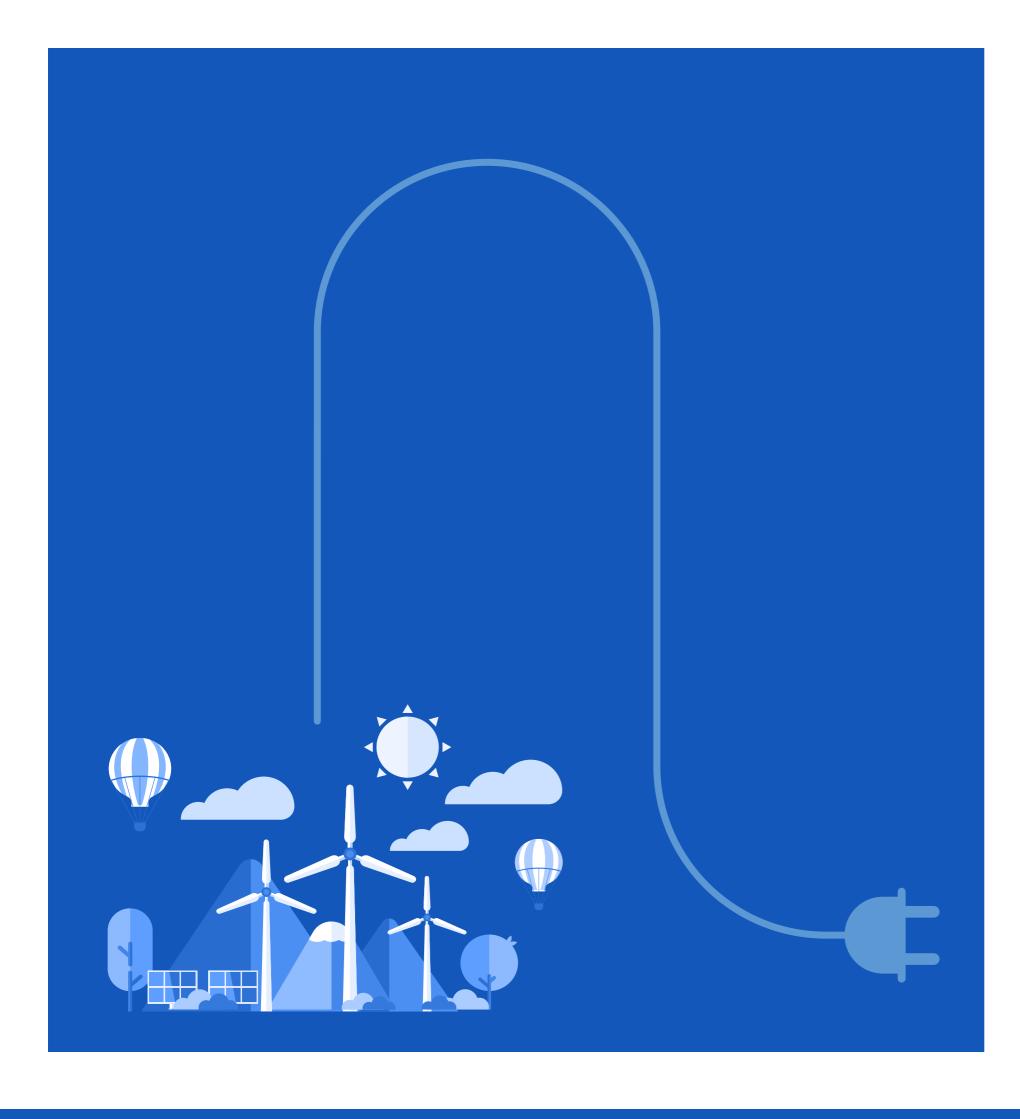# SEEV4-City Policy Recommendations

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GLOSSARY

AFID: Alternative Fuels Infrastructure Directive
BESS: Battery Energy Storage System
CCS: Combined Charging System
CPO: Charge Point Operator
DNO: Distribution Network Operator
DSO: Distribution System Operator
GDPR: General Data Protection Regulation
EFTA: European Free Trade Association
ETS: Emissions Trading System
EVs: Electric Vehicle
eV4ES: Electric Vehicle-for-Energy-Services
iEMS: Integrated Energy Management System
LRAs: Local and Regional Authority
OCPP: Open Charge Point Protocol
OEM: Original equipment manufacturer
OSCP: Open Smart Charging Protocol
PV: Photovoltaic
SEAP: Sustainable Energy Action Plan
SECAP: Sustainable Energy Climate Action Planning/Plan
SUEP: Sustainable Urban Energy Planning/Plan
SUMEP: Sustainable Urban Mobility and Energy Planning/Plan
SUMP: Sustainable Urban Mobility Planning/Plan
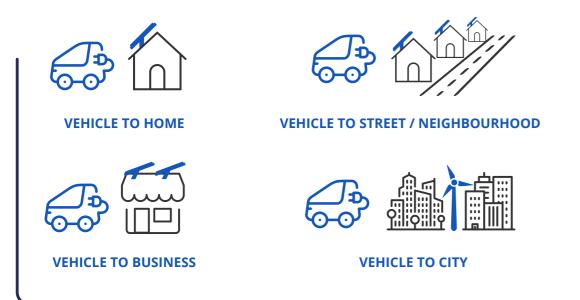**TSO:** Transmission System Operator
V2G: Vehicle-to-Grid
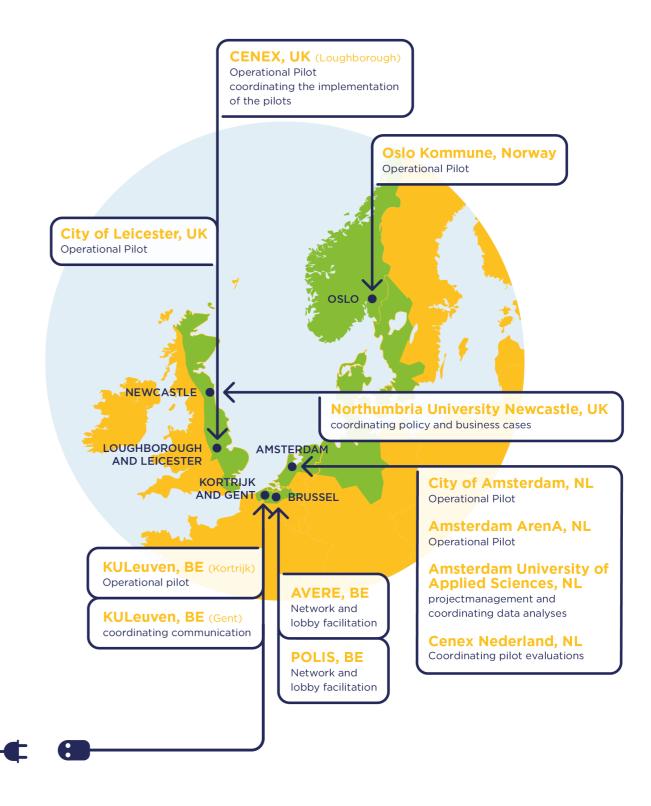**V2X:** Vehicle-to-everything

Purpose of the document

These policy recommendations were developed based on experiences and lessons from the Smart, clean Energy and Electric Vehicles (EVs) for the City (SEEV4-City) project. The SEEV4-City project, funded by the EU's Interreg North Sea Region (NSR) Programme, aimed to demonstrate integrated electric mobility solutions with renewable energy in a local and central electricity grid decarbonisation context, and encourage their uptake at local, national and transnational levels. The policy recommendations were developed in consultation with relevant public and private stakeholders, including but not limited to those involved in the six Operational Pilots across four NSR countries implementing combinations of Smart Charging and V2X technology at different scales and levels.

SEEV4-City identified the need for a policy framework that combines largely disconnected planning and policy domains, processes and tools across energy, climate change mitigation and transport/mobility. The SEEV4-City partners, include the Operational Pilot's local and regional public authorities, universities and non-for-profit consultancy organisations as well as Europe-wide networks in electromobility and representative of cities and regions implementing innovative transport solutions. These partners worked through the current status of planning framework/guidance and plans to identify progress made already and still needed at different levels for the effective integration of the domains of mobility, energy and climate change mitigation.

The SEEV4-City project has accordingly developed, and verified with stakeholders through a Webinar in June 2020, a set of policy recommendations at different levels (European/EU, national, local and regional) and for different actors identified in this document.

VEHICLE TO HOME

VEHICLE TO STREET / NEIGHBOURHOOD

VEHICLE TO BUSINESS

VEHICLE TO CITY

CENEX, UK (Loughborough)
Operational Pilot coordinating the implementation of the pilots

Oslo Kommune, Norway
Operational Pilot

City of Leicester, UK
Operational Pilot

OSLO

NEWCASTLE

Northumbria University Newcastle, UK
coordinating policy and business cases

LOUGHBOROUGH AND LEICESTER

AMSTERDAM

KORTRIJK AND GENT

BRUSSEL

City of Amsterdam, NL
Operational Pilot

Amsterdam ArenA, NL
Operational Pilot

Amsterdam University of Applied Sciences, NL
projectmanagement and coordinating data analyses

Cenex Nederland, NL
Coordinating pilot evaluations

KULeuven, BE (Kortrijk)
Operational pilot

KULeuven, BE (Gent)
coordinating communication

AVERE, BE
Network and lobby facilitation

POLIS, BE
Network and lobby facilitation

Merging SUEP and SUMP into an integrated systematic approach: SUMEP

Sustainable Energy Action Plan(ning) (SEAP) and Sustainable Energy Climate Action Plan(ning) (SECAP) as well as Sustainable Urban Mobility Plan(ning) (SUMP), including guidance/processes, can in themselves be characterised as separate policy-packages. Integrating these packages will bring benefits regarding decarbonisation of energy production, distribution, supply, and consumption as well as energy storage to achieve (ultra-) low carbon Sustainable Urban Mobility and Energy Planning (SUMEP). The integration needs to be made in the context of increasing electrification of energy infrastructure and transport together with the local and central electricity grid, as part of the move towards a "Smart Grid".

The Smart Grid approach also entails an increase in distributed energy sources (usually renewables), distributed battery energy storage and 'prosumer' concept (who both produce and consume electricity). These need to be considered and integrated in the context of electric Vehicle-for-Energy-Services (eV4ES).

To achieve significant decarbonisation of the transport sector, the electricity grid, energy infrastructure, electricity generation, transmission and distribution need to become much less dependent on fossil fuels. Better integration of renewable energy (i.e. solar, wind, hydro) needs to be advanced and supported. The cost of production (and use) of renewable energy is declining and is becoming competitive with fossil fuel energy generation. Energy autonomy may, on occasion, further reduce the cost of energy, if based on locally (self) produced renewable energy, including for use in charging electric vehicles.

The SEAP and SECAP Covenant of Mayors guidelines and planning processes focus on the key assets of buildings, equipment and facilities (municipal and third party owned) as well as transport; the SUMP guidelines focus on 'functional' municipalities. Thus, there should be, in principle, no conflict in terms of the overall objectives beyond the administrative boundaries for the SUMP guidelines. This is because of the way the traffic flows of both people and goods (including commercial) occur, which needs to be addressed regarding economic, technical, environmental and social sustainability.

What is lacking so far is a holistic policy and coherent guidelines on how to integrate sustainable urban energy planning (SUEP) and sustainable urban mobility planning (SUMP) into a Sustainable Urban Mobility and Energy Planning (SUMEP), despite some progress so far by some key European projects and some local and regional authoraties.

The SEEV4-City project advocates and supports, with evidence and suggestions, a more holistic integration of these guidelines and planning processes and resulting plans across the mobility and energy sectors, into a concept termed Sustainable Urban Mobility and Energy Planning (SUMEP).

SEEV4-CITY RECOMMENDATIONS AND ROADMAP FOR SUSTAINABLE URBAN ENERGY AND MOBILITY PLANNING (SUMEP)

Recommendations to policymakers at the EU and national levels

a) Regulatory framework

1. Harmonise existing energy and mobility activities and plans/planning, including Sustainable Urban Mobility Plans (SUMPs), Sustainable Energy and Climate Action Plans (SECAPs) and Sustainable Energy Action Plans (SEAPs).
2. Establish clear political commitment and explicit regulatory framework through the European Green Deal. Smart charging and potential Vehicle-Grid-Integration can be fully enabled through the Strategies for Smart Sector Integration, Energy System Integration and Sustainable & Smart Mobility.
3. Remove existing barriers (through the effective implementation of the Clean Energy Package) and allow for a full market participation of flexible electric loads such as EV smart charging and Vehicle-to-Grid (V2G) solutions, as well as flexible tariff structures, across the EU, i.e. in EU Member States, European Free Trade Association (EFTA) and the UK.
4. Use the revision of the Alternative Fuels Infrastructure Directive (AFID) to support the roll-out (where applicable) of EV smart-charging and eV4ES ready technologies in public, semi-public, and private infrastructure.
5. Apply a systems approach not only to support EVs but also smart charging and eV4ES, as well as the whole ecosystem around these.
6. Provide a roadmap over a long enough period to stakeholders so that they can prepare and adapt accordingly, including making the appropriate investments with sufficient certainty of financial returns. Integrated Energy Management Systems (iEMS), EV smart charging and eV4ES approaches should become an integral part of the plans, ensuring future-proof planning.
7. Avoid the boom-and-bust cycle seen with support for photovoltaic (PV) energy in Europe through overly generous and inflexible feed-in-tariffs that typically did not adapt fast enough to the uptake by consumers.

8. Assess and conclude whether electrified transport should fall under the umbrella of the European Union's Emissions Trading System (ETS) with a suitable carbon price incorporated.
9. Ensure appropriate social access to both affordable electricity and mobility for all consumers and residents at both EU and national levels and in future mobility & energy plans/planning under the proposed SUMEP concept.
10. Consider European and state-level legislation on privacy (GDPR) when capturing data and making it available for further analysis.

b) Standardisation and communication protocols

1. International level agreements should be reached to allow more standards such as Combined Charging System (CCS) to be compatible with V2G in addition to the current standard CHAdeMO. Open standards should be further encouraged through the adoption of the Open Charge Point Protocol (OCPP) and the Open Smart Charging Protocol (OSCP), in their updated versions.
2. Ensure that vehicle data (and specifically a vehicle identifier) is captured through the updated protocols and standards.

c) Systems approach

1. Foster the integration of the energy, mobility and digital sectors, allowing optimisation of the energy system as a whole.
2. Enhance demand-side flexibility to smartly manage the energy system which has large shares of renewables and EVs. This will reduce the overall costs, including those for grid upgrades (central and local).
3. Foster the value of flexible loads that allow shifting demand from peak to off-peak hours to reduce grid congestion and keep the grid stable.

d) Taxation and legislation

1. Remove any legal and taxation barriers and facilitate the process for consumers becoming prosumers.
2. Ensure the legislation (i.e. Energy Taxation Directive) sets a clear tax exemption for electricity not consumed in the EV battery for transport but stored to provide grid services. This should be combined with favourable taxation of electricity consumed off-peak in order to encourage storage/consumption at off-peak times.
3. Introduce a new rate in legislation for a flexible connection (3 × 35 A with limitations) in countries where this is not the case (e.g. the Netherlands), which makes this more cost competitive rather than treating it the same as household connections.

e) Subsidies and incentives

1. Closely link the incentives for e-mobility with the incentives for renewable energy by providing 'package incentives'.
2. Provide incentives to consumers, local authorities, local companies, and governmental public bodies to become active members of the local electricity generation and consumption.
3. "Green incentives", for the inclusion of centrally and locally generated and distributed renewable energy. This need to be accompanied by infrastructure (i.e. parking, shared charging stations), and it is important to consider both affordability and also consumer convenience.
4. Maintain a consistent and supportive policy and subsidy framework at all levels to avoid negative external factors from creating a 'boom and bust cycle' that could arise due to changing policies.
5. Establish a specific (and perhaps at a local level) V2G Feed-in Tariff which could be progressively reduced as EV battery costs decline (as projected) or allow V2G feed-in to be included in Export or Self-consumption schemes, so they are placed on a level playing field with other relevant technologies.
6. Provide subsidies to reduce the currently high battery investment cost for Stationary Battery Energy Storage System (BESS) to achieve higher energy autonomy, lower CO_2 emission and ensure better grid stress alleviation.

f) Communication and awareness

1. Raise awareness among a broad spectrum of stakeholders (in particular local actors) by developing a targeted communication strategy that (i) outlines the economic and environmental benefits of 'pro-sumption' and (ii) provides a step-by-step guidebook on the procurement process.
2. Provide a toolkit to municipalities in local languages, to include the Political, Economic, Social, Technological, Environmental and Legal (PESTEL) benefits as well as information, specifications, requirements, list of (local, regional, national or EU) solution providers, promotional materials, examples of applicable and transferable business models, etc.
3. Facilitate capacity building and peer-to-peer exchanges between local and regional authorities.

g) User acceptability

1. Consumer feedback (i.e. behaviour, receptiveness, needs and requirements) should be collected and evaluated to provide insights into EV owners' attitudes and their response to eV4ES products and services.
2. Encourage desired behavioural or societal change, such as encouraging low-carbon active personal mobility or increased energy efficiency, while considering the positive externale factors that such changes bring about.
3. Publish an eV4ES 'Best Practice' code of conduct for all stakeholders (including, system operators and aggregators) in order to ensure that the user experience is managed and batteries are not damaged by eV4ES activities.

h) Business model development

1. Effectively use policies as an enabler to incentivise the development of win-win business models with built-in distributional dimensions.
2. Encourage and establish shared (including monetarised) benefits for stakeholders' built-in agreements which incentivise all the respective stakeholders – including the EV owners at domestic scale - to contribute to an aggregated eV4ES future.

i) Research and exchange of knowledge

1. Support research collaboration and international knowledge exchange on different aspects of eV4ES and the interests of diverse stakeholders involved, such as research and education communities, original equipment manufacturers (OEM), Transmission and Distribution Systems/Networks Operators (TSO, DSO and DNO), policy makers, municipalities, service providers, EV owner/user, etc.
2. Support research collaboration and development through subsidies, grants and funding to promote research and innovation breakthroughs leading to progress in the field, by leveraging new and existing funding instruments, at both EU, national, regional and local levels.

Recommendations to policymakers at the local and regional levels

j) Strategic planning

1. Long-term, agile and integrated strategic planning in full alignment with the local/regional roadmaps and based on the interdisciplinary and inter-organisational / inter-agency cooperation among public and private actors, including charge point operators (CPOs) and distribution system operators (DSOs).
2. Avoid working in silos. Instead, Local and Regional Authorities (LRAs) should consider setting up inter-departmental and cross-cutting task forces within the municipalities, ensuring both vertical and horizontal alignment and exchange. This approach should also allow for a more harmonised approach reducing the danger for the process to become exclusively politically or business-driven.
3. Close cooperation between private and public stakeholders along the entire supply chain, namely: energy providers, charging solution providers, consumers, public authorities (mainly the above-mentioned cross-cutting task forces). This approach will help in reducing the danger for the process to become exclusively politically or business driven.
4. Develop strategies applicable to local circumstances instead of a 'one size fits all' approach.
5. Promote smart charging and eV4ES solutions in the roll-out of the public charging infrastructure and include (whenever possible) concession granting and/or state aid as a requirement in the procurement.
6. Green incentives need to be accompanied by infrastructure, i.e. parking, shared charging stations, etc. It is important not only to consider affordability but also consumer convenience.
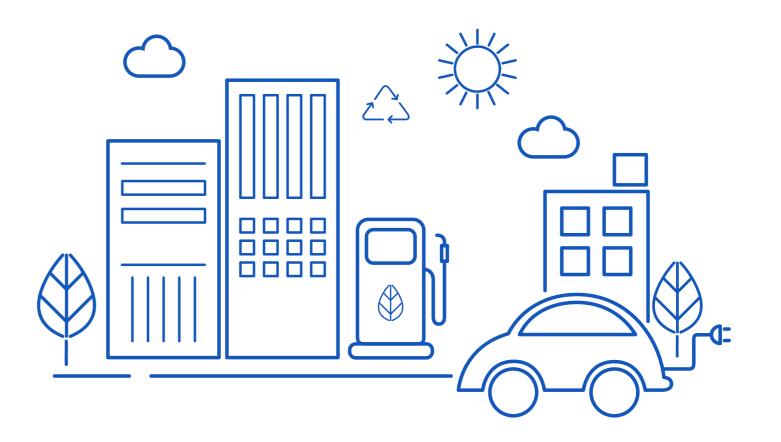
k) Capacity-building

1. Develop more integrated skill sets for energy and transport intersection amongst planners, local authority managers, consultants and technologists as well as academic and vocational institutions.
2. Participate in peer-to-peer exchanges and EU-funded/national projects as well as academic and vocational programmes.

l) Consumer empowerment

1. Empower the consumer through the provision of appropriate price incentives.
2. Create indoor parking garages for EVs with smart charging and eV4ES solutions.
3. Consider pre-booking systems and flexible charging structures. For the latter, consider dual purpose use: charging during the day, residential parking during the evening.

The following policies and directives are mentioned in this document:

- Directive on the the restructuring the Community framework for the taxation of energy products and electricity
- General Data Protection Regulation
- Directive on the deployment of alternative fuels infrastructure
- Clean Energy for all Europeans Package
- The European Green Deal
- EU Emissions Trading System (EU ETS)
- Sustainable Energy Action Plan(ning) (SEAP)
- Sustainable Urban Mobility Plan(ning) (SUMP)
- Sustainable Energy and Climate Action Plan (SECAP)

SEEV4-City project objectives

Making a huge step forward in green city development by a smart combination of electric vehicles, BESS, renewable energy sources and ICT solutions.

6 operational pilots in 6 European cities aiming at:

- **An increase in energy autonomy**

- **An increase of ultra-low emission kilometres**

- **Avoiding extra investments to make existing electrical grids compatible with an increase in electromobility and local energy production**

- **A measurable reduction in CO2 emissions for each operational pilot**

SEEV4-City is a North Sea Region Interreg project involving a consortium comprised of the City of Amsterdam, Amsterdam ArenA, CENEX UK, CENEX NL, Leicester City Council, Oslo Kommune, Amsterdam University of Applied Sciences, Northumbria University, Catholic University of Leuven, AVERE and POLIS.

SEEV4-City started in May 2017 and concluded in October 2020. The aim is to make a step forward in green city development by a smart combination of electric vehicles, BESS, renewable energy sources and ICT solutions. All participating partners aim for an increase in energy autonomy, an increase of ultra-low emission kilometres and avoiding extra investments to make existing electrical grids compatible with an increase in electromobility and local energy production.

A full-length Policy Recommendations & Roadmap Report is also available from the project's outputs website:
https://www.seev4-city.eu/publications/

The Operational Pilot Reports can also be found online:
https://www.seev4-city.eu/projects/

Interreg
North Sea Region
SEEV4-City
European Regional Development Fund

EUROPEAN UNION

Amsterdam University of Applied Sciences

KU LEUVEN

Northumbria University NEWCASTLE

JOHAN CRUIJFF ARENA

POLIS
CITIES AND REGIONS FOR TRANSPORT INNOVATION

AVERE
The European Association for Electromobility

City of Amsterdam

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