumed KPIs being in line with the set targets.

The selected channels of dissemination are relevant for the project as for most KPIs the progress is close to the targets set. To improve the performance and the impact improvement measures have been drafted for all the channels of distributions. As Twitter has proven an important vector of dissemination, due to the high number of followers and resolving visibility, specific tools have been used to boost account visibility. A solid social media channel of dissemination and communication would also support the traditional channels in their endeavour to gain visibility.

The COVID-19 outbreak required the conversion to an exclusively online presence and the distribution of all associated documents using online technologies within the first year. Unfortunately, two years after the pandemic began, it continues to affect the development of activities to this day. As a result, we were compelled to rely only on internet-based communications.

During the last year of implementation the EnergyShield consortium has improved its online presence and visibility via attending and organizing dedicated online events. Most of the assumed indicators were reached, while for some of the targets were outreached..

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ACRONYMS

ACRONYM	DESCRIPTION
CEZ	CEZ Distribution Bulgaria
CITY	City University London
CoTTP	Cogen Zagore Ltd
D	Deliverable
DIL	D I L DIEL Ltd aka Goldline
DSO	Distribution System Operator
EPES	Electrical Power & Energy Systems
ESO	Electricity System Operator EAD - Bulgaria
FOR	foreseeti AB
IREN	IREN S.p.A.
KPI	Key Performance Indicator
KT	Konnektable Technologies
KTH	KTH Royal Institute of Technology
L7D	L7Defense
M	Month
MIG	MIG 23 Ltd
NTUA	National Technical University of Athens
PSI	PSI Software AG
R&D	Research and Development
SC	Software Company Limited
SEO	Search Engine Optimization
SIGA	Si-Ga Data Security Ltd
SIV	Software Imagination & Vision Romania
T	Task
TEC	Tech Inspire Limited
TSO	Transmission System Operator
VETS	VETS Lenishta OOD
WP	Work package

1 INTRODUCTION

1.1 SCOPE AND OBJECTIVES

The objective of this deliverable is to illustrate the outcomes of dissemination plan and execution of both internal and external communication of the project results through a variety of channels. Thus, this report covers the conducted efforts of the consortium members during the third twelve months of the project.

1.2 STRUCTURE OF THE REPORT

This report is structured in two main parts. In the first part, the strategy proposed in D7.4 [ESH19] is shortly recapped as it has been updated in the context of COVID-19 pandemic [ESD20], while in the second part a quantitative analysis of the activities performed is provided. Starting from the assumed KPIs the performance of every dissemination channel is detailed alongside with consortium partner's individual contributions.

1.3 TASK DEPENDENCIES

WP7 Communication, Dissemination & Ecosystem Development focuses on the dissemination of project results and the development of an ecosystem of partners along the value chain and includes reports referring to both strategy and progress per communication, dissemination, and collaboration activities.

The D7.6 dissemination report takes over and updated the dissemination strategy proposed in D7.4 [ESH19], reported in D7.10 [ESD21], and provides an analysis of the EnergyShield KPIs at the end of the third year of implementation.

WP8 Exploitation & Scale Up builds upon both the dissemination and communication activities and aims at scaling them up beyond the project horizon.

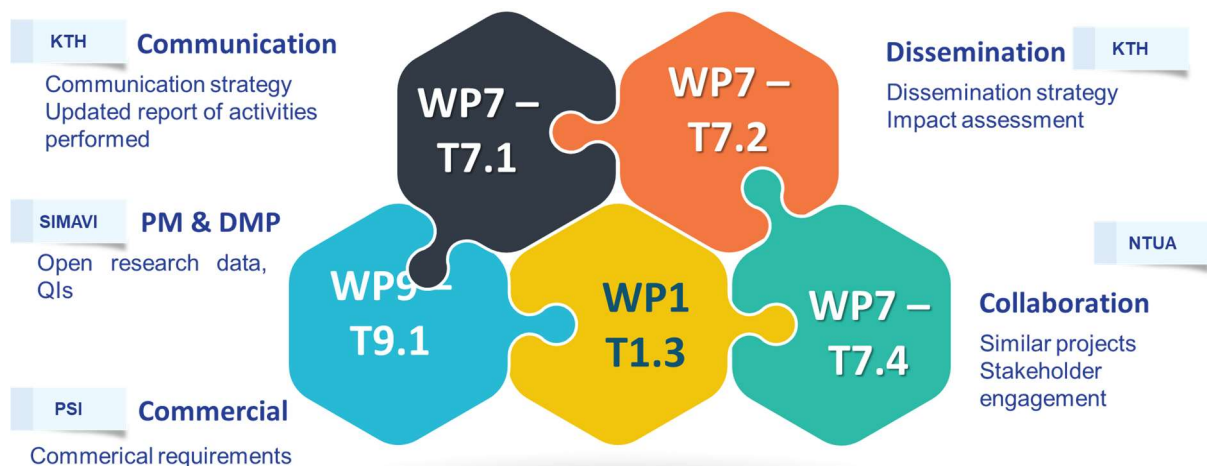


Figure 1. Dependencies of Dissemination tasks

2 DISSEMINATION STRATEGY

This section covers the summarised dissemination plan outlined for the EnergyShield project [ESH19] and the changes introduced to improve the coverage of dissemination activities [ESD20] and [ESD21].

2.1 APPROACH TO ENERGYSHIELD DISSEMINATION

A coordinated dissemination approach is important to ensure a far-reaching impact of the EnergyShield project. To disseminate in an effective and efficient manner a couple of things were considered early in project lifecycle:

- Assessment of change readiness
- Engagement throughout the project
- Enabling transfer of project outcome

The dissemination process itself is closely monitored within the EnergyShield project by means of surveys defined via ECAS (European Citizen Action Service) tool. A four-step dissemination process flow is proposed and presented in Figure 2.

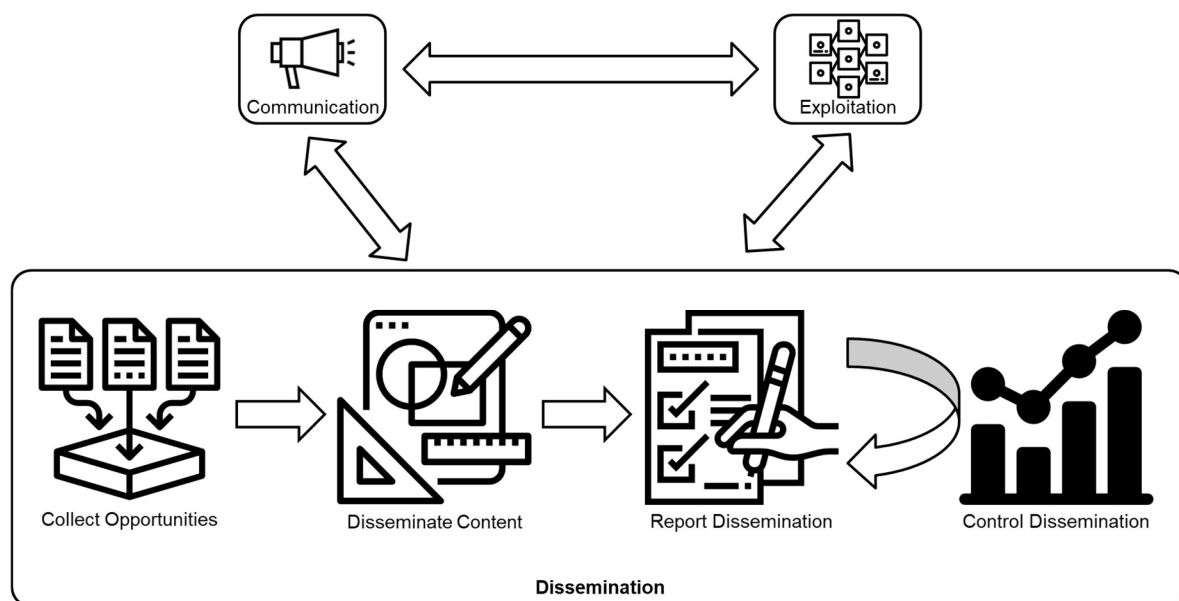


Figure 2. Dissemination process flow

Basically, the process follows the idea to first collect the dissemination opportunities from all partners and create a common knowledge base that can be shared with each other. Second, each partner is encouraged to disseminate created content of the project and if possible, to collaborate also with other partners in the project. Third, the partners report the conducted dissemination activities at a central place. This allows monitoring of the actual activities and identified opportunities for dissemination.

The **selected means of dissemination** are established for the EnergyShield project and continuous progress per KPIs was registered. The performance of KPIs is

different considering the channels of distribution. The versatility of social media tools like Twitter has supported the efforts of Consortium partners, increasing the visibility of EnergyShield project and fed the project with information about relevant online events. On the other hand, the number of users subscribing to our project newsletter has been very low during the first year but improved during the second and third year. We managed to nearly quadruple the number of subscriptions, but compared to the target, we are beyond our plans. To raise the number of subscribers even further, we are now asking attendees at all our events whether they would like to receive our newsletter.

Large-scale events were ruled out in the aftermath of the COVID-19 pandemic, which necessitated adjustments to the distribution strategy. As a result of this action, printable materials are essentially removed from the EnergyShield distribution scheme. To ensure the project's continued distribution, dissemination materials have been published on the EnergyShield website and circulated via social media channels. Beside from that, consortium partners are encouraged to engage in and arrange digital events to disseminate information about the project's achievements. In addition, we identified possible areas of collaboration with other programs that we may pursue.

3 OVERALL QUANTITATIVE ANALYSIS

This section provides a quantitative analysis of the impact of the dissemination and communication activities performed during the third year of implementation. The achievements on the proposed KPIs are detailed in the following subsections considering also the qualitative analysis performed in D7.9 Communication report v2 [ESC21].

3.1 CONSIDERED KPIS

A summary of the assumed KPIs with targets set at the end of each year of implementation is presented in Table 1, below alongside with the progress registered at the end of M36.

Table 1. Communication and collaboration KPIs break down per year

Tool	Indicator(s)	M12 (Plan)	M12 (Actual)	M24 (Plan)	M24 (Actual)	M36 (Plan)	M36 (Actual)
EnergyShield website	Number of unique visits	> 2,000	842	> 5,000	2619	> 10,000	3810
	Number of external references of the website	> 10	187	> 25	265	> 50	478
	Number of days that pass without an update	< 30 days	16.9	< 30 days	6.92	< 30 days	19
EnergyShield brochure	Number of brochures created	500	50	1,000	50	2,000	50
	Request for additional project information generated by the brochure	> 40	0	> 100	0	> 200	0
Social Media Campaign	Views per promoted post	> 1,500	666	> 1,500	600	> 1,500	608
	Number of followers	> 100	83	> 250	350	> 500	722
	Number of tweets	> 30	131	> 65	337	> 100	457
Newsletter	Number of newsletters created	> 3	2	> 7	6	> 10	9
	Number of readers who received the newsletter through mail	> 200	35	> 500	78	> 1,000	124
	Number of downloads of newsletter from web site	> 60	19	> 150	106	> 300	246
Articles	Number of generalist articles published	> 7	4	> 15	19	> 30	31
	# Published articles (Scientific)	>2	4	>5	5	>9	6

Press relations	Number of press releases issues	> 1	3	> 3	3	> 5	3
	Number of press clippings per press release	> 6	3.66	> 15	3.66	> 30	3.66
LinkedIn Groups	No of members	>20	38	>50	61	>100	116

To improve the performance and the impact, enhancement strategies have been drafted for all distribution channels. Because Twitter has established itself as a key medium for disseminating information, specific tools have been used to boost account visibility. A solid social media channel of dissemination and communication also supports the traditional channels in their endeavour to gain visibility.

In the following section, details about the opportunity of using the selected channels to disseminate project results together with the results achieved at the end of M36 are presented.

3.2 ENERGYSHIELD WEBSITE

3.2.1 UNIQUE VISITS

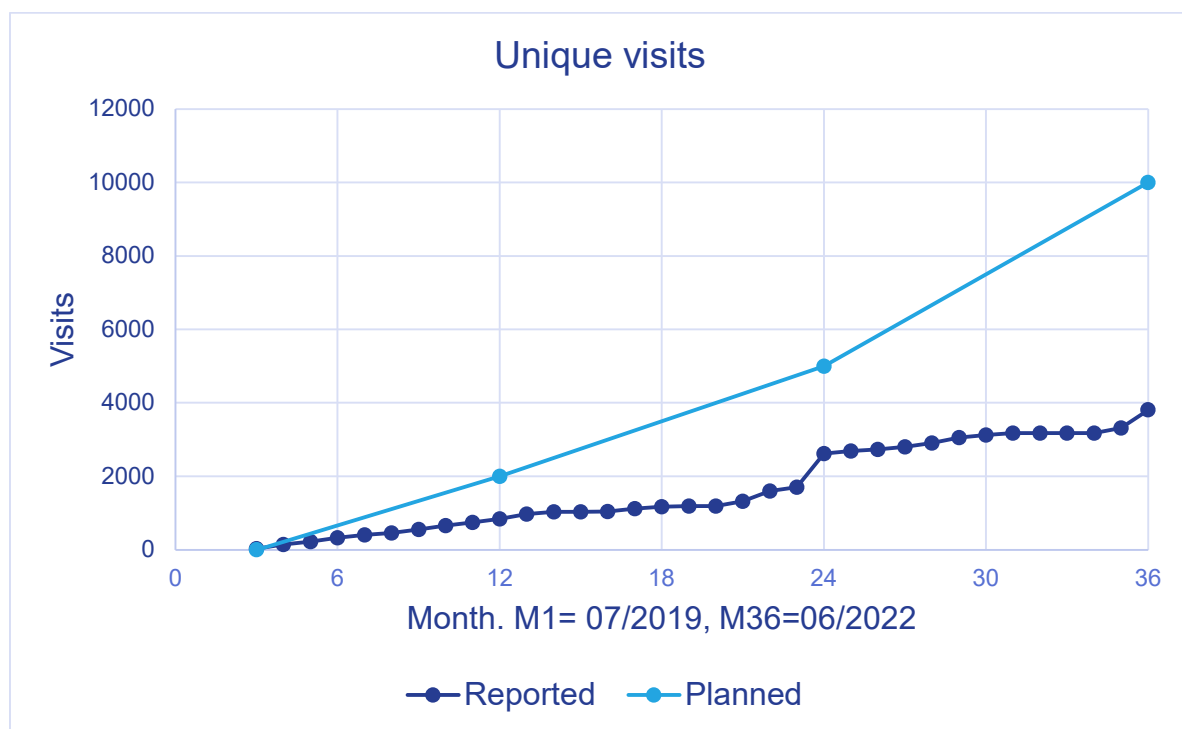


Figure 3. Progress of the number of unique visitors

The number of unique visitors accessing our website falls short of our expectations, even though the number of users constantly increased since launching and our activities during the last period showed some effects.

Optimization of the website's SEO and adding new content to the site were considered to increase the number of unique visitors. All project partners were requested to update the description of their organization as well as their contributions to the

project's overall success. Moreover, a section for sister projects was added and partners started providing more in-depth insights into the tools utilized and highlighted the project's actions on a regular basis.

The efforts that were being made to improve the project website and attract new visitors were kept up, and the result was a 78 percent increase in the number of users over the course of the final year of implementation. The fact that it is a specialised subject and that the project webpages are of interest to energy and cybersecurity domain experts contributed to the likelihood that the expected number of visitors was not reached at the end of the project

3.2.2 EXTERNAL REFERENCES

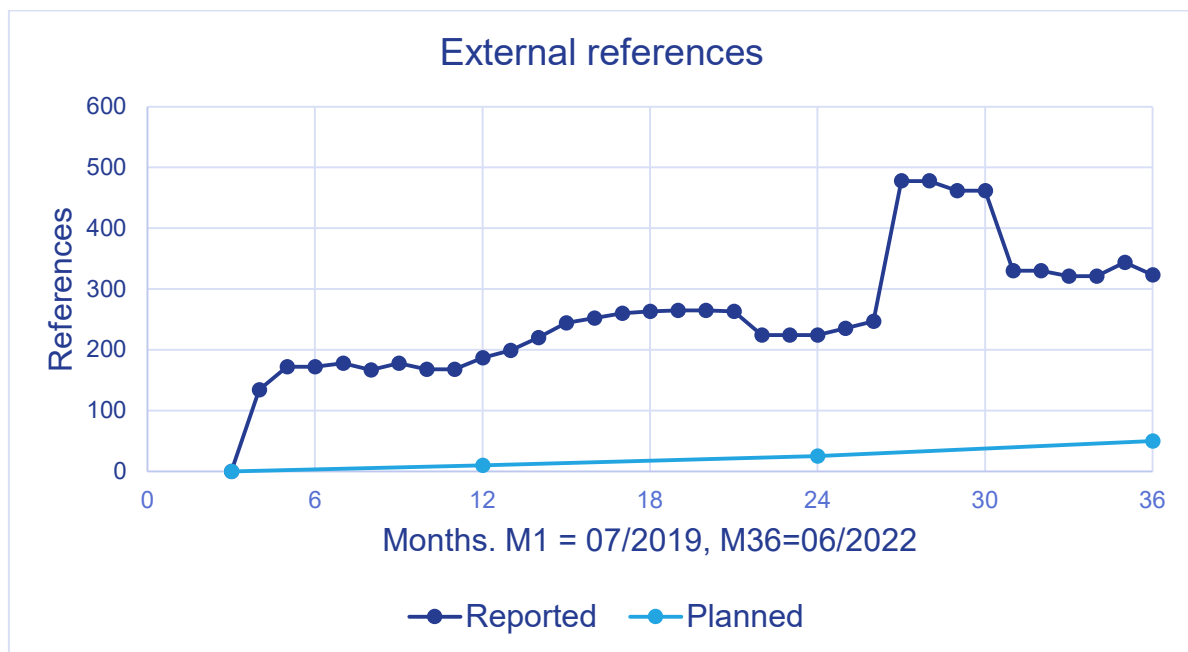


Figure 4. Progress of number of externals

The number of external references pointing to our website exceeds our expectations by a wide margin. We recognized a positive effect from our first press release. Recently, we have seen a drop in the number of inbound referrals. A possible explanation could be the re-publication of the first press release on different websites, thus leading to fewer incoming references. However, the numbers are still far beyond the planned thresholds.

3.2.3 UPDATE FREQUENCY

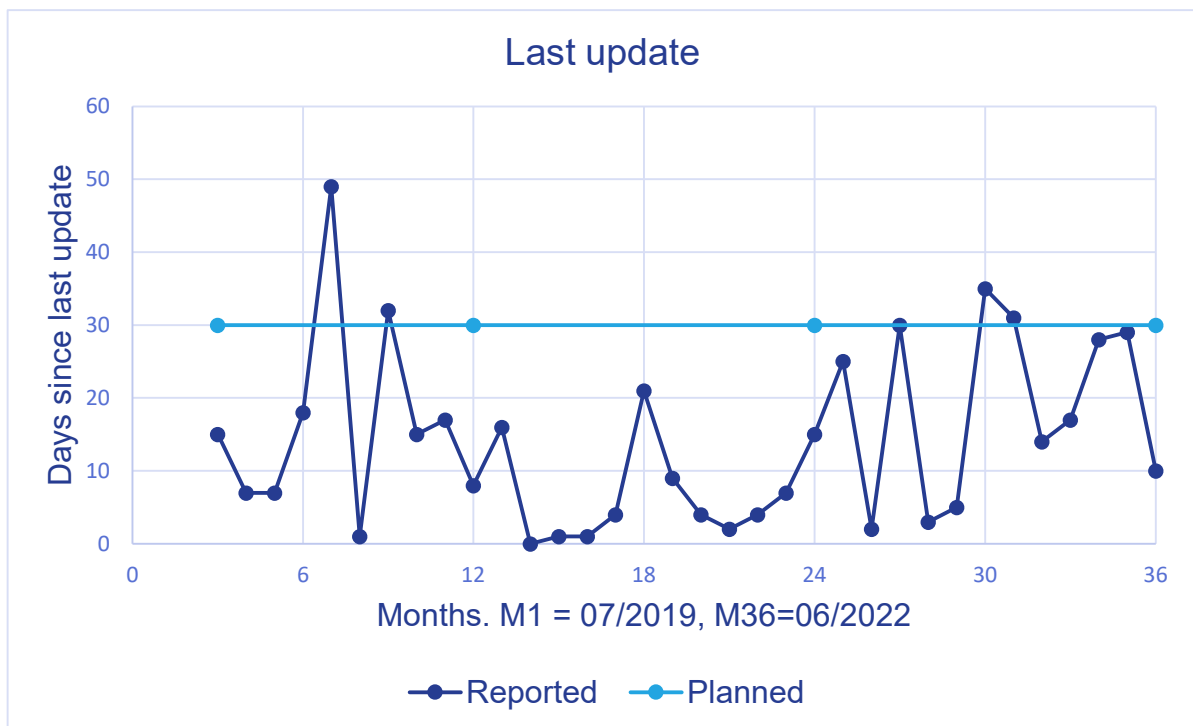


Figure 5. Progress of update frequency

The website's contents were updated at least once a month, except for the winter holidays in the first period. The medium update frequency per month is 13.3, which is higher than expected. During the last period, we tried to produce updated information on a regular basis, even several times each month where feasible. Dedicated articles have been written for each project-related event that has took place.

3.2.4 CREATED BROCHURES

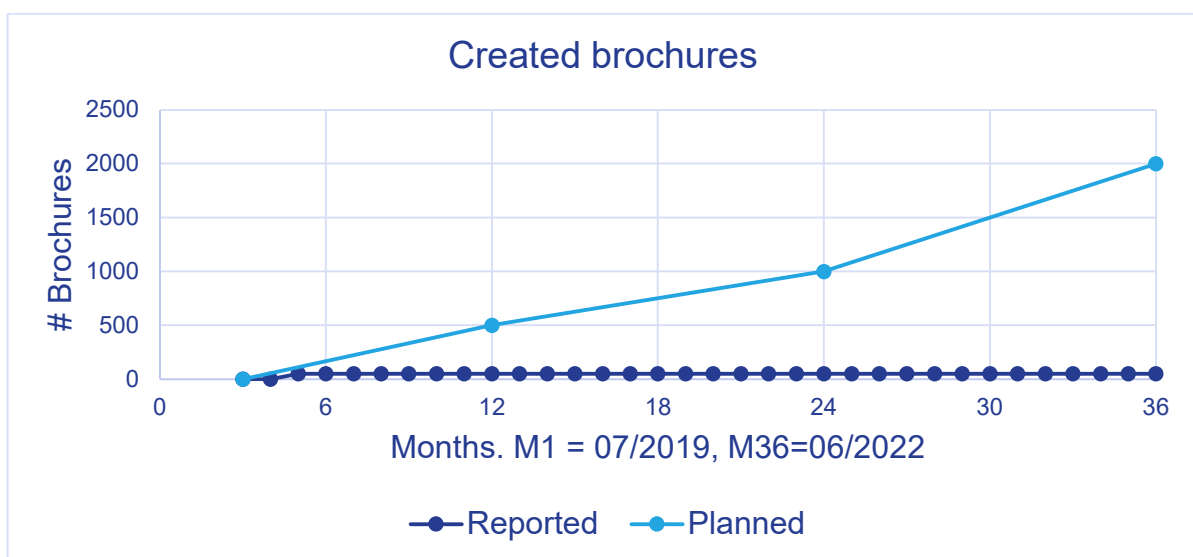


Figure 6. Progress of printouts

Creating and distributing printed brochures, events with large participation were provisioned and considered an opportunity to disseminate information about the project. A total of 50 brochures were printed and distributed at events like European Utility Week. As face-to-face events are not organized during the first and second periods, printouts cannot be distributed. As a backup strategy for this means of dissemination, the pdf version of the brochure is sent as a follow-up of attending online events (workshops, webinars, conferences, etc.), while also publishing it on the website and sharing it via social media channels.

3.2.5 REQUESTED ADDITIONAL INFORMATION

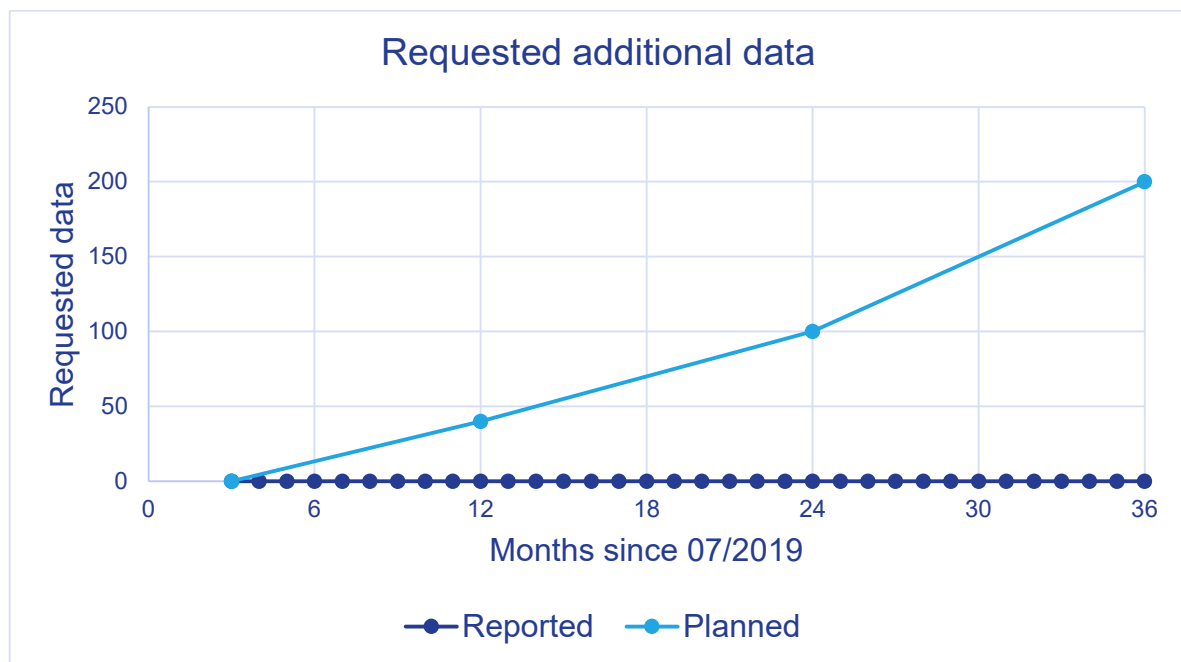


Figure 7. Progress of requested additional information.

This KPI is tough to measure since we cannot tell whether someone, for example, visited our website because they saw our brochure or for any other reason other than that. We kept this KPI on the list despite the fact that pandemic-related restrictions were lifted just two months before the project's conclusion and consortium partners did not attend events with a physical audience held in large venues.

3.3 SOCIAL MEDIA CAMPAIGN

3.3.1 VIEWS PER POST

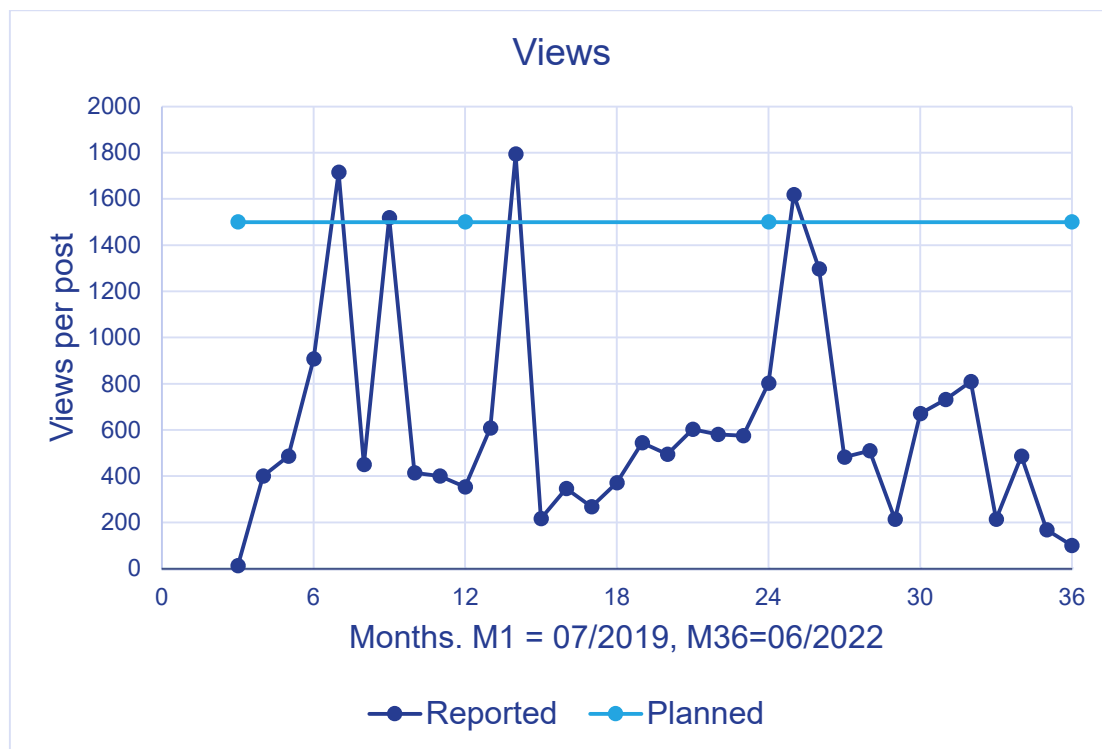


Figure 8. Progress of views per Tweet

The use of Twitter as a distribution channel was one of the factors that contributed to EnergyShield’s great performance during its first reporting period.

Reaching 1,500 views per “tweet” is a challenging accomplishment, particularly when you begin with nearly no followers. However, we have made it four times so far. In recent months, our average reach has increased to 600 viewers per tweet, thanks to the steady growth in our number of followers and to the information distributed (e.g., final event dissemination, whitepaper publications, cross-dissemination of cluster events)

3.3.2 FOLLOWERS

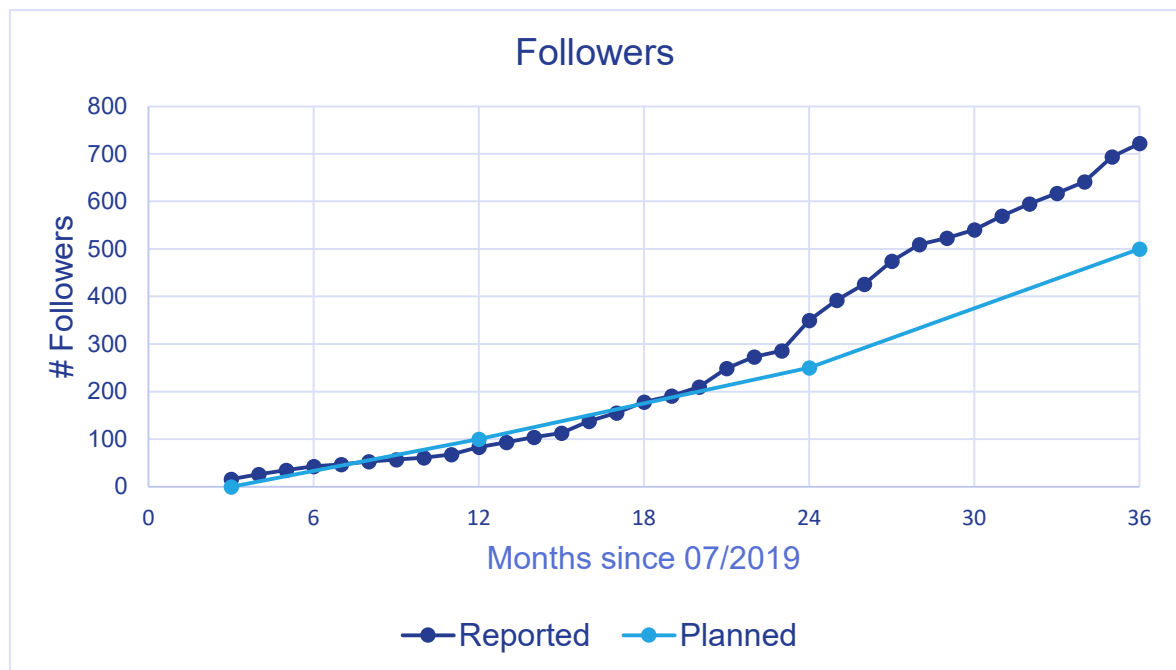


Figure 9. Progress of Twitter followers

Looking at the number of followers on Twitter, the evolution follows the set target closely, and during the last time, it even outperformed our plans. To further increase the number of followers, we exchanged our details with other Horizon projects and encouraged the partners of the respective projects to follow the other projects.

3.3.3 NUMBER OF MESSAGES

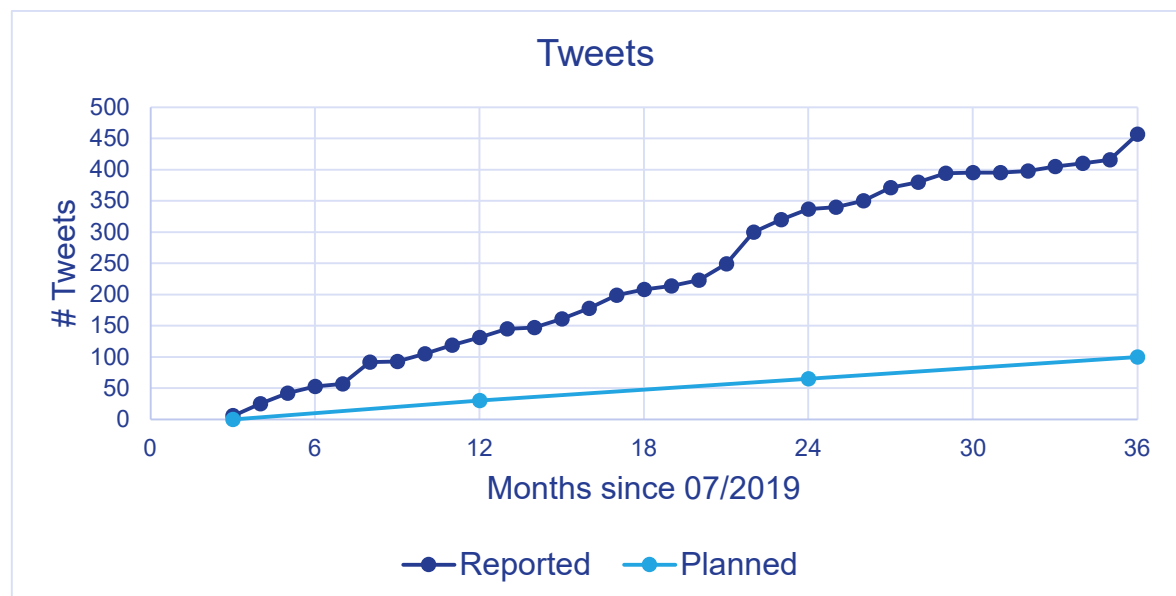


Figure 10. Progress of Tweets number

The number of tweets created is mostly five times higher than the set targets, and we have already exceeded the project's end-of-project targets.

Disseminating project outcomes through Twitter will continue to be the preferred method of dissemination since our channel already has a considerable number of readers as well as many projects and experts that are followed by our channel. Twitter is also a valuable tool for finding out about online events and connecting with other people working on similar initiatives, among other things.

3.3.4 LINKEDIN MEMBERS

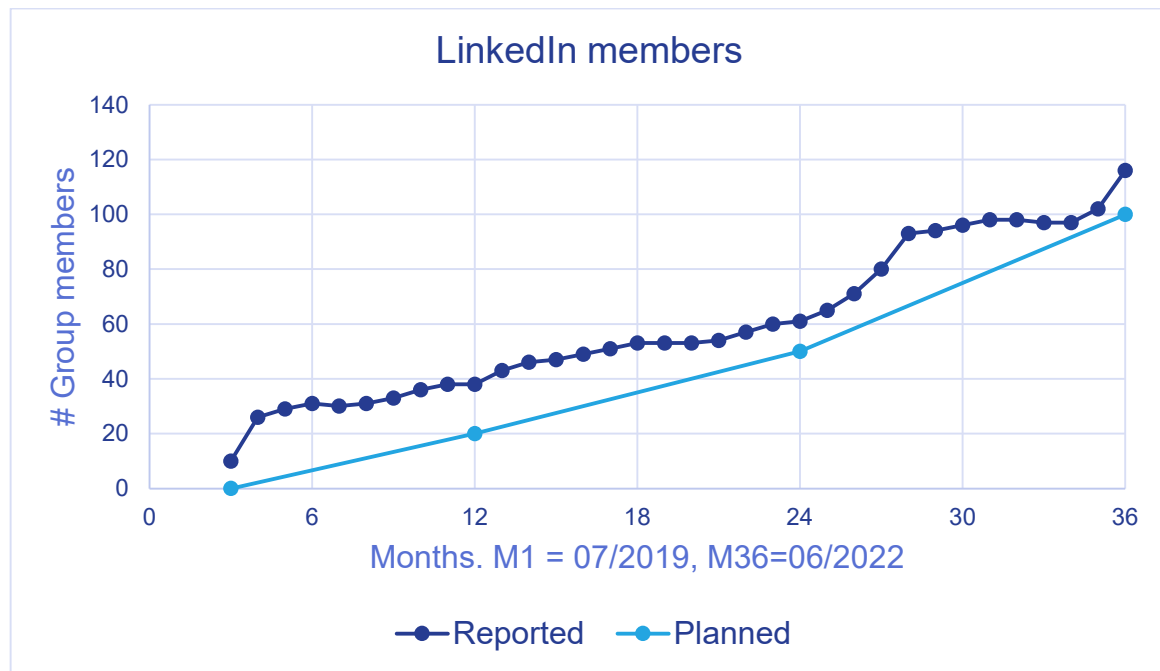


Figure 11. Progress of LinkedIn members

The number of members in our LinkedIn group grew steadily throughout the project's duration, expanding at a rapid pace in tandem with the project's growing popularity.

3.4 NEWSLETTER

3.4.1 CREATED NEWSLETTER



Figure 12. Number of created Newsletters

During project implementation, nine newsletters were published, four of which were published during the final year of implementation and included information about dissemination and partnership efforts.

3.4.2 READERS

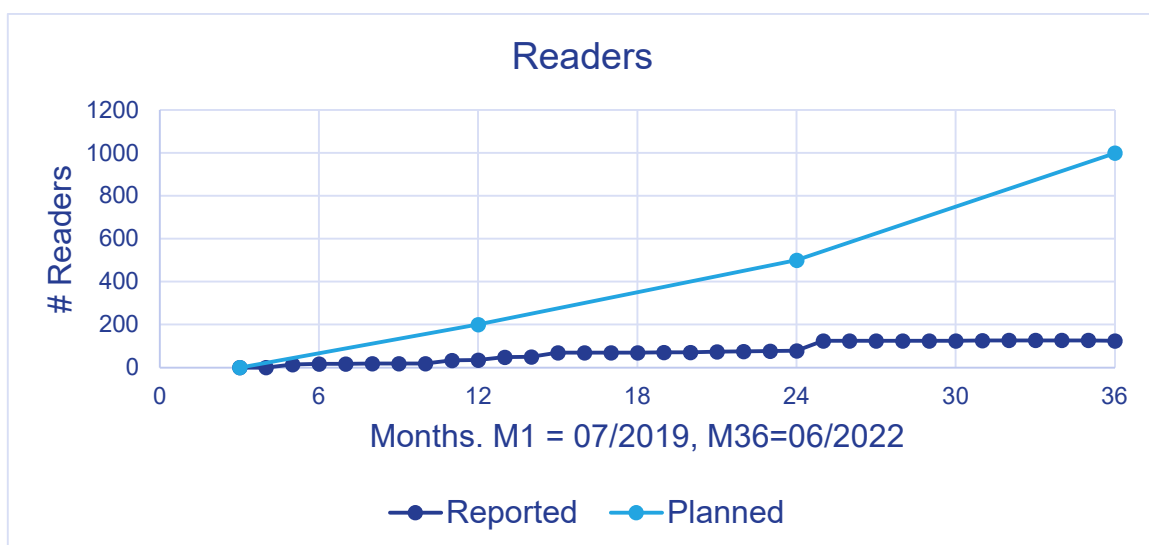


Figure 13. Number of newsletter readers

During the third period of the project, EnergyShield published one newsletter, the majority of which contained content related to dissemination and partnership efforts. To increase the number of readers, we exchanged contact information with other projects and encouraged them to sign up for each other's newsletters. Even though EnergyShield Consortium held workshops for a general audience, only a few attendees subscribed to our newsletter and visited the project website. The newsletters no longer appear to be popular, and the actions taken did not significantly increase the number of readers.

3.4.3 DOWNLOADS

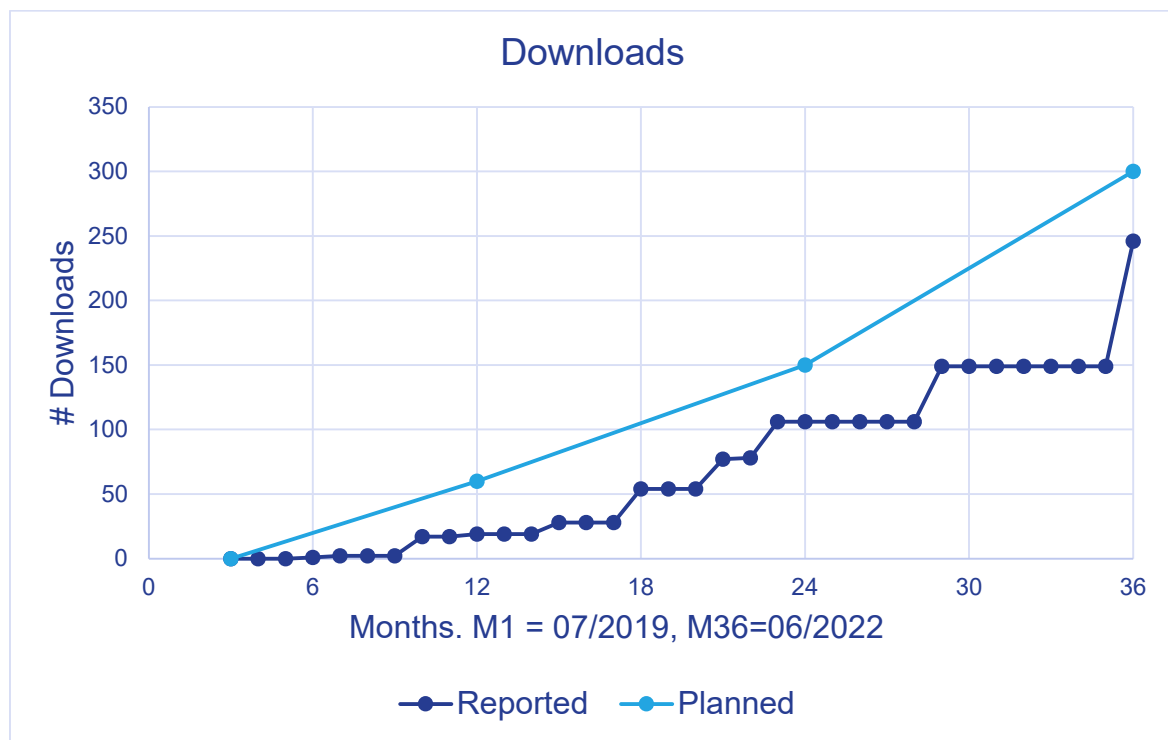


Figure 14. Number of newsletter downloads

The number of newsletter downloads performed better than the number of readers. Following the dissemination of the most recent newsletters, we saw a considerable increase in downloads, though without reaching the target.

3.5 ARTICLES

3.5.1 SCIENTIFIC

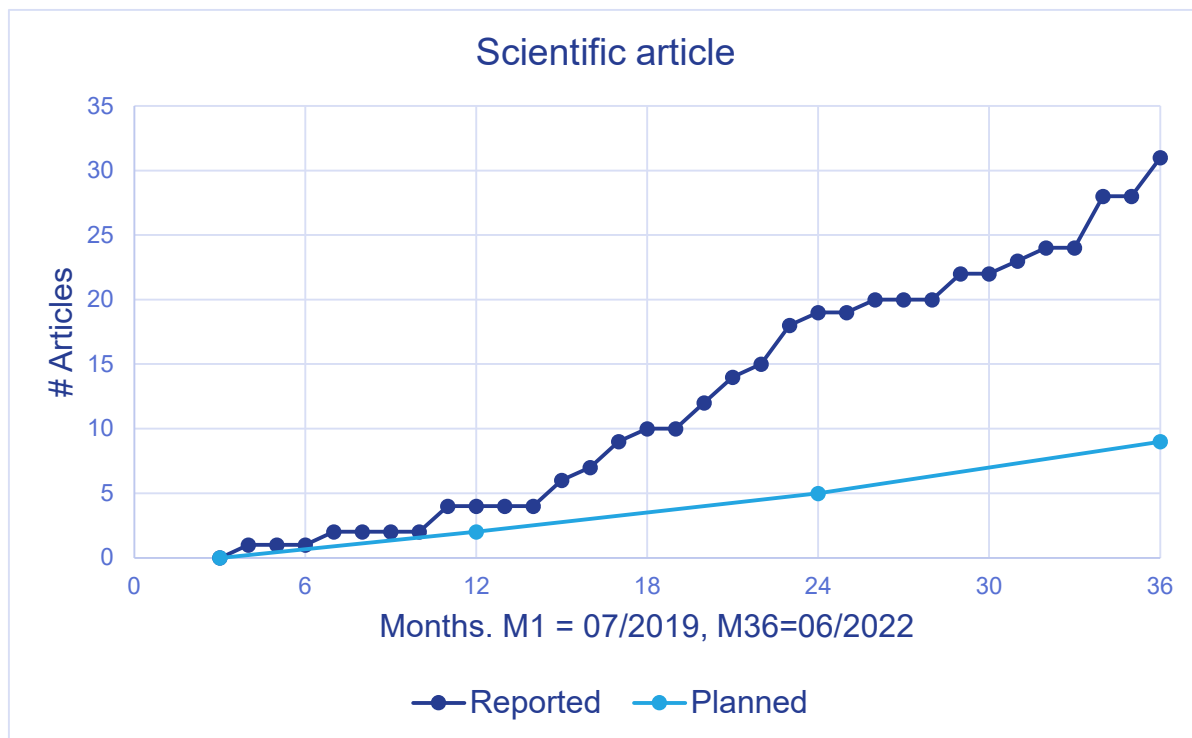


Figure 15. Number of scientific articles

During the third period of project's implementation, 11 papers were published, and many more are in the process of being published. As a result, the intended target was exceeded.

Table 2. EnergyShield publications in RP3

Year	Authors	Title	Venue
2021	Hacks et al.	Integrating Security Behavior into Attack Simulations	International Conference on Availability, Reliability and Security (ARES 2021)
2021	Sklavidis, Angelidis, Babagiannou, Liapis	Enhancing SIEM technology for protecting electrical power and energy sector	IEEE CSR EPES-SPR Workshop
2021	Sari and Butun	Early Detection and Recovery Measures for Smart Grid Cyber-Resilience	Decision Support Systems and Industrial IoT in Smart Grid, Factories, and Cities; book by IGI
2021	Acarali et al.	Modelling Smart Grid IT-OT Dependencies for DDoS Impact Propagation	Elsevier's Computers & Security journal

2021	Georgiadou et al.	Hospitals' Cybersecurity Culture during the COVID-19 Crisis	MDPI Healthcare
2021	Touloumis et al.	Vulnerabilities Manager, a platform for linking vulnerability data sources	2021 IEEE International Conference on Big Data (Big Data)
2021	Dixit et al.	FAST DATA: A Fair, Secure and Trusted Decentralized IIoT Data Marketplace enabled by Blockchain	IEEE Internet of Things Journal
2022	Georgiadou et al.	A Cybersecurity Culture Survey Targeting Healthcare Critical Infrastructures	MDPI Healthcare
2022	Engström and Lagerström	Two Decades of Cyberattack Simulations: A Systematic Literature Review	Elsevier's Computers & Security journal
2022	Urrea Cabus et al.	Security Considerations for Remote Terminal Units	Zooming Innovation in Consumer Electronics International Conference 2022 (ZINC 2022)
2022	Qadir et al.	Towards Smart Sensing Systems: A New Approach to Environmental Monitoring Systems by Using LoRaWAN	Zooming Innovation in Consumer Electronics International Conference 2022 (ZINC 2022)

3.5.2 GENERAL

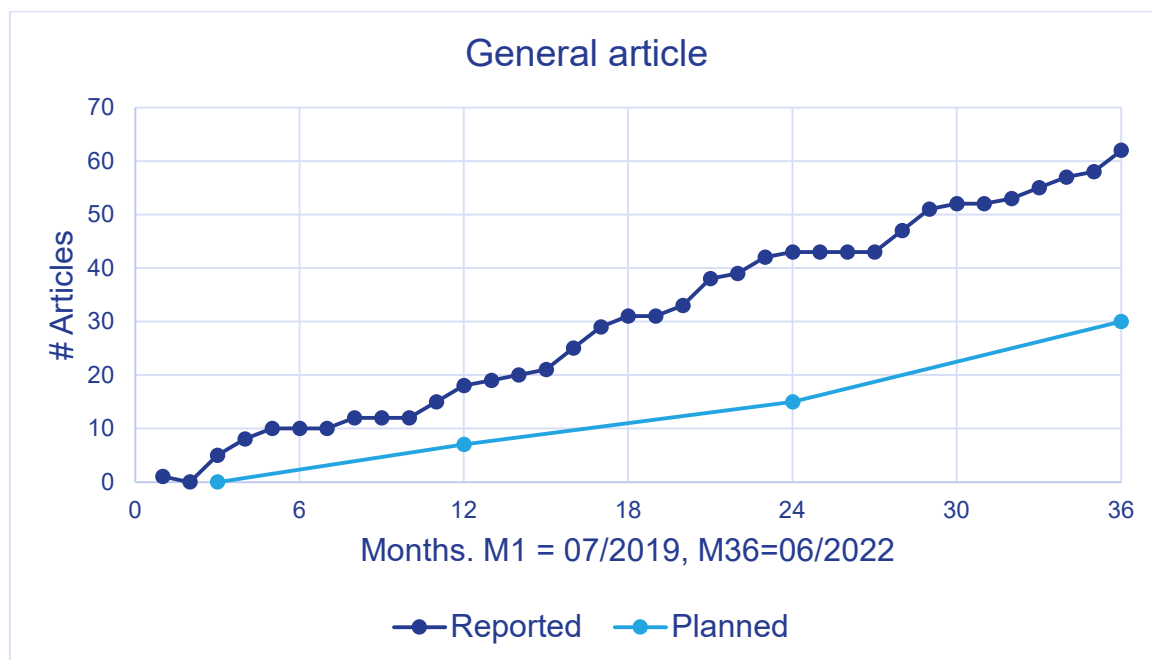


Figure 16. Number of general articles

The number of general articles on our project was not developing as expected. During the first year, the expected number of articles was written, while during the upcoming period, just a few additional articles were published. The number of general articles that have been published on either the project website or the corporate pages of the partners are significantly higher than what was originally planned

3.6 PRESS RELATIONS

3.6.1 CREATED PRESS RELEASES



Figure 17. Number of press releases

This KPI is progressing in the manner predicted. The last press release refers to project closure and includes details about the final event organised on the 23rd of June 2022

3.6.2 PRESS CLIPPINGS PER PRESS RELEASE

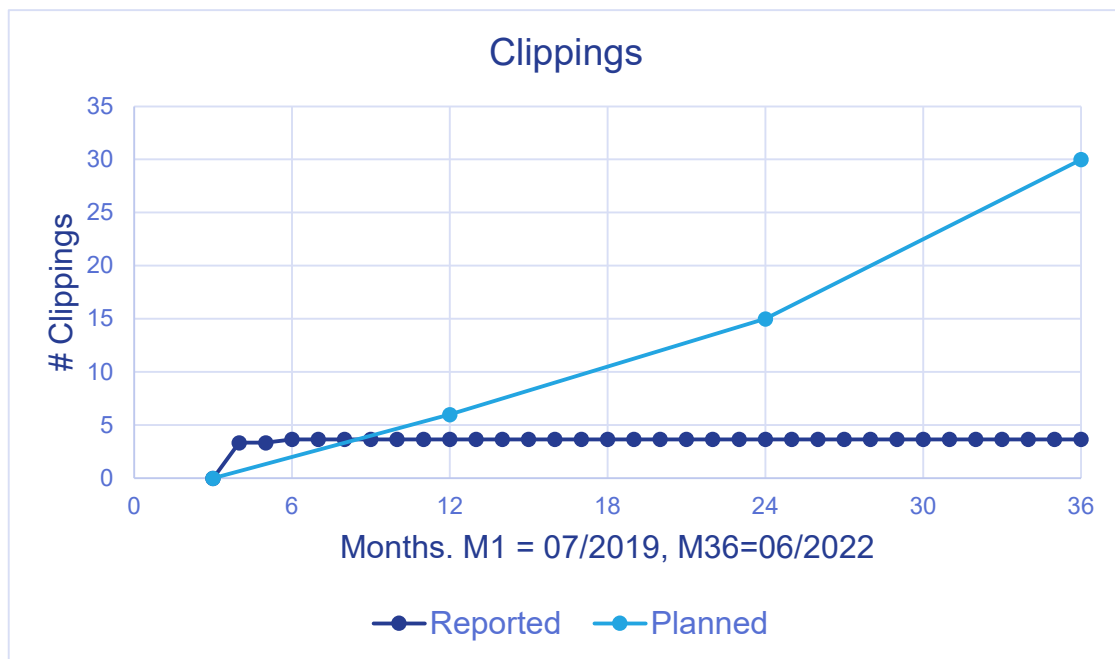


Figure 18. Progress of press clippings

To achieve higher clipping rates, it is necessary to first identify all the clippings, which is a laborious and time-consuming process. As expected, the total number of clippings has been going up steadily, reaching 11 during the project lifespan.

3.7 CONSORTIUM PARTNERS INDIVIDUAL CONTRIBUTION

3.7.1 SIMAVI

SIMAVI promised to “disseminate the results of the project to the Romanian ICT industry via national events (Scientific Research and New Technologies Bucharest, International Technical Fair Bucharest). Present the project results to critical infrastructure operators in Central & Eastern Europe (in finance and other industries). Organize cybersecurity workshops in Central & Eastern Europe.”

SIMAVI attended several standardization events in the last year of the project:

- 1) PANTERA & SUPEERA joint workshop: “Boosting the R & I activity on Smart Grid Technologies” on demand, held in Split and Bol (island of Brac), Croatia, on September 8–11, 2021.
- 2) “Biobío Energía 2021”, the energy sector forum in Latin America, held from Chile by streaming on October 19, 2021.
- 3) “The Role of Standardization for Fostering the Digitalization of the Electricity Grid” in Brussels, Belgium on November 3, 2021
- 4) “Cybersecurity Standardisation Conference 2022” held in Brussels, Belgium on March 15, 2022.

Moreover, SIMAVI was attending the 2nd International Workshop on Cyber-Physical Security for Critical Infrastructure Protection (CPS4CIP 2021), collocated with the 26th European Symposium on Research in Computer Security (ESORICS) 2021 and held online on October 04–08, 2021

The purpose of SIMAVI's participation in the 2nd ESCI-workshop CyberKit4SME Synergy was to create a collaborative environment across similar EU initiatives, such as Energy Shield, Geiger, Curex, Protego, PLANTIR, TRAPEZE, and AI4HealthSEC, to find methods to incorporate the outcomes of other projects into CyberKit4SME while also providing great potential to expand the project's impact under the understanding of cyber security in SMEs and MEs' design.

Preliminary results of EnergyShield project were presented on 27 of April at the 2nd ECSCI Workshop on Critical Infrastructure Protection CIP. The focus of the presentation was on how stakeholders could shield the power grid from cyberattacks. EnergyShield project the tools and pilots were introduced and policy contributions were shared alongside with some lessons learned and ways to reach out the project.

EnergyShield's primary achievements were presented at the "Trends in Managing Current Security and Predictive Maintenance Challenges in Smart Energy Grids in Romania" workshop on April 29, 2022. The workshop was arranged by the Bucharest Electrical Engineering Faculty (www.electro.upb.ro) and various companies.

Results of EnergyShield project were shared by SIMAVI between the 14th and 16th of June, the event Critical Infrastructure Protection & Resilience Europe 2022 at the Parliament Palace in Bucharest.

In addition, SIMAVI was in charge of organising the concluding event, which was titled "Building upon cyber resilience in the energy sector" and invited representatives from the relevant industry. The event was attended by close to one hundred people.

Table 3. Quantitative analysis SIMAVI

Category	Promised	Realized		
		M12	M24	M36
Dissemination at national events	Not specified	0	0	1
Present project to critical infrastructure operators	Not specified	0	1	2
Cybersecurity workshops	Not specified	1	1	2
Present at cybersecurity conferences	Not specified	-	-	1
Write whitepaper	Not specified	-	-	1
Present at conferences	Not specified	-	-	4

3.7.2 PSI

PSI promised to "participate in minimum 2 university seminars related to the energy sector. Present and publish white papers in the yearly User Group Meeting for PSI

Network Manager users that normally is attended by representatives from approximately 40-50 TSO/DSOs. Arrange the session/seminar all to be open for any TSO”.

The Federal Ministry of Education and Research organized the BMBF Innovation Forum “Civil Security” on May 3rd and 4th, 2022, in Berlin, Germany, where PSI participated. The two-day conference has the motto “Prepared for Tomorrow: Shaping the Future of Civil Security”. Session 6: Security research as a tool to protect critical infrastructures in Europe: This session was showing what contribution European security research can make to the resilience of critical infrastructures (KRITIS). Protection against natural hazards as well as man-made threats must be addressed. The aim was to discuss with experts what contribution civil security research can make to the European CER Directive, how the interactions between physical and cyber threats can be researched, and what the special features are for the successful transfer of results in the field of KRITIS. Additionally, Matthias Rohr presented EnergyShield at a panel on critical infrastructure security. The event was full of researchers and standardizers.

On 2022-06-07, Dr.-Ing. Ulf Häger will lecture on “Smart Grids” at the Technical University of Dortmund. Furthermore, Matthias Rohr will discuss smart grids and EnergyShield. In 2020 and 2021, similar events were part of TU Dortmund’s smart grid course.

Table 4. Quantitative analysis PSI

Category	Promised	Realized		
		M12	M24	M36
Participate in university seminars	2	0	2	2
Present white papers in user group meeting	3	0	1	-
Present at cybersecurity conferences	Not specified	-	-	1

3.7.3 SIGA

SIGA promised to “present the project results (anomaly detection) to at least 3 cybersecurity conferences. Publish articles in at least three relevant industry magazines.”

Table 5. Quantitative analysis SIGA

Category	Promised	Realized		
		M12	M24	M36
Present at cybersecurity conferences	3	2	0	-
Publish in relevant industry magazines	3	0	0	-
Write whitepaper	Not specified	-	-	1

3.7.4 FOR

FOR promised to “present project results (vulnerability assessment) at least 3 cybersecurity conferences. Publish articles in at least three relevant industry magazines.”

Table 6. Quantitative Analysis FOR

Category	Promised	Realized		
		M12	M24	M36
Present at cybersecurity conferences	3	0	0	-
Publish in relevant industry magazines	3	0	0	-
Write whitepaper	Not specified	-	-	1

3.7.5 L7D

L7D promised to “present project results to the EPES sector in Israel and Luxembourg (where L7D just opened an office).”

Table 7. Quantitative Analysis L7D

Category	Promised	Realized		
		M12	M24	M36
Present to the EPES sector	Not specified	0	1	-
Release whitepaper	Not specified	-	-	1

3.7.6 TEC

TEC promised to “present at industry forums and write a white paper which can help the prospective customers to understand the novelty of the homomorphic encryption methods.”

Table 8. Quantitative Analysis TEC

Category	Promised	Realized		
		M12	M24	M36
Present at industry forums	Not specified	0	0	-
Release whitepaper	1	0	0	1

3.7.7 KT

KT promised to “participate in relevant infosec conference such as InfoSecurity Europe, Cybersecurity for Industrial Environments and Critical Infrastructures, Cybersecurity for Critical National Infrastructure (CNI) Symposium.”

A presentation on KT’s SIEM Solution for critical infrastructures was made during the virtual 2nd ECSCI workshop (European Cluster for Securing Critical Infrastructures), which took place on April 27-29, 2022.

Moreover, Konnekt-able Technologies Ltd. participated in the International Conference on Cyber Security and Resilience, which took place in Rhodes, Greece between July 26–28, 2021. During the conference, KT presented a paper about EnergyShield’s SIEM Tool, part of the EnergyShield solution toolkit.

Table 9. Quantitative Analysis TEC

Category	Promised	Realized		
		M12	M24	M36
Participate in infosec conference	Not specified	1	0	1
Participate in workshops	Not specified	0	0	1
Release whitepaper	Not specified	0	0	1
Publish journal articles	Not specified	0	0	1

3.7.8 CITY

CITY promised to “present the project findings at minimum 3 conferences. Publish at least 3 peer-reviewed articles in open access journals. Include the project outcome into our MSc Cyber Security and MSc Internet of Things programmes.”

Due to the industrial collaboration with L7Defence and the sensitive nature of some of the smart meter data involved, CITY was also limited to publishing much of the work in open-source journals.

In addition, smart grid-based MEng projects and MSc projects have been taken by CITY Electrical Engineering, Energy Engineering, and Cyber Security students in the last 2 years, whereby they have worked with the research fellows. Students have also secured jobs in SCADA security and Smart Grid security companies as an outcome of this teaching collaboration.

Table 10. Quantitative Analysis CITY

Category	Promised	Realized		
		M12	M24	M36
Present at conferences	3	3	0	0
Publish journal articles	3	0	0	2
Book Chapter	Not specified	1	0	0
Include outcomes into teaching programmes	Not specified	0	0	0

3.7.9 KTH

KTH promised to “publish 2 international conference or workshop papers per year. Publish at least 3 peer-reviewed articles in open access journals. Involve at least 1 PhD student and possibly one post-doc in the project. Present results at various local (non-academic) forums such as Dataföreningen, IVA and at academic conferences and workshop”.

According to the results of a seminar titled “Security Assessment of Connected Devices,” the following conclusions were reached: The number of connected devices is rapidly increasing, and this trend is projected to continue. There has been a big rise in the use of smart devices since 2017, and it is expected that by 2025, they will be much more common. Additionally, because of recent hacks that resulted in device damage, stakeholders have become motivated to assist. In this regard, a framework denominated “PatrIoT” was developed by Emre Süren, Johannes Olegård, Fredrik Heiding, and Robert Lagerström at KTH Royal Institute of Technology. The “PatrIoT” framework consists of four steps: planning, threat modelling, exploiting, and reporting. To validate the proposed framework, the project involved hacking a connected house, which was carried out by undergraduate and graduate students under the supervision of PhD students, postdocs, and professors. The test was conducted on 22 devices, and the results revealed critical vulnerabilities (9.8/10 in NVD) and the publication of 17 new CVEs.

The Energy Shield project’s personnel Ismail Bütün presented the project entitled “Integrated Cybersecurity Solution for the Vulnerability Assessment, Monitoring, and Protection of Critical Energy Infrastructures” at the SCADA event held on September 13–14, 2021, where the most relevant information regarding the Energy Shield project was presented, as well as the project's overall goals and objectives; see Figure 19. EnergyShield captures the needs of electrical power and energy system (EPES) operators and combines the latest technologies for vulnerability assessment, supervision, and protection to draft a defensive toolkit.

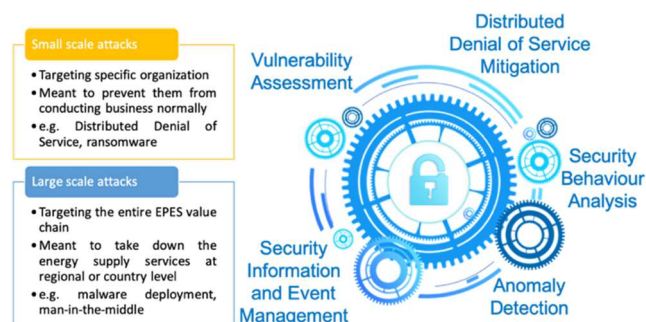


Figure 19. Energy Shield toolkit.

KTH published several scientific conference papers. Moreover, three more manuscripts were submitted:

- Security Considerations for Remote Terminal Units, IEEE Zooming In-novation in Consumer Electronics International Conference 2022 (ZINC 2022), May 2022, (Presented).
- Towards Smart Sensing Systems: A New Approach to Environmental Monitoring Systems by Using LoRaWAN, IEEE Zooming Innovation in Consumer Electronics International Conference 2022 (ZINC 2022), May 2022, (Presented).
- Securing Communication and Identifying Threats in RTUs: A Vulnerability Analysis, the 17th International Conference on Availability, Reliability and Security (ARES 2022), Aug 2022, (currently undergoing review).

Table 11. Quantitative Analysis KTH

Category	Promised	Realized		
		M12	M24	M36
Present at conferences	6	1	5	4
Publish journal articles	3	0	3	1
Involve PhD student	1	2	2	2
Present at local forums	Not specified	4	4	0
Participate in infosec conference	1	-	-	1
Book Chapters	Not specified	-	-	1

3.7.10 NTUA

NTUA promised to “disseminate the project results through at least 4 presentations to selected international workshops, conferences, symposia, or exhibitions (at least 5 during the lifecycle of the project). Publish at least 3 peer-reviewed articles in open access journals.”

NTUA has been invited to participate in research on insider threats conducted on behalf of the UK Government. Specific research examines the existing indicators and frameworks that have been developed to understand and predict insider threat activities.

CyberSecurity Culture Framework and Security Behaviour Analysis Tool, developed in the context of the EnergyShield project, meeting the criteria of this endeavor, were discussed in detail in an hour interview. Our approach and focus on the human-related cyber-security factors, as presented in our various scientific publications, were analysed and our findings from the numerous CSC framework applications were presented.

We shall be looking forward to the official presentation of the overall research results!

NTUA published several scientific articles. Moreover, two more manuscripts submitted in journals (currently undergoing review):

- Georgiadou, A., Michalitsi-Psarrou, A. and Askounis, D. Cyber-Security Culture Assessment in Academia: A COVID-19 Study
- Georgiadou, A., Michalitsi-Psarrou, A. and Askounis, D. A Cyber-Security Culture Evaluation in the Energy Sector

Table 12. Quantitative Analysis NTUA

Category	Promised	Realized		
		M12	M24	M36
Present at conferences	5	1	1	2
Publish journal articles	3	0	5	2
Involve PhD student	Not specified	-	-	4
Participate in infosec conference	Not specified	-	-	1
Release whitepaper	Not specified	-	-	2
Present to the EPES sector	Not specified	-	-	1
Cybersecurity workshops	Not specified	-	-	2
Present project to critical infrastructure operators	Not specified	-	-	1

3.7.11 SC

SC promised to “present the project results in several national and international smart grid conferences, as well as publish articles in at least 3 relevant industry magazines.”

Table 13. Quantitative Analysis SC

Category	Promised	Realized		
		M12	M24	M36
Present at conferences	Not specified	1	0	-
Publish magazine articles	3	0	0	-
Release whitepaper	Not specified	-	-	1

3.7.12 BULGARIAN PARTNERS

VETS, CoTTP, ESO, CEZ, MIG, and DIL promised to “communicate project progress in at least 3 internal presentations and at least 3 external conferences in the energy sector and/or innovation fields. Work with ENTSO-E to disseminate the project results to other European TSOs.”

Table 14. Quantitative Analysis Bulgarian Partners

Category	Promised	Realized		
		M12	M24	M36
Present at internally	3	0	0	-
Present externally	3	1	0	-
Collaborate with ENTSO-E	Not specified	0	0	-

3.7.13 IREN

IREN promised to “Communicate project progress in at least 3 internal presentations and at least 3 external conferences in the utility and/or innovation fields.”

Table 15. Quantitative Analysis IREN

Category	Promised	Realized		
		M12	M24	M36
Present at internally	3	0	0	-
Present externally	3	0	0	-
Release whitepaper	Not specified	-	-	1

4 CONCLUSION

The dissemination methods chosen were adequate for the EnergyShield project, and ongoing progress in terms of KPIs was recorded. The performance of KPIs varies depending on the channel of dissemination.

The adaptability of social media platforms such as Twitter has supported consortium partners' efforts by enhancing the visibility of the EnergyShield project and by providing the project with information about relevant online activities.

The project website was used as proxy for all the dissemination activities attended or organized, while also shared via social media channels: Twitter and LinkedIn. By always referring back to the website for details the number of visitors and newsletter subscribers increased constantly.

The COVID-19 pandemic compelled changes in the dissemination approach since the presence of major events became difficult in the first year and persisted in the second. To ensure continued project dissemination, dissemination materials have been published on the EnergyShield website and are being circulated via social media channels. In addition, consortium participants are invited to participate in and organize digital events to disseminate information about the project's accomplishments.

5 REFERENCES

- [ESD21]** EnergyShield Consortium, (2021), D7.10 Dissemination Report v2
- [ESC21]** EnergyShield Consortium, (2021), D7.9 Communication Report v2
- [ESD20]** EnergyShield Consortium, (2020), D7.5 Dissemination Report v1
- [ESH19]** EnergyShield Consortium, (2019), D7.4 Dissemination Plan
- [ESH20]** EnergyShield Consortium, (2020), D7.2 Communication Report v1

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