



ENERGY SHIELD

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

INNOVATION ACTION

H2020 Grant Agreement Number: 832907

W7 COMMUNICATION, DISSEMINATION & ECOSYSTEM DEVELOPMENT

D7.10 – DELIVERABLE – DISSEMINATION REPORT V2

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EXECUTIVE SUMMARY

This report provides a quantitative analysis of the impact of the communication and dissemination activities performed by EnergyShield consortium members during the second 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.

During the first year, the COVID-19 pandemic has forced switching to an exclusive online presence and sharing all related materials via online tools. Unfortunately, the pandemic continued in the second year. Consequently, we were forced to stick to online communication only.

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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	Bulgarian Electricity System Operator EAD
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
RP2	Second Reporting Period (July 2020 – June 2021)
SC	Software Company Limited
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 the 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 second 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 the 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.

D7.10 takes over and updated the dissemination strategy proposed in D7.4 [ESH19] and reported in D7.5 [ESD20], and provides an analysis of the EnergyShield KPIs at the end of the 2nd 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.

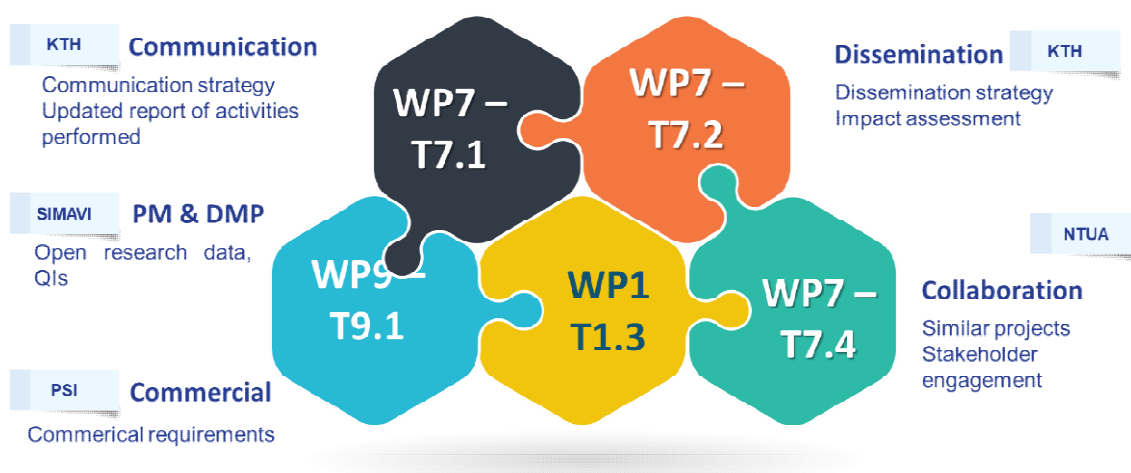


Figure 1. Dependencies of dissemination tasks

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].

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 the 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 utilizing surveys defined via ECAS (European Citizen Action Service) tool. A four-step dissemination process flow is proposed and presented in Figure 2, below.

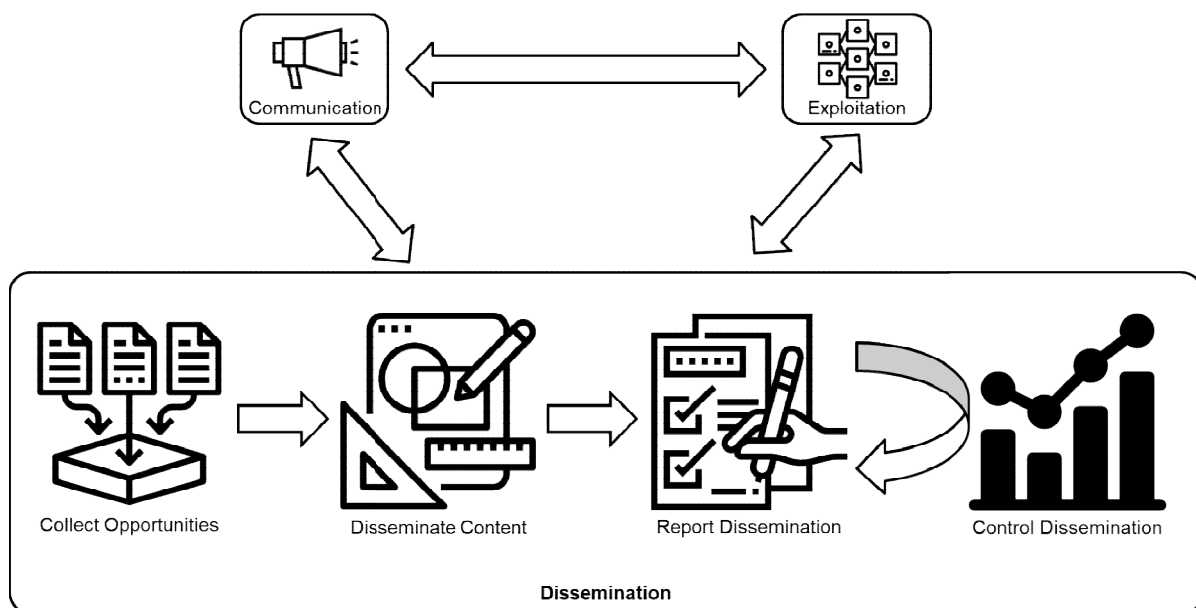


Figure 2. Dissemination process flow

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. Secondly, each partner is encouraged to disseminate created content of the project and if possible, to collaborate with other partners in the project. Thirdly, the partners report the conducted dissemination activities at a central place. This allows monitoring of the actual activities and of the identified opportunities for dissemination.

The **selected means of dissemination** are established for the EnergyShield project and a 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 the EnergyShield project and fed the project with information about relevant online events. On the other end, the number of users subscribing to our project newsletter has been very low during the first year but improved during the second year. We managed to nearly quadruple the number of subscriptions, but compared to the target, we are behind our initial plans. To further increase the number of subscriptions, we now ask participants of all our events if they like to receive our newsletter.

COVID-19 pandemic has forced adjustments in the dissemination strategy as the presence of large events became impossible. This means that printout materials are no longer relevant in EnergyShield dissemination plan. To continue ensuring the dissemination of the project, the dissemination materials have been shared via EnergyShield webpage and distributed via social media channels. Furthermore, Consortium partners are encouraged to attend and initiate digital events to share information about the project achievements. Moreover, we identified possible collaboration opportunities with other projects.

3. OVERALL QUANTITATIVE ANALYSIS

This section provides a quantitative analysis of the impact of the dissemination and communication activities performed during the first two years 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 the progress registered at the end of M24.

Table 1. Communication and collaboration KPIs break down per year

Tool	Indicator(s)	M12 (PLAN)	M24 (PLAN)	M24 (Actual)	M36 (PLAN)
EnergyShield website	Number of unique visits	> 2,000	> 5,000	1745	> 10,000
	Number of external references of the website	> 10	> 25	224	> 50
	Number of days that pass without an update	< 30 days		11,6	< 30 days
EnergyShield brochure	Number of brochures created	500	1,000	50	2,000
	Request for additional project information generated by the brochure	> 40	> 100	0	> 200
Social Media Campaign	Views per promoted post	> 1,500		673	> 1,500
	Number of followers	> 100	> 250	314	> 500
	Number of tweets	> 30	> 65	332	> 100
Newsletter	Number of newsletters created	> 3	> 7	6	> 10
	Number of readers who	> 200	> 500	77	> 1,000

	received the newsletter through mail				
	Number of downloads of newsletter from web site	> 60	> 150	106	> 300
Articles	Number of generalist articles published	> 7	> 15	5	> 30
	# Published articles (Scientific)	>2	>5	19	>9
Press relations	Number of press releases issues	> 1	> 3	3	> 5
	Number of press clippings per press release	> 6	> 15	3,6	> 30
LinkedIn Groups	No of members	>20	>50	61	>100

To improve the performance and the impact, measures have been drafted for all the channels of distribution. As Twitter has proven an important vector of dissemination, 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 M24 are presented.

3.2. ENERGYSHIELD WEBSITE

3.2.1. UNIQUE VISITS

The number of unique visitors accessing our website still 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, the attractiveness of the website needs to be improved.



Figure 3. Progress of the number of unique visitors

During the current reporting period, SEO of the website was improved, and more meaningful content was added to the website. Also, all partners were asked to provide a description of their organization and how they contribute to the project. A special section for our sister projects was added and the Consortium partners started to provide more concrete insights into the used tools and continuously announced the activities around the project.

In the upcoming period, these efforts will be continued, and providing further insights into the project will be prioritized. For example, a dedicated area will be added to the webpage to provide an overview of all joint activities such as the participation in clusters related to Horizon 2020.

As the project steps into the last phase of implementation and results will be showcased, expectations are that the interest in our website will increase and become more attractive for practitioners. Additionally, a positive effect of communicating the outcomes of our first demonstrators (tools and toolkit) is expected. However, reaching the planned number of visitors by the end of the project is still challenging.

3.2.2. EXTERNAL REFERENCES

The number of external references to the EnergyShield website outnumbers the expectations. A boost was recognized when making the first press release, while later the number of external references decreased slowly, but keeping up the planned numbers. A possible explanation could be the re-publication of the first press release at different websites and, thus, leading to fewer incoming references.

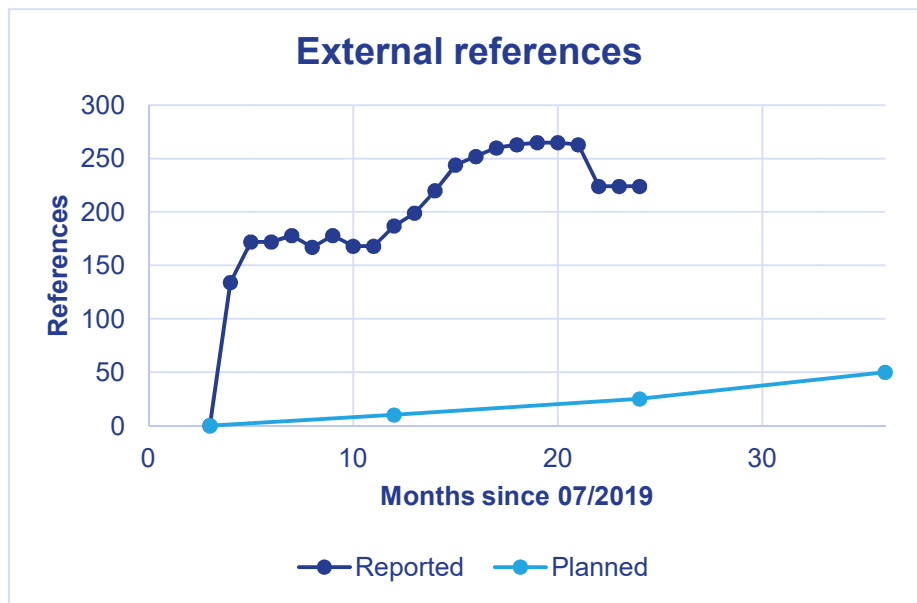


Figure 4. Progress of number of externals

As the number of external references on Twitter is far beyond the planned thresholds, for the last reporting period EnergyShield will focus on tracking that these numbers will stay on the same high level as it is now.

3.2.3. UPDATE FREQUENCY

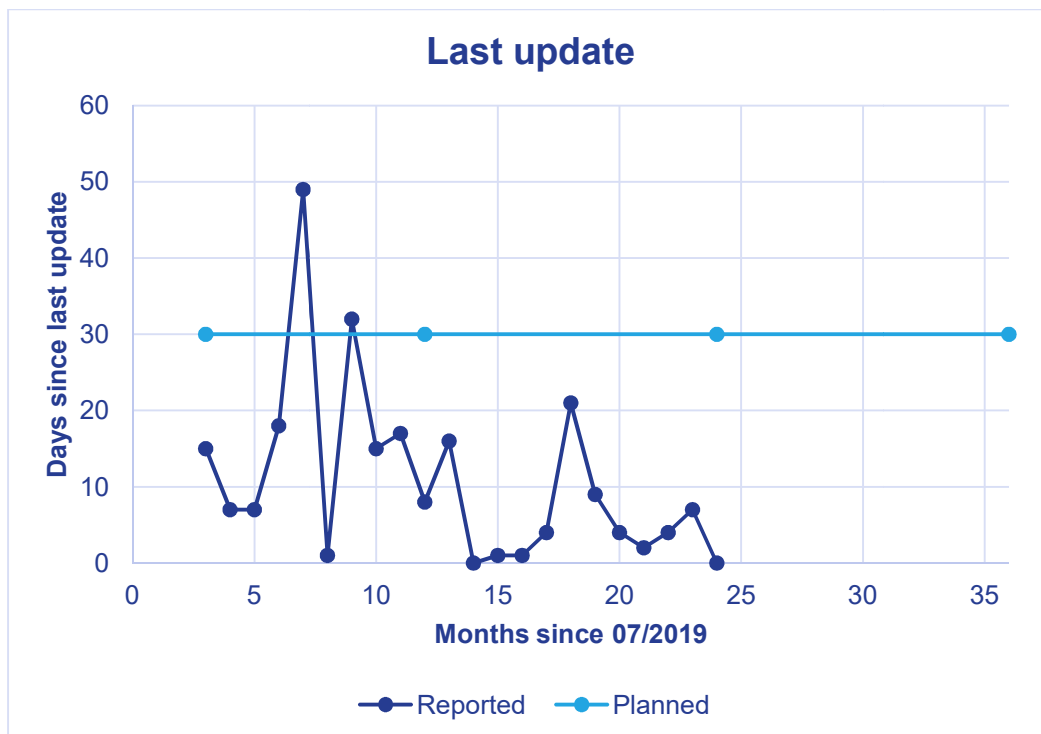


Figure 5. Progress of update frequency

The content on the website was updated at least once a month with an exception during winter holidays in the first period. The medium update frequency is 11.8 days, better than planned (once a month). During the last period, Consortium partners continuously provided content to be published on the website, even several times per month in some cases. All project-related events have a dedicated article on the website and expectations are that the number of articles communicating results will increase as the demonstrators will be released.

3.2.4. CREATED BROCHURES

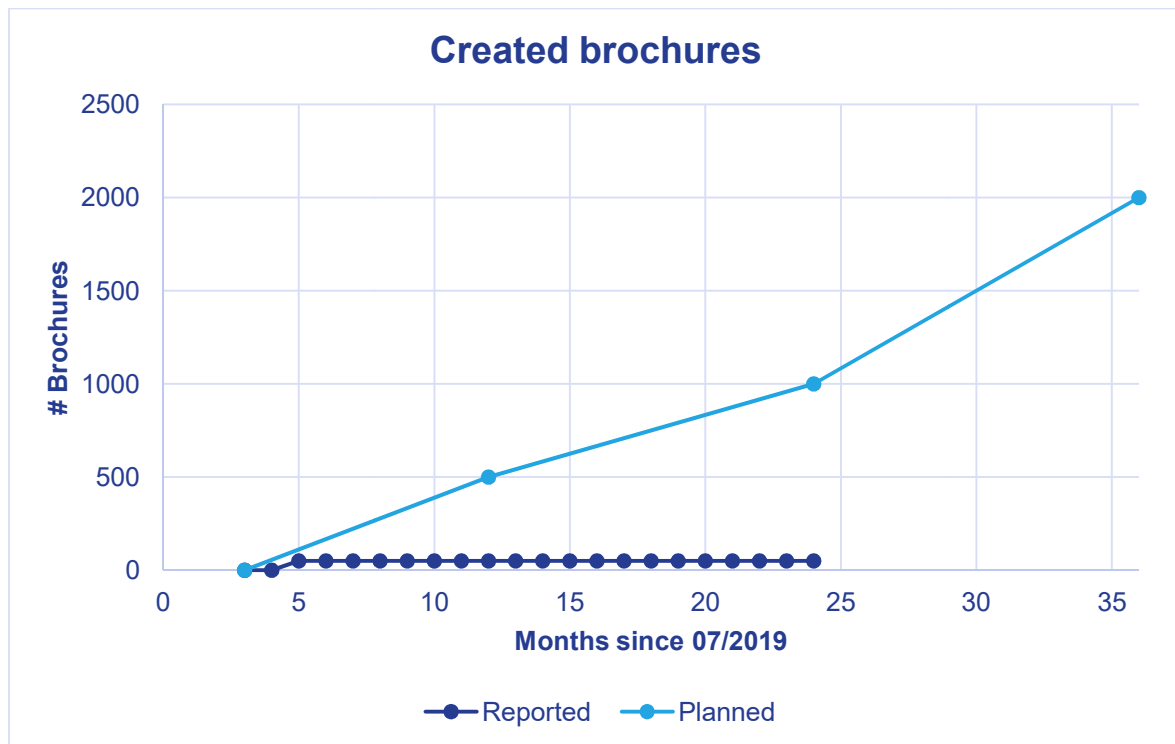


Figure 6. Progress of printouts

Creating and distributed printed brochures events with large participation was provisioned and considered an opportunity to disseminate information about the project. A total of 50 brochures were printed and distributed in 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 (workshop, webinars, conferences, etc.), while also publishing it on the website and sharing it via social media channels.

3.2.5. REQUESTED ADDITIONAL INFORMATION

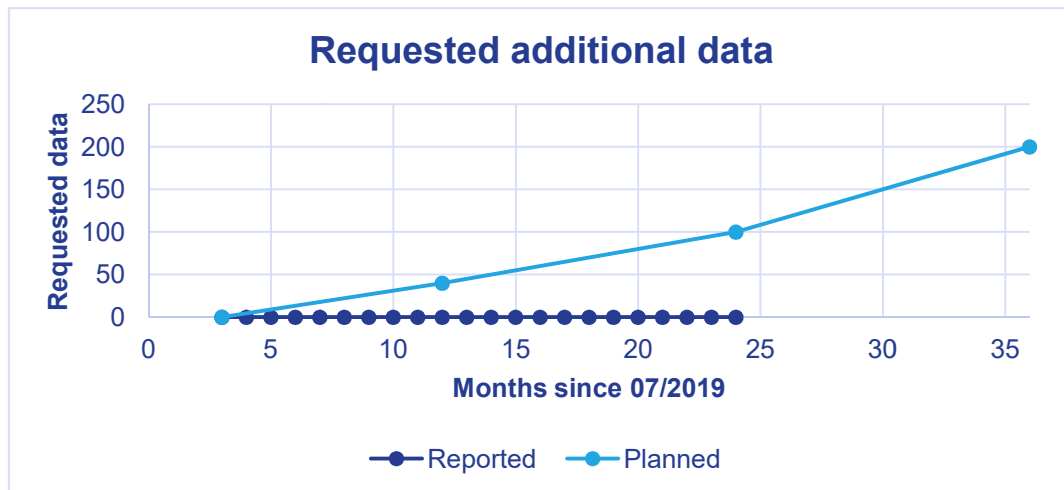


Figure 7. Progress of requested additional information

This KPI is difficult to track as it is difficult to determine if someone e.g., visited our website because of seeing our brochure or due to other reasons. This KPI is still on the list in case pandemic limitations will come to a closure and large events with the physical audience will be again possible.

3.3. SOCIAL MEDIA CAMPAIGN

3.3.1. VIEWS PER POST

Twitter is one of the dissemination channels that led EnergyShield to great achievements during the first reporting periods.

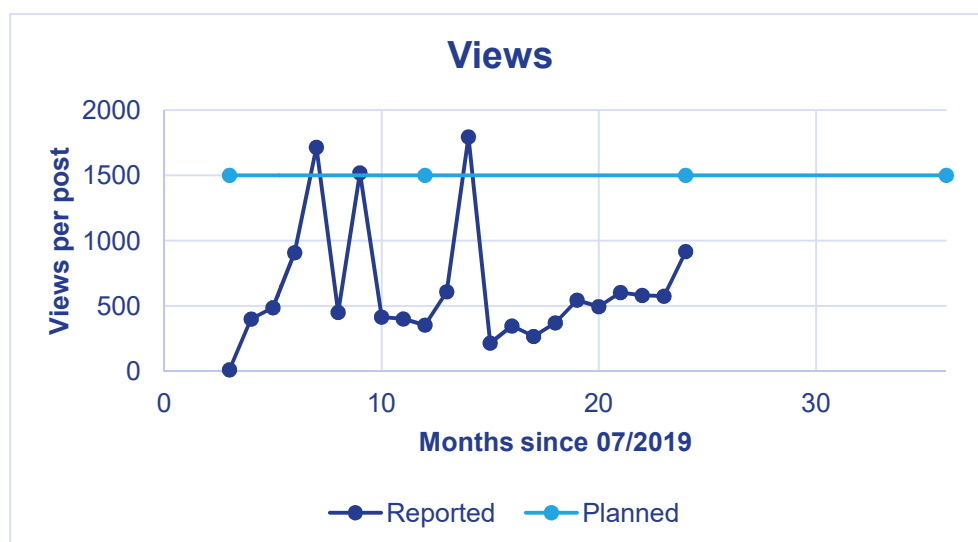


Figure 8. Progress of views per Tweet

To reach 1,500 views per Tweet is quite challenging, especially when you start with nearly no followers. However, this target was reached three times so far. The continuous increase of followers led to the fact that the average reach out of EnergyShield posts is meanwhile at 600 viewers per tweet.

During the last reporting period, the Consortium partners will try to improve this view rate and bringing it closer to the threshold of 1,500 views permanently.

3.3.2. FOLLOWERS

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

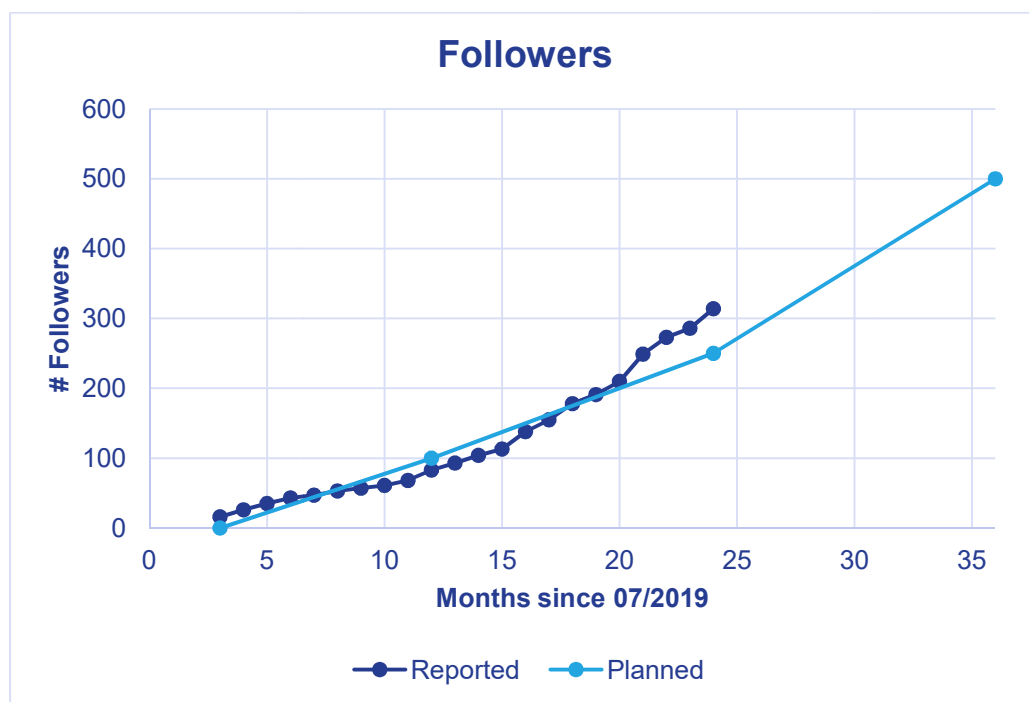


Figure 9. Progress of Twitter followers

The number of followers progresses in line with the provisioned targets and expectations are that during the last reporting period the current followers will attract more followers to EnergyShield and the target will be reached. Moreover, EnergyShield is part of various clusters including H2020 projects and support of co-organizing events with high impact and visibility and promotes these events via Twitter. Another thing that increased the number of followers refers to large H202 projects that have endorsed EnergyShield events (BRIDGE, CYBERWATCHING.EU, PANTERA, INTEGRIDY, and ECHO) alongside the number of messages distributed and re-distributed by consortium partners and other network participants.

3.3.3. NUMBER OF MESSAGES

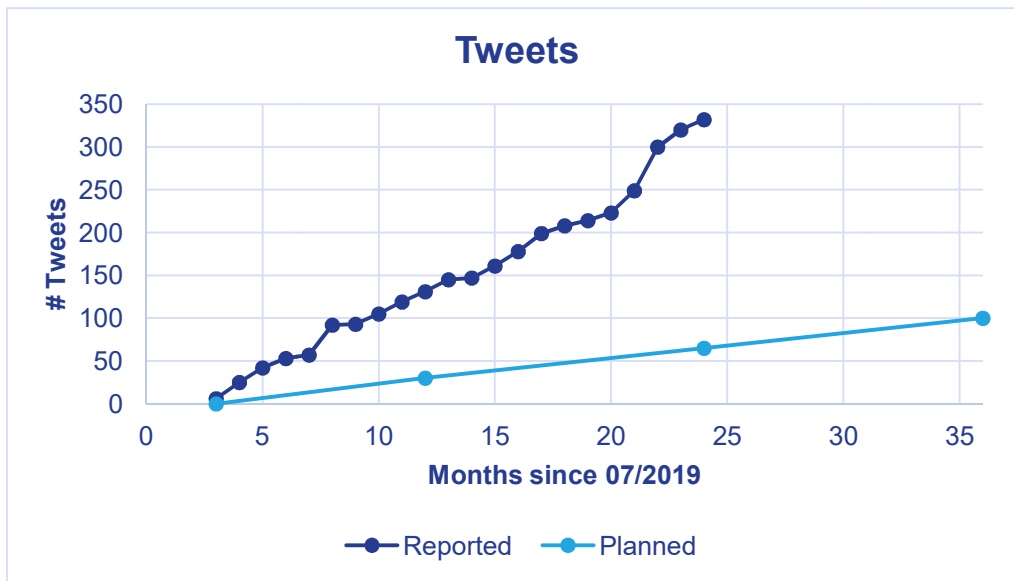


Figure 10. Progress of Tweets number

The number of tweets created is mostly 5-times higher than the set targets and the targets set for the end of the project have already been exceeded.

Disseminating via Twitter will continue to be the first option when disseminating project results as our channel already has a significant number of readers and a great number of projects and experts followed. Twitter is also a wonderful platform to get information about online events and get in touch with similar projects.

3.3.4. LINKEDIN MEMBERS



Figure 11. Progress of LinkedIn members

The number of members in our LinkedIn group is continuously growing and will hopefully increase fast simultaneously to the growing popularity of our project.

3.4. NEWSLETTER

3.4.1. CREATED NEWSLETTER



Figure 12. Number of created Newsletters

In the second year of project implementation, 4 newsletters were issued leading to a total of 8 sent newsletters.

3.4.2. READERS

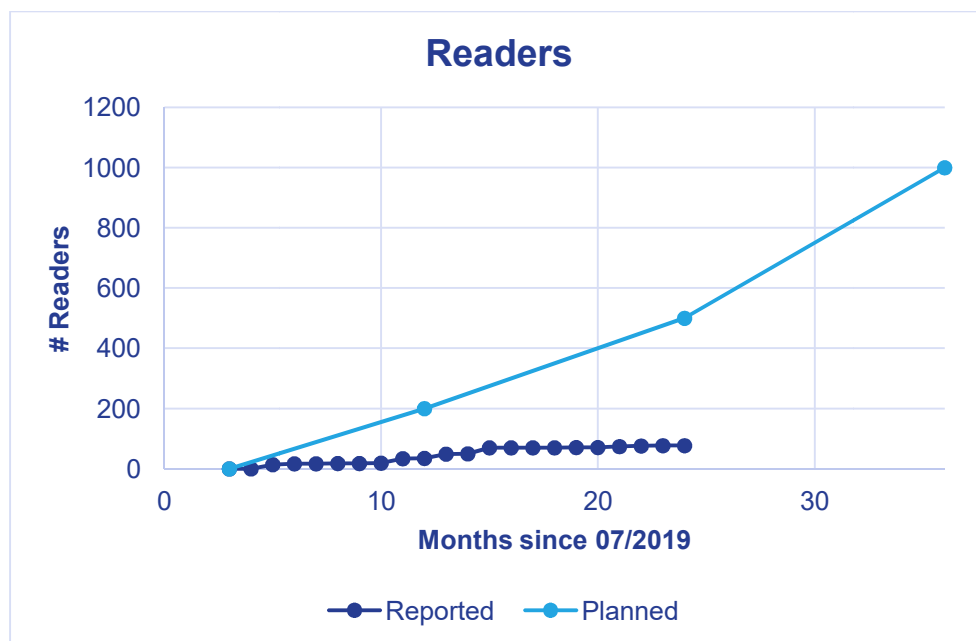


Figure 13. Number of newsletter readers

In the second period, EnergyShield issued 4 newsletters, mainly including content related to dissemination and collaboration activities. To increase the number of

readers, we exchanged with other projects our details and were encouraged to subscribe to the other's newsletter. Therefore, an increase in the number of subscriptions is expected. Reaching the planned threshold at the end of the project is challenging as the number might have been unrealistic and the newsletter seems not to be very popular anymore.

3.4.3. DOWNLOADS

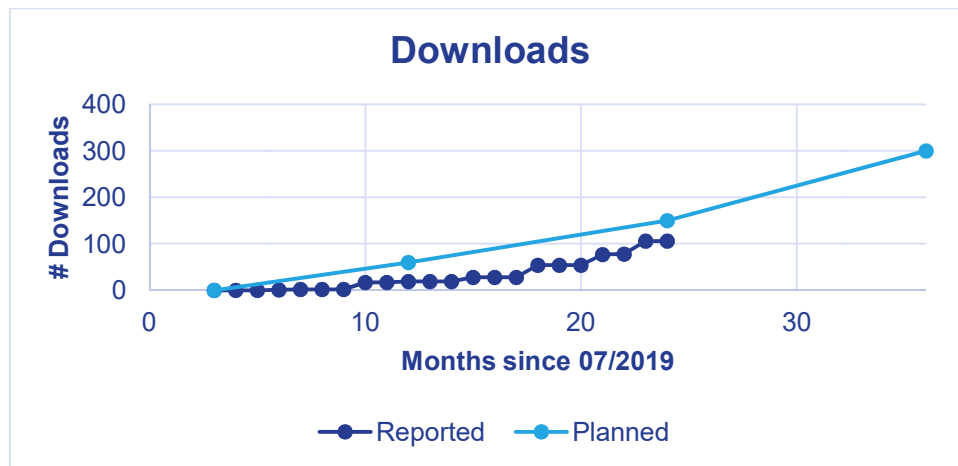


Figure 14. Number of newsletter downloads

The number of newsletter downloads is performing better than the number of readers. We recognized a significant growth of downloads after sending the latest newsletters and expectations are to reach the aimed threshold by the end of the project.

3.5. ARTICLES

3.5.1. SCIENTIFIC

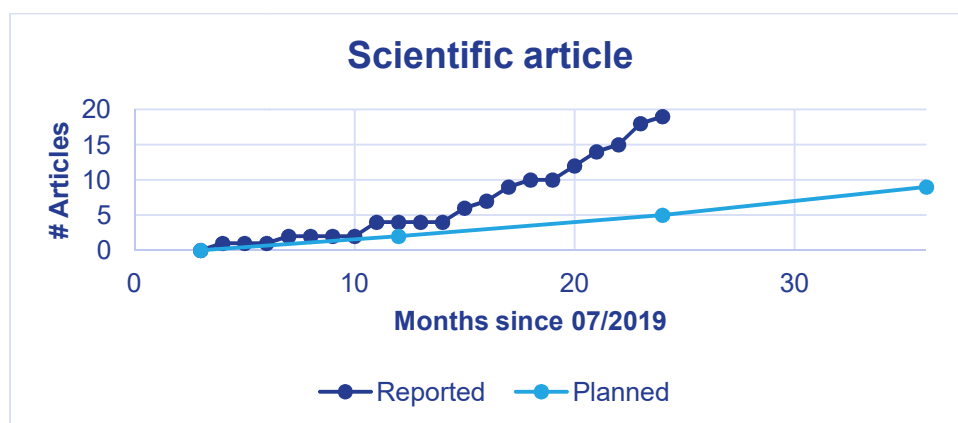


Figure 15. Number of scientific articles

During the first two years of implementation 19 peer-reviewed articles have been published and several more articles are in writing. Consequently, the aimed goal is already reached and will be further outperformed.

Table 2. EnergyShield publications in RP2

Year	Authors	Title	Venue
2020	Välja, Heiding, Lagerström, Franke	Automating threat modeling using an ontology framework	Cybersecurity, Springer Open, journal
2020	Ling, Lagerström, Ekstedt	A Systematic Literature Review of Information Sources for Threat Modeling in the Power Systems Domain	15th International Conference on Critical Information Infrastructures Security (CRITIS 2020)
2020	Georgiadou, Mouzakitis, Askounis	Towards Assessing Critical Infrastructures' Cyber-Security Culture during COVID-19 crisis: A Tailor-made Survey	4th International Conference on Networks and Security (NSEC2020)
2020	Georgiadou, Mouzakitis, Askounis, Bounas	A Cyber-Security Culture Framework for Assessing the Organization Readiness	Journal of Computer Information Systems
2020	Hacks, Katsikeas, Ling, Lagerström, Ekstedt	powerLang: a probabilistic attack simulation language for the power domain	Energy Informatics
2020	Katsikeas, Hacks, Johnson, Ekstedt, Lagerström, Jacobsson, Wällstedt, Eliasson	A probabilistic attack simulation language for the IT domain	Graphical Models for Security
2021	Georgiadou, Mouzakitis, Askounis	Designing a Cyber-security Culture Assessment Survey Targeting Critical Infrastructures During Covid-19 Crisis	The International Journal of Network Security and Its Applications (IJNSA)
2021	Loxdal, Andersson, Hacks, Lagerström	Why Phishing Works on Smartphones: A Preliminary Study	54th Hawaii International Conference on System Sciences
2021	Georgiadou, Mouzakitis, Askounis	Working from home during COVID-19 crisis: a cyber security culture assessment survey	Security Journal
2021	Hacks, Katsikeas	Towards an Ecosystem of Domain Specific Languages for Threat Modeling	33rd International Conference on Advanced Information

			Systems Engineering
2021	Hersén, Fögen	Hacks, Towards Measuring Test Coverage of Attack Simulations	Enterprise, Business-Process and Information Systems Modeling
2021	Xiong, Lagerström	Hacks, A Method for Assigning Probability Distributions in Attack Simulation Languages	Complex Systems Informatics and Modeling Quarterly
2021	Georgiadou, Mouzakis, Askounis	Detecting Insider Threat via a Cyber-Security Culture Framework	Journal of Computer Information Systems
2021	Georgiadou, Mouzakis, Askounis	Assessing MITRE ATT&CK Risk Using a Cyber-Security Culture Framework	Sensors
2021	Hacks, Butun, Lagerström, Buhaiu, Georgiadou, Michalitsi – Psarrou	Integrating Security Behavior into Attack Simulations	International Conference on Availability, Reliability and Security (ARES 2021)

3.5.2. GENERAL



Figure 16. Number of general articles

The number of general articles on our project is not developing as expected anymore. During the first year, the expected number of articles has been written, while during the second year, just one additional article was published. However, a considerable number of articles will be written in the upcoming phase as this KPI is driven by the industrial partners that will publish the outcomes of the demonstrations soon.

3.6. PRESS RELATIONS

3.6.1. CREATED PRESS RELEASES

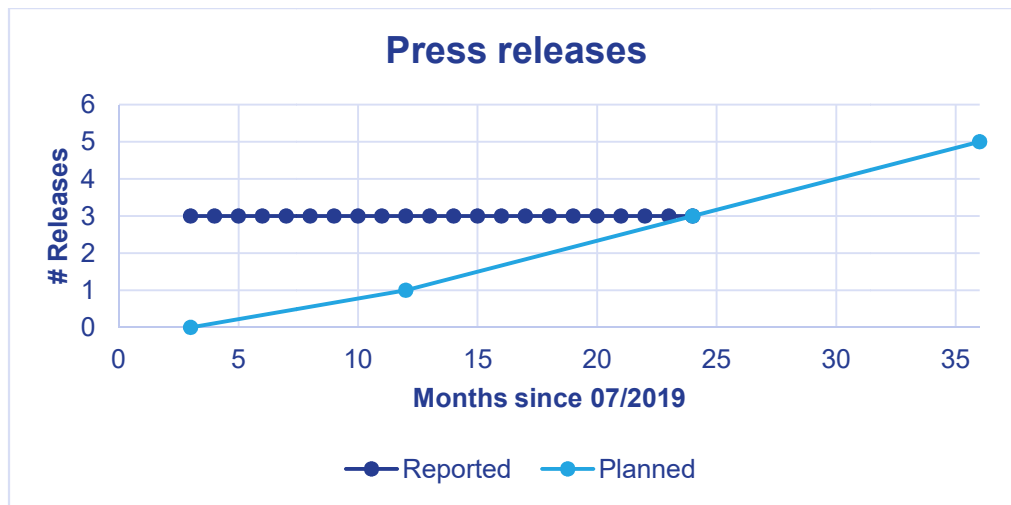


Figure 17. Number of press releases

This KPI is developing well and as expected. The next press release will be announced published in September to illustrate the outcomes of the demonstrations.

3.6.2. PRESS CLIPPINGS PER PRESS RELEASE

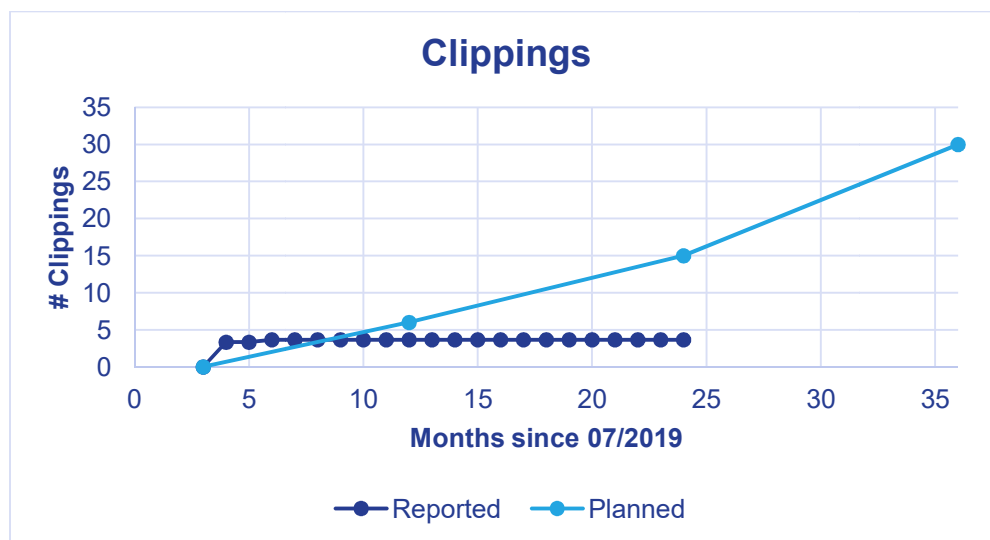


Figure 18. Progress of press clippings

The number of clippings is developing as expected. However, it will be challenging to achieve higher clipping rates as it is a demanding task to recognise all clippings.

3.7. CONSORTIUM PARTNERS INDIVIDUAL CONTRIBUTION

In this section, the activities provisioned in the GA are mapped against already performed by each consortium partner during the first two years of implementation.

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) and organize cybersecurity workshops in Central & Eastern Europe.”

Table 3. Quantitative analysis SIMAVI

Category	Promised	Realized		
		M12	M24	M36
Dissemination at national events	Not specified	0	0	
Present project to critical infrastructure operators	Not specified	0	2	
Cybersecurity workshops	Not specified	1	1	

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 that normally is attended by representatives from approximately 40-50 TSO/DSOs, and arrange the session/seminar all to be open for any TSO.

Table 4. Quantitative analysis PSI

Category	Promised	Realized		
		M12	M24	M36
Participate in university seminars	2	0	2	
Present white papers in user group meeting	3	0	1	

3.7.3. SIGA

SIGA promised to present the project results (anomaly detection) to at least three cybersecurity conferences and to 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	

3.7.4. FOR

FOR promised to present project results (vulnerability assessment) through at least 3 cybersecurity conferences and to 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	

3.7.5. L7D

L7D promised to present project results to the EPES sector in Israel.

Table 7. Quantitative Analysis L7D

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

3.7.6. TEC

TEC promised to present at industry forums and write a white paper that 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	
Write white paper	1	0	0	

3.7.7. KT

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

Table 9. Quantitative Analysis TEC

Category	Promised	Realized		
		M12	M24	M36
Participate in InfoSec conference	Not specified	1	0	

3.7.8. CITY

CITY promised to present the project findings at minimum 3 conferences, to publish at least 3 peer-reviewed articles in open access journals and to include the project outcome into MSc Cyber Security and MSc Internet of Things programmes.

Table 10. Quantitative Analysis CITY

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

3.7.9. KTH

KTH promised to publish 2 papers at international conferences or workshops per year. In order to publish at least 3 peer-reviewed articles in open access journals, involves at least 1 Ph.D. student and possibly one post-doc in the project and present results at various local (non-academic) forums such as Dataföreningen, IVA, and at academic conferences and workshops.

Table 11. Quantitative Analysis KTH

Category	Promised	Realized		
		M12	M24	M36
Present at conferences	6	1	5	
Publish journal articles	3	0	3	
Involve PhD student	1	2	2	
Present at local forums	Not specified	4	4	

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) and to publish at least 3 peer-reviewed articles in open access journals.

Table 12. Quantitative Analysis NTUA

Category	Promised	Realized		
		M12	M24	M36
Present at conferences	5	1	1	
Publish journal articles	3	0	5	

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	

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	1	
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	

4. CONCLUSION

The **selected means of dissemination** are appropriate 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 the EnergyShield project and fed the project with information about relevant online events.

To improve the number of subscribers, we shared our details with other H2020 projects and encouraged them to subscribe to the EnergyShield newsletter and to follow the project on social networks.

COVID-19 pandemic has forced adjustments in the dissemination strategy as the presence of large events became impossible in the first year while in the second year of implementation (RP2) large events were organized online and facilitated the access of multiple consortium partners.

To continue ensuring the dissemination of the project, the dissemination materials have been shared via the EnergyShield webpage and distributed via social media channels. Furthermore, consortium partners are encouraged to attend and initiate digital events to share information about the project's achievements. Two workshops were organized during the current period (RP2) and a large number of webinars initiated by similar projects or clusters were attended by consortium partners.

During the last phase of project implementation, the EnergyShield consortium plans to increase project visibility, benefitting from collaboration with other projects, and extending the stakeholders' network.

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