



# V2Market Exploitation Plan

D8.1

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# Deliverable

PROJECT ACRONYM	GRANT AGREEMENT #	PROJECT TITLE
V2Market	101033686	V2Market

## DELIVERABLE REFERENCE NUMBER AND TITLE

### D8.1

**Exploitation plan for the uptake of V2Market at European level, including a record of activities related to exploitation performed in the period**

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## DISSEMINATION LEVEL

- ✓ **P** **Public**
- C** Confidential, only for members of the consortium and the Commission Services

# Version History

REVISION	DATE	AUTHOR	ORG	DESCRIPTION
V1	22/04/2024	Quentin Donnette Andres Pinto-Bello	smartEn	First Draft
V1.1	29/04/2024	Clara Ferrer Gabarro, Joana Mundo Olive	ECO	Review of the Deliverable
V2	08/05/2024	Quentin Donnette Andres Pinto-Bello	smartEn	Final Draft
Final version	08/05/2024	Joana Mundó Clara Ferrer	ECO	Final review and final version

## Statement of Originality

This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.

# Executive Summary

The following report describes the actions the V2Market Project Partners expect to undertake, and the exploitation strategy developed as part of the activities of exploitation for the uptake of vehicle-to-grid markets at European level. This first edition of the Exploitation plan entails the initial plan for exploitation with the results available at the time of writing. By the end of the project, an updated version of this report will be elaborated and shared through the project website. For its last version, a Joint Ownership Agreement will be agreed upon by Project Partners for the successful market implementation of services developed through V2Market. Moreover, the exploitation plan will be added with the inputs of the report on distribution property and user right.

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## List of Acronyms

Acronym	Description
D	Deliverable
DC	Direct Current
DER	Distributed Energy Resources
DNO	Distribution Network Operator
DSO	Distribution System Operator
EE	Energy Efficiency
EPC	Energy Performance Contract
ESCO	Energy Service Company
EU	European Union
EV	Electric Vehicle
ICT	Information and Communication Technology
M&V	Measurement and Verification
NVP	Net Present Value
OTC	Community Transition Offices
RES	Renewable Energy Source
SECAP	Sustainable Energy and Climate Action Plans
TCO	Total Cost of Ownership
TSO	Transmission System Operator
V2B	Vehicle-to-Building
V2G	Vehicle-to-Grid

V2H	Vehicle-to-Home
V2M	Vehicle-to-Market

# 1. Introduction

The report Exploitation plan for the uptake of V2Market at European level describes the methodology used to create the analytical framework of the task and specifies the initial targeted actions for the exploitation of V2Market outputs after the project completion. The Exploitation plan will be used as a basis for the drafting of the report *Signed ownership agreement* of the V2Market outputs.

The present document provides a vision on the different categories of outputs created within V2Market and further explains the exploitation strategy considered per output/Key Exploitable Result. A last part compiles the exploitation actions considered per identified category to create more synergies in actions considered for V2Market partners. Exploitation actions are considered for the partners of V2Market as well as stakeholders of the energy sector, policymakers, and other European projects actors to make further use of the developed outputs.

## 1.1 Audience of the report

As a public report, this report can address a large range of audience. Specific targeted audience were considered while designing the document. The targeted audience include:

- Policymakers at European, national, and local level:

V2Market analyses the potential of V2G/V2B/V2H. V2Market aims at creating financial and contractual frameworks ensuring the sustainable uptake of V2G/V2B/V2H and providing key data on the economic viability of these services. However, the regulation framing V2G/V2B/V2H is still missing at Member States level. This deliverable will specify actions considered to make V2Market results known to policymakers to place higher on the political agenda the topic of V2G/V2B/V2H.

- Stakeholders and civil society interested in V2G/V2B

As the exploitation plan is publicly available, any stakeholder interested in the V2G/V2B topic will be able to access information.

- The European Commission services:

The document acts as a guideline for the reporting to the Commission's services on the exploitation strategy considered after the completion of V2Market.

- Project Partners involved in V2Market:

The exploitation plan acts as single access point to have access to the partner's exploitation strategies and targeted actions.

- Other European-funded projects

Actors involved in projects related to electromobility or the development of smart cities could have an interest in V2Market outputs. This report highlights developments made by the project, as well as the accessibility of the associated reports and guidelines. The work completed within V2Market could serve as a foundation for various other projects.

## 1.2 Link with other outputs and reports

The drafting of this Exploitation plan, formalising the exploitation of V2Market outputs was based on previous work done by the consortium. It is linked to the following deliverables:

- Project Management Plan, and Data Management Plan:

Project Management Plan (D1.1), and Data Management Plan (D1.3) list the different deliverables produced within V2Market as well as mentioning their status of confidentiality.

- Value proposition Canvas (D2.3):

This deliverable highlights the benefits that services developed through V2Market can provide to different stakeholders. Stakeholders considered include EV owners and users, fleet and car-sharing operators, utility companies, facility managers, charging point operators, Distribution System Operators (DSOs), ESCOs, energy communities, aggregators, and financial actors. This analysis will provide a clear guideline to refine the exploitation strategy toward the identified stakeholders.

- Distribution property / user right (D6.3)

This report will elaborate the legal distribution of the property right for every ICT tool produced within V2Market. This document will ensure that current owners of the ICT tools developed before the start of V2Market will keep full ownership of their developments. The development of this deliverable will impact the exploitation strategy of V2Market partners. The review of the Exploitation plan will take a particular attention to align with the requirements of this deliverable. However, as the document detailing distribution property and user rights will be confidential, no extensive mention of its content will be reflected in the exploitation plan.

- Signed ownership agreement of the V2Market outputs as described in Task 8.7 (D8.6)

This document will establish the basis for ownership and further detail the exploitation of V2Market outputs a legally binding document. The document will detail the actions V2Market partners will undertake up to five years after the project completion.



## 2. Listing V2Market outputs

The development of the exploitation plan requires identifying the various types of outputs created by V2Market. Categorising these outputs allows for greater accuracy in anticipating exploitation actions, ensuring that V2Market's partners take a holistic approach to project development, and apart from own developed outputs they can identify actions linked to other group created assets.

### 2.1 Identification of the outputs

The outputs produced by V2Market are the following ones:

- 1) Exploring new financial schemes and business models for the uptake of V2G/V2B

This category includes:

- a. Integration of V2G into an Energy Performance Contracting (EPC) Scheme

Two analysis of V2M EPC implementations, based on examples, are proposed. The more standard one starts with the replacement of a fleet of ICEVs and uses V2G as an additional revenue stream, and another one is proposed, that would allow the concept of Flexibility Energy to be on the center of an EPC instead of Energy Efficiency. The implications of both approaches under the light of the recently published EN 17669 have been discussed and adaptations have been suggested. The main characteristics of the M&V plans pertinent to each approach have been indicated. Some adaptations have been proposed in order to accommodate the Flexibility Energy concept within the M&V plan related to the EPC contract.

- b. Integration of V2G into a servitisation scheme

The V2Market's servitization scheme endeavours to establish a business model centered around "mobility-as-a-service." Under this model, an electric vehicle (EV) end-user would enter into a contract with a battery owner to utilize the battery capacity on a monthly subscription basis. The rest of the battery's capacity will be exploited by the battery owner to provide flexibility services to the grid. This model provides a reduction of upfront capital expenditure for EV end-users and ensuring an optimal provision of V2G services.

- c. Creation of a Hybrid EPC-servitisation scheme

The hybrid EPC and servitization scheme amalgamates characteristics from both models. It integrates the "mobility-as-a-service" elements of the servitization contract while also encompassing the maintenance, design, installation, and operation responsibilities of the ESCo or aggregator within the EPC components.

- 2) Innovative contractual arrangement for V2G/V2B

As one of the core goals of V2Market, the development of innovative and open contractual arrangements for the uptake of V2G/V2B will allow more service providers to be active in the EU. They include:

a. Contractual agreement between aggregators and EV owners

The contractual agreement between aggregators and EV owners has been created as contracting guidelines that include the following requirements: Pay-for-performance schemes, price-based contracts, volume-based contracts, control-based contracts, time-based contracts, servitisation. Other incentives such as gamification schemes have also been considered.

b. Contractual agreement between aggregators and flexibility buyers

The last contractual agreement template links ESCOs or aggregators to flexibility buyer for the provision of the following services: Vehicle-to-Building (V2B) services, the incorporation of energy efficiency (EE) measures, and the incorporation of the RES generation.

3) Development or upgrade of ICT solutions for enabling V2G/V2B

Most of the outputs created within this category have a different ownership status. Project partners will own certain developments made or solutions developed in this category. The evaluation of their exploitation will be further detailed in another report. Work done on this category is linked to ICT developments and includes:

a. IT Integrations to OMIE Local Markets platform and Wholesale Electricity Markets

The Local Markets platform is a communication tool developed by OMIE to manage distributed resources in local markets. This innovative platform empowers market participants by providing them with the capability to engage in local market auctions, offering both long-term and short-term flexibility. OMIE has developed different services to automatize and facilitate active participation in these markets. During the project, Nuvve and Holaluz used these connections to elaborate their integrations. V2Market uses this tool to test Local Flexibility Markets and demonstrate the variability of V2G services that EVs can provide in electricity markets. Moreover, the platform is used to analyse the different opportunities that market participants have in terms of price signals to refine V2G scheduling and improving EVs owners' comfort.

OMIE has made available for the project the platforms of the current wholesale electricity markets, as well as the integration possibilities with them that OMIE offers to the participants in these markets. These integrations have also been tested during the project.

b. GIVe

GIVe is an already proven tool developed by Nuvve allowing V2G services. This technology is already in use in several countries across the globe, including in EU countries. It provides optimisation of the EV charge and discharge cycle. The technology will be used for several

purposes: a standardised baseline calculation for the integration of V2G revenues as part of the EPC scheme, monitoring, and verification (M&V) protocols, and communication with the OMIE's Local Market Platform to provide to the target groups (aggregator – EV owner) with a decision-making tool for the overall V2G and EE management.

c. Fleetbox

Fleetbox is an application accessible to customers under a Nuvve service contract. It allows users to remotely monitor and manage electric vehicle (EV) fleets in real-time. Two roles are specified: Fleet Manager and EV Driver. Parameters available for monitoring and control (when relevant) are connectivity status, battery charge level, range, trip schedules and emergency charge. The adjustments for ICT Tools were development for user interface only. The development made under V2Market are related to the language proposed with the application (Spanish).

4) Extension of general knowledge related to V2G/V2B and creation of material for communication.

This last category includes other developments that share knowledge of V2G/V2B or provide tools for the exploitation of the results with the broader community. The list of outputs include:

- a. an economic analysis of V2G/V2B potential;
- b. a regulatory analysis of V2G/V2B barriers and enablers in the EU;
- c. an analysis of the different stakeholders that could benefit from the outputs of V2Markets;
- d. learning from the real-life implementation in the Municipality of Barcelona;
- e. the creation of material to raise awareness and provide training on V2G/V2B activities.

## 3. Definition of the exploitation strategy and identification of potential barriers

### 3.1 Exploitation strategy

After an analysis of the different outputs created within V2Market, the following chapter will concentrate developing the exploitation strategy of the project. To encompass the full scope of the project, the analysis will be further detailed by outputs and topics.

## 3.1.1 Analytical framework

To perform the exploitation plan, project partners were requested to fill a questionnaire, that followed this structure:

- I) Description of the outputs: This part aims at clearly identifying the functionalities and characteristics of outputs created within V2Market.
- II) Value created: This part aims at identifying the different use or value generated by the output.
- III) Exploitation paths: This section is considering different strategies based on the output end-user. Several paths are considered. One path for organisation creating the output, others to different stakeholders.
- IV) Actions considered: This part is dedicated to the compilation of actions that can be undertaken to ensure the exploitation of the outputs. Different actions should be considered per exploitation paths identified in the previous parts.
- V) Impacts: This part is focused on the analysis of the benefits that the output can provide to society (e.g. environmental benefits, policy making changes, evolutions of markets).
- VI) Potential risks identified: This section identifies potential barriers or obstacles that could impact the project's exploitation. Answers are linked to the different exploitation paths identified.

## 3.1.2 Work performed not included in the analysis

While most of the work done within V2Market is included in the Exploitation Plan, two key project activities are excluded as not relevant to the uptake of V2Market after the project completion. These ones are:

- Coordination and management: This activity is about monitoring the advancement of the project. Its outputs will not cover element relevant to the Exploitation plan.
- Communication and Dissemination: Its content and outputs will cover the activities while V2Market project is on-going and will be accessible for reading and download until 2027. Some of its outputs, such as communication material and the website, will still be used. However, its content will not be relevant for an exploitation strategy as actions identified will end after the project completion.

## 3.1.3 MARKET STUDY

MARKET STUDY	
LEAD BENEFICIARY DESCRIPTION OF THE OUTPUTS	<p>ECOSERVEIS</p> <ul style="list-style-type: none"> <li>- The main output of the market study consists of the key aspects of related markets so that they can incorporate V2G technologies. It includes also potential barriers and opportunities for each stakeholder (resulting from a SWOT in depth analysis).</li> <li>- The most important elements of V2G are identified for each target group, constituting individual value propositions for each identified group.</li> </ul>
VALUE CREATED	<ul style="list-style-type: none"> <li>- Value propositions for each group are key for future V2G applications and business opportunities that can be based on the results of the market study. These can be used to promote V2G along the different groups, considering the views gathered from representatives of each group during the market study.</li> </ul>
EXPLOITATION PATHS	<ul style="list-style-type: none"> <li>- 3–5-minute self-training modules will be prepared during last activities of V2Market project, which include the value propositions' perspective for each target group.</li> <li>- Each project partner separately can also use these value propositions and in general the conclusions of the market study to better target their audiences.</li> </ul>
ACTIONS CONSIDERED	<p>1) By ECO</p> <ul style="list-style-type: none"> <li>- ECOSERVEIS will be including flexibility and V2G potential in own developed trainings about PV self-consumption and other energy trainings (on the topic of electricity markets, energy efficiency, energy transition), as ECOSERVEIS is carrying out regularly training programs under the formula of contracted services for public authorities and in specific projects (such as innovation EU projects). As an example, one of the trainings is for CATEB (building engineers association) and it will run from late 2024 until 2026.</li> <li>- Results from market study and project developed knowledge are being used for two new projects centred in smart buildings that will start by September 2024 (CÉLINE project and ReLIFE project, Horizon Europe and LIFE-CET projects respectively). The knowledge produced will also be used to design more projects in 2025.</li> <li>- Introduction of V2G in new Sustainable Energy and Climate Action Plans (SECAP) elaboration. ECOSERVEIS has developed some SECAPs in the past</li> </ul>

for several municipalities and, in view of preparing some more or updates of existing ones, ECOSERVEIS has planned to integrate V2Market learnings, from end 2024 until 2026. ECOSERVEIS also has provided advice for the updating of the activities catalogue for the Regional Covenant of Mayor Coordinator for the Girona Region (Diputació de Girona) and the V2X approach would also be included in such type of services if contracted again in the future.

- To integrate V2G and flexibility potential in strategic consultancy services ECOSERVEIS is regularly providing to municipalities during the usual business activity.
- Integration of V2G advice and services possibilities for energy communities (i.e. in the framework of COMANAGE project (2022-2025), led by Ecoserveis and implemented by AMB, among others, both partners of V2Market).
- ECOSERVEIS intends to include V2G and flexibility advice through the Community Transition Offices (OTC in Spanish) that are being implemented in Spain through governmental funding and that are opening tenders for strategical advice to third parties during 2024. OTCs are single point of contact financed with public funds but run through associations. They provide advice and support to those developing energy community initiatives. The advice can include the potentials of developing V2G capabilities. Ecoserveis is responding to a call for proposals (bids) to be part of these OTCs, and ability to carry on this action will rely on the final decision by the public administration. ECOSERVEIS plans to submit bids to at least two public tenders between 2024-2025 and expects to integrate these services during 2025-2026.
- As National Coordinators of the Climate Pact in Spain, ECO will include the V2G concept into events targeting the general public and deliver the relevant knowledge to the Spanish Climate Ambassadors in Spain (108 ambassadors).
- Participation in the Catalan Sustainable Energy Cluster, Flexibility working Group, to contribute with the knowledge generated to position papers and policy recommendations.

## 2) By ESC

ESC intends to leverage the insights provided in report highlighting the Value Proposition Canvas. The analysis of different target groups specificities regarding V2X services provides a solid ground for the development of tailor-made approach on offers or projects related to electromobility.



IMPACT	<ul style="list-style-type: none"> <li>- To raise an awareness of the reality of V2G market opportunities for new ventures and business opportunities.</li> <li>- To understand how to better target and communicate the different stakeholders to engage them in V2X technologies.</li> <li>- To incentivise the implementation of national and international regulations to include and facilitate V2G technologies by identifying the potential market needs and opportunities.</li> </ul>
POTENTIAL RISKS IDENTIFIED	<ul style="list-style-type: none"> <li>- Electricity markets and vehicle markets in general are rapidly changing due to the energy transition's rapid pace. Relevant changes in market regulations might alter the results obtained, especially the SWOT analysis performed for each stakeholder.</li> </ul>

## 3.1.4 ELECTRICITY MARKETS

ANALYSIS OF THE ELECTRICITY MARKETS AND ITS POTENTIAL FOR INTEGRATING V2G	
LEAD BENEFICIARY DESCRIPTION OF THE OUTPUTS	<p style="margin: 0;"><b>OMIE</b></p> <ul style="list-style-type: none"> <li>- Work done within the market study is focusing on how EVs and specifically technologies such as V2G, V2B or V2H could be integrated into the wholesale electricity market, taking advantage of, and acting on the electricity price signals. The final reports also analyse the barriers and legal aspects that need to be changed to allow V2M to be introduced to the market.</li> <li>- Some outputs as the report on the IREMEL market potential looks at the new opportunities that local electricity flexibility markets can open for EV owners and fleets to solve DSO constraints on the distribution grid.</li> </ul>
VALUE CREATED	<ul style="list-style-type: none"> <li>- The 20 conclusions of activities related to the electricity market analysis are summarised and presented in the Report on the conclusions of the study of the different markets (D3.3). These conclusions are explained in a language that is easy to understand for all types of readers. The conclusions are based on the analysis and research carried out and relate to V2G technology, the market, and new figures of interest for the integration of electric vehicles into the grid.</li> <li>- The findings help to identify the barriers and challenges that V2G, V2B and V2H technology will face in the coming years and identify different opportunities for them with value propositions.</li> </ul>

EXPLOITATION  
PATHS

Different parties and stakeholders that can make use of the electricity market analysis outputs were identified. These include:

- **Market operator:** Creating new opportunities for EVs to participate in electricity market platforms. Create standards and flexibility services for distribution system operators.
- **EV users:** will be aware of price signals from the electricity market. With these price signals, EV owners will be able to perceive some income or benefits for their services and change their charging/consumption behaviour.
- **Prosumers:** they can use the battery of their EV to improve the energy efficiency of their home. In this way, the EV is part of the technologies that would lead to a higher energy independence of the household.
- **Energy communities:** the rapidly increasing number of EVs on the roads make it important to manage efficiently the electricity consumption within communities, making the flexibility of EVs an important asset to integrate with the rest of the energy source of the community, making use of technologies such as V2G, V2B or V2H.
- **Aggregators:** This new role could coordinate the activation (consumption/generation) of different energy assets, including EVs and fleets in different locations. These aggregators can negotiate their portfolio in the wholesale electricity market or in the local flexibility market (where the area where the assets are located is very relevant), and in this way reach the minimum bidding quantity (MWh) required for trading, adding all the energy resources under their contract (including EVs).
- **DSOs:** Local flexibility markets, managed by the market operator, open a new opportunity for them to solve constraints on the distribution grid using renewable energy and flexible resources connected to the grid. EVs are a good solution to alleviate constraints on the grid as they can react very quickly to the signals given and have the possibility to move from one charging point located at a specific point of the grid to another.
- **EV and charger manufacturers:** V2X technologies with intelligent control of their charging/discharging times according to the electricity price signal could trigger greater interest in buying new electric vehicles due to the savings.

ACTIONS  
CONSIDERED

1) By OMIE

OMIE identified the following exploitation actions:

- a. OMIE regularly participates in public consultations and the results obtained in V2Market will be useful for supporting the integration of electric vehicles in the electricity markets.



- b. The Analysis of the Electricity Markets performed and the knowledge created by V2Market will be used to improve the local market concept and processes, taking into consideration the key aspects detected.
- c. OMIE will lead the advocacies activities for the adoption and establishment of local electricity flexibility markets to address distribution grid challenges, including the V2G, V2H, and V2B participation.
- d. Using the results from V2Market, OMIE will promote the adoption of a national advocacy strategy for the transposition of European Directives. The goal is to facilitate the participation of electric vehicles (with small-scale bids) in electricity markets, similar to other renewable and flexibility technologies.
- e. OMIE actively and regularly participates in events, conferences, and webinars related to electricity markets, flexibility, and active demand management. As part of the V2Market project, OMIE will leverage the obtained results to demonstrate the necessity of integrating electric vehicles and other flexible energy assets into electricity markets.
- f. The integration and connection carried out during the V2Market project between OMIE, Holaluz, and Nuvve will help gain a better understanding of the potential entry and connection challenges that market participants may encounter when participating in and connecting to OMIE's markets. This is particularly relevant in the context of creation of local flexibility markets in Spain, that are not yet an established reality as of today.
- g. The results obtained in the pilot will allow OMIE to better understand the behavior that electric vehicles may exhibit when participating in electricity markets.

It is important to clarify that OMIE is a regulated company; this is why it depends directly on the way of EU Directives regulation, but all the useful concepts in this project will be applied also in the sandboxes until the final transposition in Spain.

### 2) By IDAE:

The content presented in the analysis of the electricity market, its components and potential integration of V2G technology provides a relevant piece of information to support and assist in IDAE activities related to electromobility. The analysis carried out will be taken into account to identify technical and regulatory areas in which further effort is needed and can be prioritised.

### 3) By Holaluz

	<p>Holaluz intends to leverage insights for strategic planning in V2G integration. Holaluz has utilized the comprehensive analysis of electricity markets as a strategic guide related to the products and services of the company. By understanding the dynamics of the potential for electric vehicle integration within various electricity markets and identifying the benefits and challenges of Vehicle-to-Grid (V2G) technologies. Holaluz aimed to refine its approach to incorporating EVs into its solar energy solutions. Furthermore, the market analysis has been instrumental for Holaluz in designing our proposal for managing distributed flexible resources.</p> <p>4) By AMB The knowledge developed within this section is key to understand the electricity market from the fleet owner perspective. We believe that will provide us with more knowledge of how the electricity market works and what is important to consider when analysing it. It will be used for AMB internal training in the future.</p> <p>5) By ESC ESC intends to leverage the insights provided in the review of key elements of electricity markets (D3.1). The report provides an in-depth analysis of V2G/V2B business cases on different electricity markets. These outputs will be used to cement commercial propositions and provide knowledge to other projects.</p> <p>6) By smartEN The economic analysis conducted by V2Market will serve as supporting material for its advocacy efforts. Obtaining relevant data on the potential of V2G/V2B in various countries can be difficult, particularly in Spain where flexibility markets are non-existent.</p>
<p>IMPACT</p>	<ul style="list-style-type: none"> <li>- Knowledge development:             <ul style="list-style-type: none"> <li>o Understand how V2X technologies can be integrated into the wholesale electricity market (including local flexibility markets) to generate a profit or income for users/owners.</li> <li>o Identify barriers that need to be addressed by regulators and manufacturers to facilitate the integration of V2G into society.</li> <li>o Improving the integration, use and value of electric vehicles for owners and fleet managers using innovative technologies such as V2G, V2H or V2B.</li> </ul> </li> </ul>
<p>POTENTIAL RISKS IDENTIFIED</p>	<ul style="list-style-type: none"> <li>- Work related to the analysis of electricity markets highlights the barriers and regulatory aspects that need to be changed to enable the market introduction of V2X. The results help to identify the barriers and challenges that V2G, V2B and V2H technologies will face in the coming years, and to identify different opportunities for them with value propositions.</li> <li>- Resistance toward unlocking legislation to address barriers and lack of implementation.</li> </ul>

# 3.1.5 ECONOMIC VIABILITY AND FINANCIAL SCHEMES FOR V2G/V2B

ECONOMIC VIABILITY AND FINANCIAL SCHEMES FOR V2G/V2B	
<p>LEAD BENEFICIARY DESCRIPTION OF THE OUTPUTS</p>	<p>ESC</p> <ul style="list-style-type: none"> <li>- The economic viability based on different price scenarios: Net present value (NVP), Total cost of ownership (TOC), scenario modelling.</li> <li>- The servitisation scheme design for V2G: The output has defined the attributes and features that outline the nature and scope of a business model transition from selling products to offering services. Servitisation involves providing value-added services alongside or instead of traditional product sales. The main functionality and characteristics were built around: service offerings, subscription model based on Total Cost of Ownership, customization and value proposition.</li> <li>- An end-client servitisation contract for V2G: Key features, provisions, and attributes that define the terms and conditions of a contractual agreement. These characteristics outline the specifics of what is expected from each party involved in the contract and ensures an alignment of interest with possible financiers by including specific clauses that are standard requirements in the financing world.</li> <li>- Eurostat guidelines: Off-balance sheet guidelines based on EUROSTAT requirements.</li> <li>- Infographics: value proposition and customer education on Servitization and V2G.</li> </ul>
<p>VALUE CREATED</p>	<ul style="list-style-type: none"> <li>- The familiarization with servitisation schemes in the V2G context.</li> <li>- The familiarization and implementation of new business models.</li> <li>- The implementation of lessons learned in the V2M project at an EU level.</li> <li>- The deployment of V2G technology at an EU level based on the findings in the V2M project overall especially of the financial business model.</li> <li>- The education of the wider public at an EU level on what V2G is and what is servitisation in this context.</li> <li>- The economic viability of V2G based on Total cost of ownership.</li> <li>- The usage of the servitisation contract drafted for the engagement with end clients and financiers.</li> <li>- Eurostat guidelines can be used by public entities in their compliance with the off-balance sheet aspects.</li> </ul>

EXPLOITATION  
PATHS

- The results generated in the design of the servitisation can be used by aggregators and ESCo's in order to deploy their services by presenting a value proposition to the end client that will be a "no-brainer". The current barriers to EV usage are high EV prices, lack on infrastructure and lack of know-how on battery degradation. By implementing a servitisation scheme and providing the V2G or V2H services that are so needed currently, these barriers are being addressed and surpassed.
- The results of the economic viability scenarios can be used as a tool/incentive by aggregators in their market penetration.
- The infographics are tools that both the public players and the private ones can use to educate the public on what V2G and servitisation is and what benefits they provide.
- The contract that was drafted is useful for end clients private/public bodies and aggregators as it encompasses a variety of standard clauses and variable elements such as the commercial proposition. The contract was designed as a standardised contract.
- The Eurostat guidelines can be exploited by the public bodies as off-balance sheet criteria for public organisations are being found under Eurostat.

ACTIONS  
CONSIDERED

1) By ESC

ESC identified the following exploitation actions:

- The outcomes of the V2M project will be disseminated and leveraged in a future LIFE proposal focused on the energy transition and green energy within the public built environment (proposal currently under Grant Agreement process).
- EnerSave intends to utilize the project's materials and results for advocacy at the European level, including sharing findings at events like ENLIT (pending topic and selection by event organizers) and presenting V2M findings to the Sustainable Energy Finance Association during their annual meeting (subject to board approval).
- Additionally, EnerSave plans to promote the results on social media platforms and educational platforms such as Udemy and Nearpod, targeting key stakeholders to familiarize them with the outcomes.
- Through its extensive network of clients and collaborators, EnerSave will engage with ESCOs, project developers, tech providers, and asset owners to share the findings and materials developed within the V2M project. Collaboration with organizations like the Global ESCo Network may provide further opportunities for dissemination, potentially through webinars or their annual International ESCO symposium (pending approval by organizers).

2) By AMB

As a public administration we value the economic analysis performed within V2Market and believe that they are very helpful for assessing the financial viability of V2G/V2X services. It is fundamental to increase the acceptance of EVs and their related electricity services in Europe and particularly in Spain. The outputs of the economic studies and financial schemes will be used to tailor the use of AMB fleet once electricity markets will open to V2G.

### 3) By Nuvve

Nuvve intends to exploit the result of several materials created in the economic analysis. It includes:

- Economic studies: Using the conclusion of the Economic Viability Study, Nuvve will likely adapt the current V2G model deployed within other markets across Europe to align with the findings within the Spanish specific market: increase the benefits of V2G by linking solar photovoltaics "in order to maximize the entire process of storage capacity and grid balancing". Concerning the necessary grid upgrades within the Iberian region, Nuvve plans to capitalize on the opportunity that V2G brings to the region and create a buffer between the gaps of the current infrastructure and future upgrades as stated in the economic study report "V2G is a fast and relatively cheap solution" compared to capital intensive and time intensive grid upgrades.
- EPC servitisation contracts: In terms of the servitisation models, V2Market created some templates Nuvve is now familiar with. Our current service structure will benefit from the exploitation of the guaranteed savings model and the shared savings model explored as well. The in-depth LAUNCH contract and its clauses specific for Spain will be used.
- Infographics: The project deliverable offers some clear infographics that our marketing department will use to produce content in parallel with our Spanish partner/s as we continue to inform about the V2G environment and its benefits.

### 4) By smarten

smartEn will present to its members the different outputs and concepts developed by ESC. The concept of servitisation could create interesting commercial prospects for some of the members. Moreover, the infographics developed could be exploited in future publications or reports linked to other European funded projects where smartEn is involved.

IMPACT	<ul style="list-style-type: none"> <li>- Economic:               <ul style="list-style-type: none"> <li>o Evolutions of markets by implementing new business models</li> <li>o Helping consumers to become prosumers</li> </ul> </li> <li>- Educational: Raising awareness of the public on V2X via the infographics</li> <li>- Environmental: The implementation of V2G will support the grid to absorb more renewable energy without needing to invest heavily in grid upgraded.</li> <li>- Policy-making: V2Market will highlight required legislative and regulatory changes, ensuring the development of suitable regulation.</li> </ul>
POTENTIAL RISKS IDENTIFIED	<ul style="list-style-type: none"> <li>- A lack of V2G regulation implemented at an EU level, and subsequently in Member States might hamper the ability to replicate V2Market outputs.</li> <li>- A lack of Member state level knowledge on the V2G topic and benefits might hamper the required development of regulation.</li> </ul>

## 3.1.6 CONTRACTUAL ARRANGEMENT FOR THE DEFINITION OF THE AGGREGATOR ROLE AND THE ELECTRICITY FLOWS' TRADING BETWEEN DIFFERENT PARTIES

CONTRACTUAL ARRANGEMENT FOR THE DEFINITION OF THE AGGREGATOR ROLE AND THE ELECTRICITY FLOWS' TRADING BETWEEN DIFFERENT PARTIES	
LEAD BENEFICIARY DESCRIPTION OF THE OUTPUTS	<p>ANESE</p> <ul style="list-style-type: none"> <li>- Activities related to the EPC-servitisation contract for facilitating access to finance for the EV-V2G costs focussed on integrating V2G/V2B into a standard EPC contract, both</li> </ul>



<p><b>VALUE CREATED</b></p>	<p>as a stand-alone feature and in conjunction with other EE measures. This has led to two separate cases being analysed, since the European standard model of EPC currently demands that the “energy service” being contracted results in local an immediate energy savings, which is not the case for the V2B/V2G technologies. The study has thus been divided into two scenarios, one considering a broader definition of “energy services” and another one reflecting the present regulatory and normative status quo. For each scenario, a suitable measurement and verification (M&amp;V) plan has been outlined, integrating the specificities of V2G/V2B into the EPC model.</p> <ul style="list-style-type: none"> <li>- Workstream related to contractual arrangements developed two contracting guides for producing standardized contracts have been developed. The first regarding the contracts between the EV owner and the aggregator, and the second regarding the contracts between the aggregator and the flexibility buyers.</li> <li>- All this has resulted in the availability of an outline for the use of V2G/V2B with EPC in the two main possible scenarios, accompanied by the suggested outline of the corresponding M&amp;V plans and guides for the elaboration of the main contracts.</li> </ul>
<p><b>EXPLOITATION PATHS</b></p>	<ul style="list-style-type: none"> <li>- The deliverables generated under the analysis of EPC-servitisation contract for facilitating access to finance for the EV-V2G costs and the overall workstream related to contractual arrangement can be directly used by an ESCo wanting to include V2G/V2B services in their catalogue, integrated into an EPC, and also for ESCos wanting to assume the Aggregator role. The work developed paves the way for the quick adoption of V2G/V2B services by ESCos, given the necessary regulatory framework changes.</li> </ul>
<p><b>ACTIONS CONSIDERED</b></p>	<p>1) By ANESE</p> <p>ANESE identified the following exploitation actions:</p>

- a. Disseminate selected project deliverables within ANESE's ecosystem

ANESE will disseminate contractual arrangements outputs (as the Contractual Guidelines) and output from other activities (as the Guidelines for EV owners and aggregators and the V2M Policy Paper) amongst ANESE member through the internal communication channels – newsletter, web page, dedicated e-mails. The objective is to provide associates willing to enter the V2X market with a complete package or toolkit that facilitates the process.

- b. Learning from the pilot sites experiences for advocacy activities

The information shared by the pilot sites after the completion of the project will be taken into consideration and compared to publicly available results from ongoing regulatory sandboxes, when developing policy advice – whether replying to public consultations, or proactively contacting policy makers. These activities will be aimed at helping achieve a mature and favourable regulatory framework for V2X market agents and services, in as little time as possible.

- c. Presentation of V2Market outputs during energy related professional events

V2M goals, intermediate results and developments are already being divulged by ANESE in an ongoing basis, on private events, trade shows and fairs, as part of the Association's communication roadmap. In the upcoming years, ANESE's presence in these trade shows is assured, and the results and key takeaways from the V2M project will continue to be divulged and publicised.

Presence of the V2M project on the following trade shows and events is guaranteed for the foreseeable future: Genera, Matelec, Net Zero Tech, Congreso ANESE as well as the presentation of ANESE's Technologies Guide event.

- d. Proactively pursue the continued contact and information exchange with remaining partners

ANESE will continue the contact and information exchange with the remaining project partners, so as to build on each other's experiences and learnt lessons.

2) By smartEN

smartEn will ensure the exploitation of the contractual guidelines by presenting the deliverables to its members companies. With the right regulatory framework that will fully recognise the status of independent aggregators and its relationship with other electricity market stakeholders, the contractual guidelines could ease the process of customers contracting for smartEn members. The



IMPACT	material will be presented by the during calls and meeting dedicated to electromobility.
	<ul style="list-style-type: none"> <li>- If the conditions for V2B/V2G deployment and ESCo as aggregator are met (both market and regulatory) then the results generated by the workstream related to contractual arrangement will be on the base of the first tens of contracts. After the initial period, it is likely that other approaches will be developed, some based on this work's perspective and some entirely new, but that will be the market looking for its maturity, hence the main goal of this work will have been accomplished.</li> </ul>
POTENTIAL RISKS IDENTIFIED	<ul style="list-style-type: none"> <li>- The first and most important risk that threatens the sound exploitation of the outputs generated is the inexistence / inadequacy of the regulatory framework. The lack of properly developed and functional local flexibility markets is another barrier. The last main factor that may condition the sound exploitation of the results is the market value of the flexibility services, since too low margins will favour the collapse of the aggregator function into a previously established figure such as the DSO or the utilities themselves.</li> </ul>

### 3.1.7 ICT TOOLS ADAPTATION

ICT TOOLS ADAPTATION	
LEAD BENEFICIARY DESCRIPTION OF THE OUTPUTS	<p>NUVVE</p> <p>The ICT Tools adaptation is based on two separate components:</p> <ul style="list-style-type: none"> <li>- NV-OMIE Adaptation functionalities and characteristics: Complying with the original scope of the project is an API connection between Nuvve and OMIE's energy prices platform which enables Nuvve full read access of prices in the Intra-day and Day-Ahead markets. Nuvve can then perform price analysis, tie in the EV-EVSE user analysis and perform a bid corresponding to the intersection between price value attainment and EV client energy satisfaction. This tool allows for actual V2G to exist within Spain through Nuvve's Fleetbox integration with V2G capable hardware.</li> <li>- NV-HZ Adaptation functionalities and characteristics: Complying with the adapted scope approved by stakeholders while the V2M project was already underway, this adaptation is an ICT Tool enhancement between Nuvve and Holaluz. This enhancement allows Nuvve to perform energy management advisory as a service for Holaluz with the end goal of incentivising energy savings and charging at the best times within their customer base. The use of the tool</li> </ul>

<p><b>VALUE CREATED</b></p>	<p>does not stop there, there is much potential to integrate this tool within Holaluz’s energy environment. Both ICT Tool adaptations mentioned above will enable V2M partners to define the challenges that lie ahead for V1G and V2G and to begin to perform V1G and V2G in Spain and clear a path for future growth in these untapped energy markets.</p> <ul style="list-style-type: none"> <li>- The main effect of this work is to enable actual performance of V1G and V2G in Spain and show the effectiveness of this technology within the Spanish energy markets by generating value through revenue and/or savings.</li> <li>- A secondary effect of this work is that it will inform V2Market partners and non-participants of the challenges ahead pertaining specifically to the new and emerging energy markets within Spain and the apparent legislative lag. With this reference, the potential and viability of future business cases between V2M partners as well as non-participants will be clearer than before.</li> </ul>
<p><b>EXPLOITATION PATHS</b></p>	<ul style="list-style-type: none"> <li>- The tasks and knowledge enabled by these tools will impact Nuvve in a positive way. Learnings developed in this project will foster Nuvve’s understanding of the Spanish energy markets, the Spanish population’s relationship to those energy markets and the challenging limitations of current legislation and infrastructure.</li> <li>- Further, the NV-HZ tool enhancement for energy advisory leads to a promising opportunity for both parties post the V2M project. This exploitation path specifically benefits Holaluz’s current energy scheme and business model using Nuvve’s Astrea AI by leveraging the learnings from Holaluz customer base data stream. By tracking key aspects across vast amounts of energy transactions, Nuvve has empowered Holaluz with new understandings of their own user base and particular energy flows. Through an effort to increase customer use of energy literacy, Holaluz can now decide and adjust their energy management model and incentivize savings directly with each customer. All the while, Nuvve continues to pinpoint the intersection between energy price value attainment and Holaluz client’s energy needs. For example, Nuvve can provide Holaluz customers with insights on when to charge their electric vehicles to minimize cost and GHG footprint. The future of this relationship can grow as Nuvve and Holaluz continue to work together tying new energy assets to an already existing business model within the energy sector. This symbiotic relationship will strengthen an existing model.</li> </ul>
<p><b>ACTIONS CONSIDERED</b></p>	<p>1) By Nuvve</p> <p>Nuvve identified several actions linked to the learnings of ICT tools adaptation. It includes:</p> <ul style="list-style-type: none"> <li>- Growing the deployment of V2G technologies and increase our partnerships with V1G and V2G capable EV, EVSE, and stationary</li> </ul>

IMPACT

batteries in Spain and continue growing upon the learnings and understandings of local Spanish legislation regarding V2G infrastructure.

- Upscaling the deployment of V2G Hubs within the Spanish Market.
- Expand our knowhow of energy markets and energy balancing aggregation services into Home Energy Management Systems within the residential area and into Smart Building ventures within the country.
- Leverage the integration with OMIE after V2Market completion to transition from pilot simulations into real world market participation within the energy markets available.
- Expanding the deployment of V1G, V2G, V2X technologies into the Spanish market and increase grid resiliency.
- Continue and expand Nuvve reach diminishing the carbon footprint and cost of operation of fleets and newly integrated e-homes while creating new avenues for revenue.
- Expand V2G technology integration with utilities bridging the gap between energy and transportation.

Introduce Nuvve AI powered forecasting tools to increase margins of revenue within V2G available markets and smart energy transactions.

2) By Holaluz

Holaluz identified several exploitation actions:

- The integration with Nuvve's platform in Q1 2024 for the pilot can be the stepping stone of future collaboration to optimize Holaluz's Energy Management of residential customers with or without EVs.
- The integration with OMIE's test platform in Q2 2024 for the pilot can be the stepping stone of future collaborations to test different energy trading strategies across the different electricity markets to help OMIE beta test and Holaluz stay at the forefront in the market's new developments for energy management.

- V1G and V2G have a profound societal impact, leading to a cleaner planet. Through enhanced energy resource utilization and understanding, we can drive environmental improvement. This extends from large-scale collaboration among energy aggregators, transmission system operators, and stakeholders, down to individual energy users. Involving individuals at all levels of the energy sector pyramid not only increases energy awareness but also offers direct financial benefits. Active participation enables users and businesses

POTENTIAL RISKS IDENTIFIED

to comprehend their influence on the energy sector in detail. With this awareness and a growing sense of environmental responsibility, individuals are likely to make more sustainable choices, benefiting both their finances and the planet. Additionally, allowing EV owners to participate in the energy market helps communities adapt to energy fluctuations, reducing CO2 emissions. To support these opportunities, proactive government policies could involve the implementation of new Royal Decrees explicitly mentioning V2G and offering incentives.

- Nuvve will develop for Holaluz an energy insights service, analyzing pricing data and charging needs patterns of its customers to advise them on the best time to charge. This will enable Holaluz to develop smart charging offerings that reward charging behaviours of its customers. In a first step the service will inform them when to charge to minimize cost or GHG footprint, then to maximize self-consumption. In a second step Nuvve will integrate with Holaluz ICT to automate the smart charging. Eventually in a later step, when bidirectional charging vehicles are available in Spain, Nuvve and Holaluz will evolve these smart charging offerings to full V2G offerings. Lastly, integrating residential solar data and optimizing V2G for more efficient energy distribution in the utility's transmission network. Nuvve has identified regulatory opportunities within Holaluz's operating environment to reduce transmission costs by utilizing a fee-free transmission zone provision applicable to Holaluz. The impact will be on Holaluz energy sourcing and balancing cost, Nuvve enabling it to use its customers' vehicles as a flexible capacity. The reduction in GHG emissions from peaker plants and the dampening effect on prices of smart charging will positively impact all electricity consumers in Spain, even those that do not have an electric vehicle.

- An effective and integrated electric energy environment relies primarily on comprehensive legislation and infrastructure encompassing both physical and bureaucratic aspects, posing the primary challenges to V2G implementation.
- Current legislative limitations can be mitigated through government support for V2G technologies, while the outdated or lacking infrastructure can also be rectified through government initiatives in Spain. Unlocking value within unexplored segments of the electric energy ecosystem, spanning local, municipal, and regional levels, hinges on the removal of these barriers by the Spanish government and private sector stakeholders. It is crucial to underscore the challenge at hand: technological advancements and cooperation among energy sector players alone are insufficient. Clear and effective regulations outlining the procedural and technical prerequisites for localities to enable and execute V2G are imperative. Presently, Spanish Royal Decrees do not incorporate provisions for V2G technologies, perpetuating bureaucratic impediments that hinder the widespread implementation of

	<p>V2G programs. Another regulatory barrier is the prescribed total capacity management requirement for participation in Spanish ancillary services. Lowering this threshold is essential to enable the emergence of viable new markets.</p> <ul style="list-style-type: none"> <li>- Any tax on the rewards from V2G is a potential risk to the uptake of V2G offerings for electricity consumers as it might reduce the benefit and the incentive to participate and complexify the business of V2G operators.</li> <li>- The deployment of V2G is also contingent on the availability of bidirectional charging capable vehicles for consumers to purchase.</li> </ul>
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## 3.1.8 PILOT TESTING IN THE BARCELONA METROPOLITAN AREA

PILOT TESTING IN THE BARCELONA METROPOLITAN AREA	
<b>LEAD BENEFICIARY DESCRIPTION OF THE OUTPUTS</b>	<p><b>AMB</b></p> <ul style="list-style-type: none"> <li>- <b>EPC and Servitisation Tendering Templates:</b> The outputs include standardized tender templates and guidelines for Energy Performance Contracting (EPC) and servitization schemes. These templates provide a structured framework for municipalities in the Barcelona Metropolitan Area (AMB) to adopt V2G solutions. The templates are available in Spanish, with English guidelines for wider dissemination.</li> <li>- <b>Open Training of Public Staff:</b> The output is an informative training session covering V2G/V2B concepts, regulatory aspects, economic viability, EPC, servitization, ICT tools, data management, and more. This training equips AMB staff and invited public employees with essential knowledge about V2G technologies and their implications.</li> <li>- <b>Testing Period :</b> Outputs include refined ICT tools with new features for V2G testing, a technical factsheet evaluating performance and barriers, and an evaluation of the deployment against predefined indicators.</li> <li>- <b>Focus Groups with Staff:</b> Creation of training materials guidelines in the form of a defined structure and the content to be dealt with during the proposed trainings, together with the proposed slides if required.</li> <li>- <b>Assessment of Best Contractual Arrangements :</b> The output is an assessment of optimal contractual arrangements for AMB as a public EV owner based on pilot data. This information guides future tendering processes for V2G stations.</li> </ul>

VALUE CREATED

- Research Paper: The output is a research paper detailing the methodology, data, and results of the pilot implementation. This open-access paper is aimed at the academic sector and key industrial stakeholders for knowledge dissemination.

The expected use and value generated include:

- Enhancing AMB's understanding of V2G concepts and benefits.
  - Providing municipalities with structured templates to adopt V2G solutions efficiently.
  - Equipping public staff with knowledge about V2G technologies and their regulatory aspects.
  - Evaluating and refining V2G system performance based on testing and feedback.
  - Identifying optimal contractual arrangements for AMB as a public EV owner.
  - Contributing to academia and industry by sharing research findings through an open-access research paper.
- Focus group: The value generated consists of general and specific content about EV and V2G that is prepared for dissemination and market promotion, using adapted language for general and specific audiences. The expected use of the document is to serve as guideline for the content to be treated during the trainings, and to provide the necessary documents (i.g. presentation slides). In addition, it can be used by partners to enrich their own market strategies and communication materials.

EXPLOITATION PATHS

The results generated can be exploited as follows:

- The tender templates and guidelines are ready to be adopted by Spanish municipalities interested in V2G solutions. AMB can share these resources to facilitate the expansion of the V2G network.
- The knowledge gained from the training can be applied by AMB staff and invited public employees in their decision-making processes regarding V2G technology adoption.
- The refined ICT tools and technical factsheet can be utilized to deploy and evaluate V2G solutions effectively. OMIE and Nuvve can incorporate insights into their communication and energy management systems.
- Outputs can be exploited during the proposed training sessions for the pilot by whoever carries out the training. In addition, in future activities, it can be exploited by project partners and other companies because of having free access to the content and presentations.
- Insights from the assessment of contractual arrangements can inform future tendering processes for V2G stations, ensuring optimal financial and operational outcomes.



ACTIONS  
CONSIDERED

- The open-access research paper will contribute to the academic sector's understanding of V2G technologies and their practical implementation.

1) By AMB

AMB identified the following exploitation actions:

- Continue to update and refine the tender templates based on real-world deployment experiences.
- In the upcoming years, the AMB envisions a strategic plan for the continuous professional development of its staff and municipal employees. This plan involves conducting regular follow-up training sessions to keep our team up to date with the latest advancements in V2G technologies. These sessions will serve a dual purpose: keeping participants updated on technological advancements and reinforcing the importance of flexibility services in the local context. The AMB is dedicated to hosting annual V2G sessions and presenting project outcomes at conferences and workshops of affiliated organizations like CEEC and EnerAgen. The objective is to position flexibility markets as a compelling element in all renewable energy generation projects. Simultaneously, the proposed training materials will serve as a foundational guide for future dissemination activities related to V2X technologies, including informative sessions, dissemination videos, and self-learning materials.
- The AMB will collaborate with industry partners to integrate refined ICT tools into commercial products and services. A systematic assessment of bidirectional charging infrastructure will be conducted throughout its lifecycle. In 2024 and 2025, data collection, monitoring, and communication processes necessary for optimal functioning of V2G technologies will be implemented. This period will also involve an evaluation of the effectiveness of essential ICT components, identifying errors and areas for improvement to ensure project continuity. Continuous user feedback will be collected and analyzed to address any technical or operational issues. Furthermore, all collected data will be published on an open-source platform accessible to everyone. Regularly review and update contractual arrangements to adapt to changing market conditions and technology advancements.
- To ensure the sustained relevance and adaptability of the project's initiatives, AMB will establish a systematic approach to reviewing and updating contractual arrangements. Engaging legal experts annually over the next five years will serve as a proactive measure to assess and modify contractual frameworks in response to changing

market conditions and technological advancements. The aim is to align agreements with the latest industry standards and innovations.

- The research paper summarizing the project's outcomes and advancements developed in the workstream related to pilot testing will be presented at relevant academic conferences in the following years, including national conferences such as Asociación de Ingenieros de la Energía - AINenergía. To reach a broader local audience, the paper will be translated into Catalan and sent to local authorities/municipality technicians, ensuring the dissemination of results and knowledge acquired during the project across the Metropolitan Area of Barcelona.
- Use the proposed training materials as a guideline for future dissemination activities related to V2X technologies that can be used in informative sessions, dissemination videos or self-learning materials, once the project is completed.

#### 2) By Holaluz

Holaluz, as pilot manager, identified exploitation actions linked to learning from the development of the pilots:

Holaluz intends to exploitation learnings for the purpose of research, development, and launch of integrated solar and EV smart charging solutions. Holaluz will utilise insights from the V2Market pilot project to accelerate the development of an integrated solar energy and EV smart charging solution. This product could optimise user energy costs and support grid and market stability, incorporating the flexibility and efficiency gains identified during the pilot. The timeline for the deployment of the commercial offer will not be mentioned in this current report, a public deliverable. However, it will be integrated to the report "Signed ownership agreement" of the V2Market outputs.

#### 3) By ESC

The tendering templates to streamline our procurement processes and ensure efficiency in project implementation to be used in a LIFE proposal that EnerSave is part of and currently under a Grant Agreement process.

#### 4) By smartEN

Depending on the conclusions, smartEn could use the outcome of the Research Paper as support material for its advocacy activities. Indeed, finding relatable numbers on the potential of V2G/V2B in different countries can be challenging, especially in the case of Spain where flexibility markets are not existent.

#### 5) By OMIE

OMIE intends to exploit the results of the Research Paper. The conclusions drawn from the deliverable will enable OMIE to



IMPACT	<p>understand how electric vehicles participate in the market and allow OMIE to create simulation models for the integration of EVs in the electricity market. These models will simulate the impact and influence of electric vehicles in the market, particularly with technologies such as Vehicle-to-Grid (V2G). Additionally, the results will serve as a starting point for improvements in the prequalification, qualification, and negotiation processes of local markets. This will facilitate the future integration of electric vehicles into these markets as they begin to operate in Spain.</p>
	<p>The expected impact of the results generated during the pilots at EU and national levels includes:</p> <ul style="list-style-type: none"> <li>- EU Level: Contributing to the advancement of sustainable transportation solutions through V2G technology adoption and their incorporation in regulatory frameworks. Sharing knowledge and best practices across EU municipalities for efficient EV integration into the grid.</li> <li>- National Level: Enabling Spanish municipalities to make informed decisions about V2G adoption. Promoting energy efficiency, reducing carbon emissions, and driving economic growth through the expansion of V2G networks.</li> </ul>
POTENTIAL RISKS IDENTIFIED	<p>The identified risks and barriers for the sound exploitation of the outputs include:</p> <ul style="list-style-type: none"> <li>- A limited awareness and understanding of V2G concepts among AMB staff and municipal employees.</li> <li>- A resistance to change or uncertainty among stakeholders regarding the integration of EVs into the grid.</li> <li>- Policy challenges and regulatory barriers might affect the implementation and scalability of V2G solutions.</li> <li>- Technical issues or compatibility challenges with ICT tools can potentially hindering effective data collection and management.</li> <li>- Market fluctuations or changes in EV adoption rates could impact the viability of contractual arrangements.</li> </ul>

## 3.1.9 EXPLOITATION AND TRANSFERABILITY TO EUROPEAN COUNTRIES

EXPLOITATION AND TRANSFERABILITY TO EUROPEAN COUNTRIES	
LEAD BENEFICIARY	smartEn

DESCRIPTION OF THE OUTPUTS

The project will produce the relevant material and develop a comprehensive strategy for the exploitation of V2Market outputs. It entails a large variety of actions including:

- The creation of material (videos, trainings, guidelines) to foster the exploitation of V2Market results
- The redaction of a policy paper with recommendations explaining the main barrier faced and the identified enabler of V2B/V2B in Europe.
- The organisation of webinars at European and national level to spread the knowledge developed within V2Market and raise awareness of civil society on V2X/V2G
- The elaboration of a business plan assessing the potential of services developed within V2Markets at European and national level.

At the time of writing (April 2024), V2Market partners initiated different exploitation actions including:

- The organisation of webinars: three webinars have been organised.
  - o Webinar 1 (29<sup>th</sup> February 2024) - Bidirectional charging of Electric Vehicles: a decentralised energy resource for system services
    - Audience: 136 attendees
    - Recording: Available on V2Market Youtube channel
  - o Webinar 2 (21<sup>st</sup> March 2024) - Bidirectional charging of Electric Vehicles: challenges and opportunities for a growing decentralised energy resource in the BeNeLux region
    - Audience: 70 attendees
    - Recording: Available on V2Market Youtube channel
  - o Webinar 3 (23<sup>rd</sup> April 2024) - The smart electrification of the transport sector: challenges and opportunities for local authorities
    - Audience: 56 attendees
    - Recording: Available on V2Market Youtube channel
- The publication of a Video showcasing the pilot as a demonstration site on 19<sup>th</sup> April 2024. The video is available on V2Market YouTube channel.
- The creation of a YouTube channel to disseminate recordings and video materials.

VALUE CREATED

- A reduction of contractual development costs with the guidelines allowing more actors to enter the V2G/V2B market
- An increase of economic profitability for EV by making the financing schemes developed through V2M known
- Reduce CO2 emissions:
  - o By enabling V2G/V2B, need for generators targeting peak-hours or dedicated to balancing markets will decrease.

EXPLOITATION  
PATHS

- V2G allows the uptake of EVs while reducing their impact on grid extension.
- Improve policymaking at European level by highlighting current shortcomings of European legislation and at national level by highlighting best practices and barriers for V2G/V2B through the EU.
- To foster the role of prosumers and aggregators in the energy system by raising awareness on the potential of V2G/V2B

Exploitation paths considered are the following:

- For V2M Project Partners: Use of educational material to raise general awareness of the population to V2G/V2B potential and promote their activity within V2Market
- For commercial actors: Use of the guidelines as a contract basis. It will reduce their future contractual development costs
- For smartEn: use of the material produce (especially the policy paper) for our advocacy at European level as part of our Electromobility taskforce.
- For other European funded projects: Use of the material produced within the project, especially in exploitation actions

ACTIONS  
CONSIDERED

1) By smarten

Actions identified by smartEn include:

a. Actions related to the policy paper

V2Market Policy Paper identifying barriers and enablers for the development of V2X services will become pivotal in smartEn advocacies related to electromobility. Its content will help to tailor recommendation for the revision of European legislation covering V2X such as:

- The alternative fuel infrastructure regulation (2021/0223)
- The energy performance of buildings directive (2018/844)
- The renewable energy directive (2018/2001)

The content of V2Market policy paper will be used for the development of future material produce by smartEn including upcoming "Implementation Guidebook". This guidebook will draw recommendations for national transposition of EU legislative provision relevant of DSF, including V2X, by addressing persisting regulatory barriers. V2Market Policy Paper, drawing recommendations for every type of authorities (from local to European), will guide the drafting of this deliverable for issues related to electromobility, more specifically on V2X. The Implementation Guidebook is expected to be released by January 2025.

b. Guidelines for EV owners and aggregators

The guidelines for EV owners and aggregator will be central to the exploitation strategy of smartEn. Indeed, its content is the most likely to convince service providers to consider engaging in V2X activities or to develop solution to support V2X aggregators and ESCos. smartEn reach may be less comprehensive for individual EV owners due to its membership base.

A two-fold approach is considered for the exploitation of the guidelines:

- A presentation of the guidelines to smartEn members: smartEn members includes a large spectrum of market actors active consumer-centric energy solutions (aggregator, platform providers, hardware and software developers). The guidelines could foster the integration of V2X services for into their business models if they did not consider it yet. The outputs of V2Market were, at the time of writing, mostly presented to SmartEn members already engaged in electromobility. The guidelines could convince other service providers experienced with smart energy solutions but not covering electromobility to engage in V2X activities.

- A presentation of the deliverable during events: The presentation of the deliverable during professional event organised or attended by smartEn could ensure to reach a large audience. The list of targeted events will be presented in the next section. These events ensure a large audience. Printed version of the guidelines will be distributed in events where smartEn has a booth.

c. Presentation of V2Market outputs during energy related professional events

To present V2Market materials at events organised or attended by smartEn will ensure reaching the widest possible audience. The provided list only includes events organised after V2Market completion where smartEn participation is currently confirmed and where a booth to showcase various materials is already reserved. The significant number of participants at these events will ensure that the project outputs reach not only service providers specialising in flexibility but also EV owners, encouraging them to participate in V2X activities.

The list includes:

- FlexCon 2024: 24-26 September 2024 in Amsterdam  
FlexCon is co-organised by the Flexiblepower Alliance Network and smartEn. It is a two-days conference dedicated to Energy Flexibility. 320 persons attended the last edition of FlexCon.

- Enlit Europe: 22-24 October 2024 in Milan  
Enlit Europe is one of the largest European professional events on the topic of energy transition. 14 000 attendees are expected for Enlit Europe 2024. smartEn will have a booth where different deliverable of V2Market will be distributed and smartEn staff will be able to answer questions related to the project and V2X services.

- SmartEn Symposium: 12 December 2024 in Brussels  
smartEn Symposium is a biennial event organised by smartEn. The audience will be composed of businesses and policymakers that have a keen interest in developing flexible, consumer-driven and smart solutions for the energy system. It will present the main conclusions of smartEn work and reports, more precisely on the Implementation Guidebook.

2) By IDAE:

a. Actions related to the Policy Paper:

As the National Energy Agency, IDAE functions are to support and promote technology in achieving the decarbonisation of the energy system. Furthermore, IDAE assists the Ministry for Ecological Transition and the Demographic Challenge to fulfilling the country's objectives and commitments at European level. To this end, the policy paper will be taken into consideration in the activities mentioned above and in the development of specific related financing programmes.

b. Actions related to the exploitation of V2Market results and materials:

Subsequent to the Commission final review and approval, the Spanish Energy Agency will inform to related in-house technical departments on the project's main results and conclusions. Furthermore, the Ministry will also be notified. Project's deliverables will be shared and presented.

c. Action related to the presentation of V2Market outputs and guidelines in forums and technical events:

IDAE is regularly involved in national and international technical and policy forums, including targeted energy flexibility and mobility events. As part of the V2Market dissemination activities, the project's results will be mentioned and introduced among participating actors.

3) By AMB

a. Actions related to the guidelines for EV owners and aggregators

As a public administration we value those guidelines and believe that they are very helpful in terms of dissemination material. It is fundamental to increase the knowledge of EV in Europe and particularly in Spain. Those guidelines could help to increase the

**IMPACT**

acceptance of the EV in the Spanish market and to accelerate its penetration.

4) By ESC

The guidelines for EV owners and aggregators (D8.3), self-training module (D8.4), and policy paper (D8.5) will serve as invaluable resources in educating stakeholders, empowering participants, and advocating for policy changes conducive to our project's success. Through collaborative utilization of these resources, we aim to enhance our project's impact and contribute meaningfully to our shared objectives.

5) By ANESE

ANESE will promote the material created within the exploitation phase. Especially for the guidelines for EV owners and aggregators. This document could convince different stakeholders to engage in V2G/V2B activities depending on the regulatory framework. Moreover, conclusion of the Policy Paper is be used for tailored advocacy activities in Spain.

V2Market outputs will also be further used by ANESE for the creation of an information package for ANESE associates interested to start commercial activities related to V2G/V2B. It includes:

- The Guidelines for EV owners and aggregators to the V2G/V2B basics (D8.3)
- The Business plan (D8.7)
- Tendering templates and guidelines for EPC - servitisation of V2G for its use by the public sector in Europe (D7.1)
- The report on the conclusion of the market studies (analysis of business models, legal, market and policy barriers and opportunities) (D3.3)
- The report on Hybrid EPC-servitisation contract templates for incorporating V2G, including the integration of monitoring and verification of energy savings from the V2G technology (D4.2)
- The Policy Paper (D8.5).

6) Other European Projects:

- a. Presentation of V2Market overall outputs and the content of activities related to the exploitation of V2Market results to other EU-funded projects or during events gathering projects.

Economic:

- To increase the attractiveness of EVs for different profiles (households, public authorities, and private sector) due to additional revenue or saving generated by services associated V2B/V2G.
- To optimise energy efficiency at building level and integrating local energy production.
- On a grid level, V2G can avoid costly grid expansion or investment in peak generation, often costly and polluting.



POTENTIAL RISKS IDENTIFIED

Environmental:

- Allowing an efficient integration of intermittent RES, benefitting to TSOs, DSOs, and BRPs

Policy making:

- Improvement of European and national legislative and regulatory framework

Improvement of EV attractiveness toward different customer profiles (households, public authorities, private sector)

For the guidelines, V2Market may face difficulties to adapt a contractual agreement tailored for the Spanish market to another European countries.

The evolution of electricity and mobility markets may impact negatively the outputs of V2Markets.

Difficulties to access Spanish electricity markets may hamper the credibility of V2Market outputs toward commercial actors.

A lack of regulatory framework allowing V2G/V2B would make impossible the exploitation at a European-wide level.

## 4. Summary of the expected actions per category

From the different analysis provided, the summary of the following considered actions per category includes:

### 1) New financial schemes

- Direct uses by concerned partners for commercial activities;
- Use of educational different platforms (e.g. Udemy or Nearpod) to make the outputs of this category known and used;
- Presentation of the outputs during professional events to foster their adoption by market parties.

### 2) Contractual agreements

- Direct use by partners for commercial activities;
- Engagement with energy providers and aggregators and provide them with the findings and tools/material developed within the V2M project;
- Regular review and update contractual arrangements to adapt to changing market conditions and technology advancements.

### 3) ICT developments

- Collaboration with industry partners to integrate the refined ICT tools into commercial products and services;
- Foster the synergies created within V2Market project partners for future development;
- The development of intelligent tools (V2X) and their connection to market platforms, taking into account electricity price signals for each period

**4) Knowledge development**

- Direct use for V2Market partners for their activities
- Promote of the material and outputs using partners social networks, or during professional events or trainings.

**5) Transversal exploitation action:**

- One key takeaway from the analysis is the need for transversal advocacy activities at European and national level. V2Market outputs, as highlighted in the different parts “Potential risks identified” of the chapter 3, are dependent to the evolution of regulatory frameworks. If V2G/V2B/V2H is not allowed throughout the EU, the potential use of V2Market outputs will not be possible. The foremost priority will stand on advocacy activities to have a full recognition of V2G/V2B/V2H in regulatory frameworks as well as having products allowing its participation to electricity markets.

## 5. Annexes

### 5.1 Questionnaire sent to work package leaders

**V2Market T8.1 – Exploitation plan for the uptake of V2Market at European level**  
**Questionnaire for Work Package leaders**

Dear partners,

Please find below the questionnaire to collect your inputs for the Deliverable 8.1.

The reasoning behind the structure of the questionnaire is the following:

I. Description of the outputs:



- This part is dedicated to the description of the functionalities and characteristics created within your WP / Task.
- II. Value created:
  - The section will describe the uses or the value created within your WP/ Task.
- III. Exploitation paths
  - This part should describe how your WP / Task outputs can be exploited at the end of the project. It should consider different paths. Firstly, how the outputs can impact your own activity; then, how it can impact society and different stakeholders (e.g., current or potential EVs owners, aggregators, policy makers, automobile and parking industry, energy efficiency sector, academia).
- IV. Actions considered:
  - This section will compile the identified actions that must be undertaken to ensure the exploitation of the outputs. Actions should be considered for every exploitation paths. Please make a distinction between action taken by your organisation and by the consortium. The timeframe should be limited to five years after the project completion.
- V. Impact:
  - This part is dedicated to the analysis of the benefits that the output can provide to society (e.g. environmental benefits, policy making changes, evolutions of markets)
- VI. Potential risks identified:
  - In this section, please identify potential barrier or obstacle that could refrain the exploitation of the result. Answers should be linked to the different exploitation paths identified.

### **Questionnaire:**

- Description of the outputs:
  - What are the main functionalities and characteristics of outputs created within your WP / Tasks?
- Value creation:
  - What are the expected uses / values generated within of your WP/ Tasks?
- Exploitation strategy:
  - How can the result generated within the WP / Task be exploited and by whom?
- Actions identified:
  - Which actions can be taken once the project is completed to ensure the sound exploitation of your results?
- Impact:
  - What are the expected impacts of the results generated by your WP / Task at EU and National level?
- Potential risks identified:
  - Which identified risks or barrier can hamper the sound exploitation of the outputs generated within your WP / Task?



