



Positive Energy Blocks for Small and Medium Sized Cities

Webinar - 3rd November 2016



- Introduction to PEB** *Paul Cartuyvels, BOUYGUES Europe*
- Analytical perspective** *Goran Strbac, Imperial College*
- Impact of mobility** *Ivo Cré, POLIS Network*
- Business models** *Anja De Cunto, EUROCITIES*
- EU framework** *Georg Houben, European Commission*
- Q&A** *Special guests: ERRIN, Reggio Emilia*
- Conclusions** *Paul Cartuyvels, BOUYGUES Europe*



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Introduction - What's a PEB?



A **Positive Energy Block (PEB)** is a group of at least 3 connected neighbouring buildings that annually produce more energy than required

in terms of lighting, heating, cooling and ventilation.



Aim: to launch 100 PEB projects by 2020.

At least 1 PEB per Member State
50% in “Small Giants” (<150.000 inhabitants)

Focus: mixed & complementary usage of buildings
ICT for design & management
local renewable energy production
new & retrofitted buildings
public and private actors



Financing: exploring Smart Specialisation Strategy (S3) at regional level, EIB, Private investors...



Location: Identification specific to each city with preference given to central area for demonstration purposes



“Setting the Bar” for the PEB Initiative

Clear case and plan

What: 100 PEB

Why: Tackling energy issues together + social & economic urban regeneration

Who: local authorities, private partners & citizens

How: Action plan + Promotion through cities associations

When: NOW - identification of partners and content definition

Will it support our EIP goals?

Pace: progressive, adapted to capacity, launched end 2015

Scale: EU wide, all Member States involved, all cities sizes may participate

Impact: high replicability, adapted solutions; pull toward positive energy

Integrated solutions: innovative materials and design; ICT from conception to management; renewable energies and storage

Common (repeatable) approach: YES with geoclimatic and sizes adaptation



Towards PEBs: the example of HIKARI in LYON (France)

12.000 m² zero energy building
in the Lyon-Confluence area

JOIN US!

Field visit of the Positive
Energy Block HIKARI
Lyon
8 November 2016

NEXT buildings

Photographic credit:
HIKARI designed by Kengo Kuma and Associates

Introduction: a real case in Lyon



A block integrated in a district:

The Lyon-Confluence urban project

- 150 hectares (70 renewed)
- 1,000,000 m² net floor area to be built
- 20,000 residents (7,000 in 2000)
- 25,000 jobs (7,000 in 2000)

Existing neighbourhood

Phase 1: 2003-2018

Phase 2: 2012-2030

Commissioning of Hikari: september 2015

Introduction: a real case in Lyon



Hikari: a mix-use block

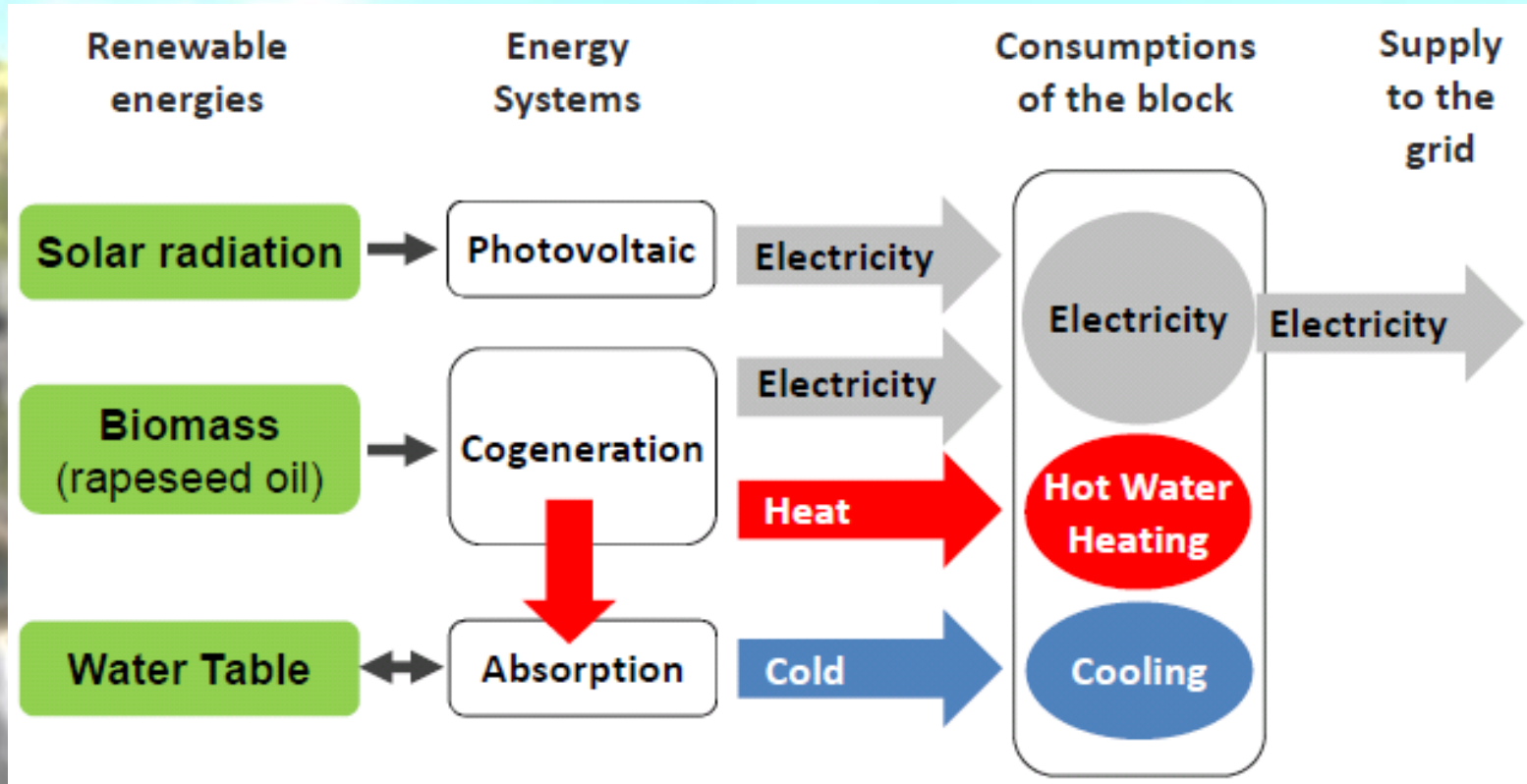
Total floor area: 12,300 m²

- Dwellings**
- Office spaces**
- Shops**

Introduction: a real case in Lyon



Hikari: a positive energy block



Introduction: a real case in Lyon



Hikari: a positive energy balance

Energy production of Hikari
1.485 GWh of primary energy



■ Electricity (cogeneration) ■ Electricity (photovoltaic)

+2.8 MWh (0,2%)

Energy consumption of Hikari
1.482 GWh of primary energy



■ Electricity ■ Rapeseed oil ■ Gas



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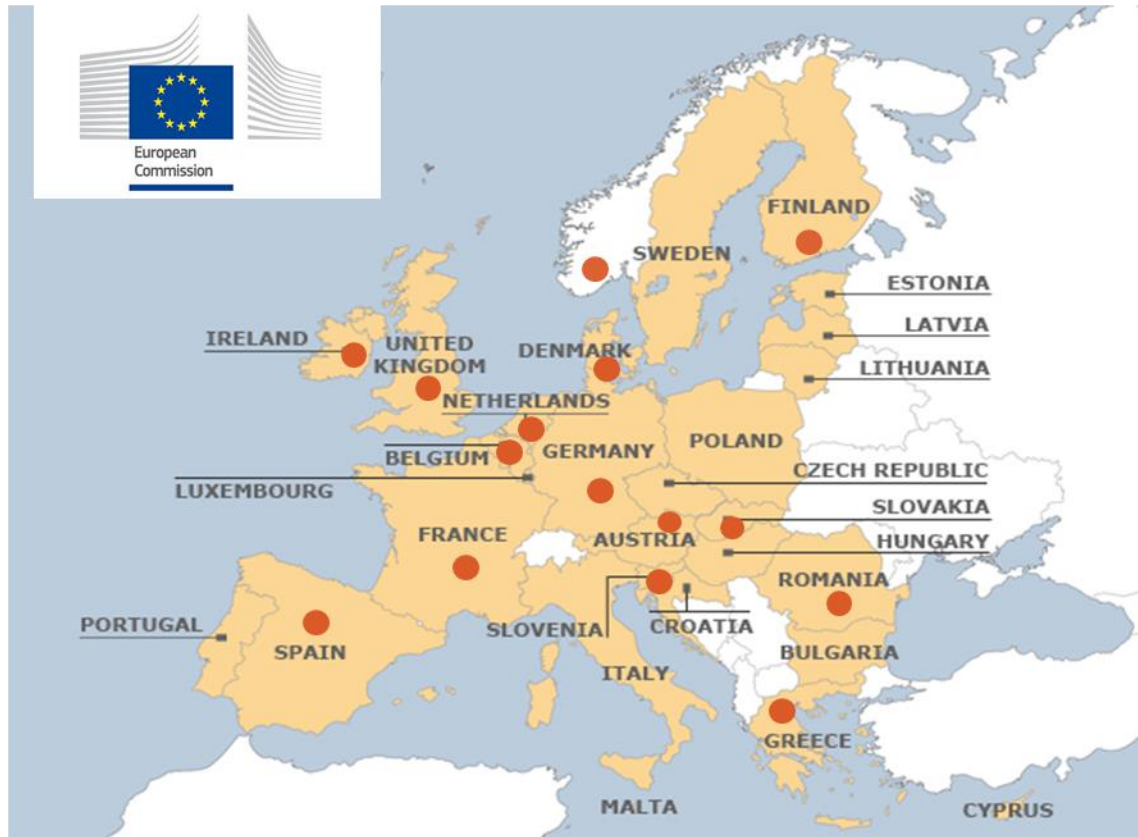
PEB = Circular Economy

When considering the PEB concept, a series of elements naturally come into place: the need for a smart grid; local renewable energy production; advanced materials, digital design; energy storage and **connection to electromobility solutions...**





Collaborative Platform



75 partners

19 countries

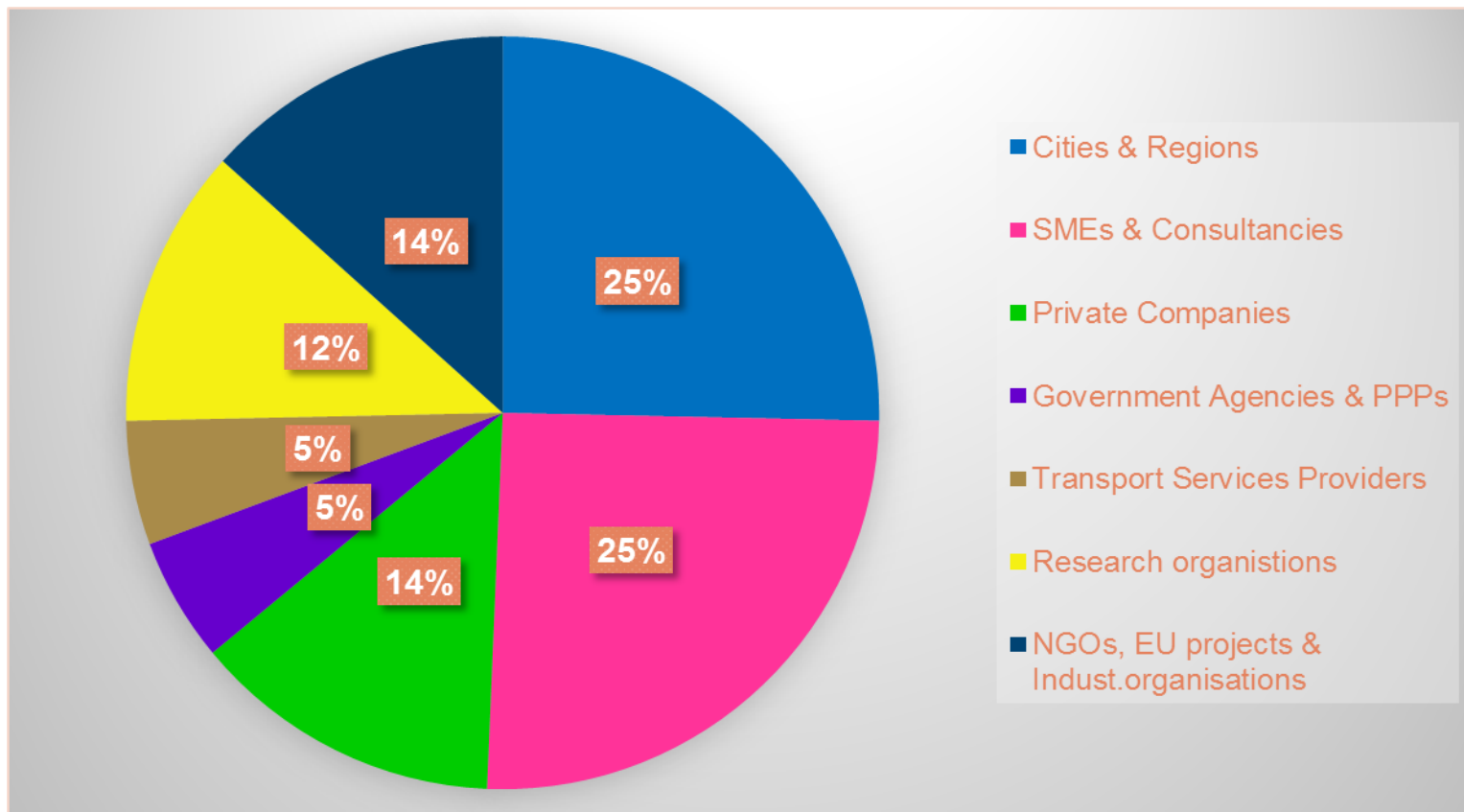
19 cities & regions

=

Dedicated
community

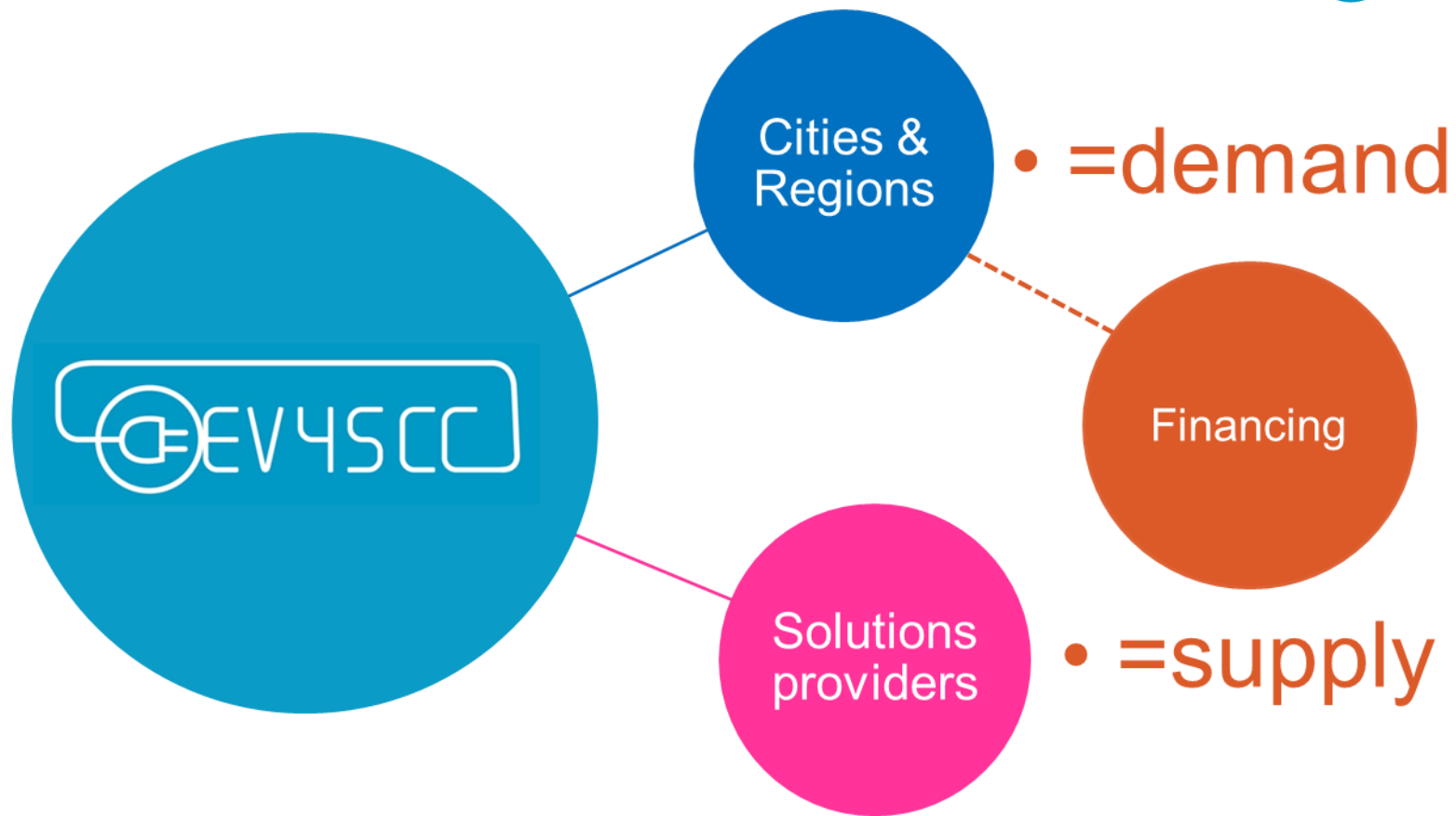


UNIQUE Platform





Connecting the “dots”





Replicate solutions



E-bus

E-fleet

E-freight

E-mobility planning & smart charging

Other actions:

- Give the lead to cities and regions
- Address the barriers and find ways to overcome them
- Find the right partners
- **Unlock financing**



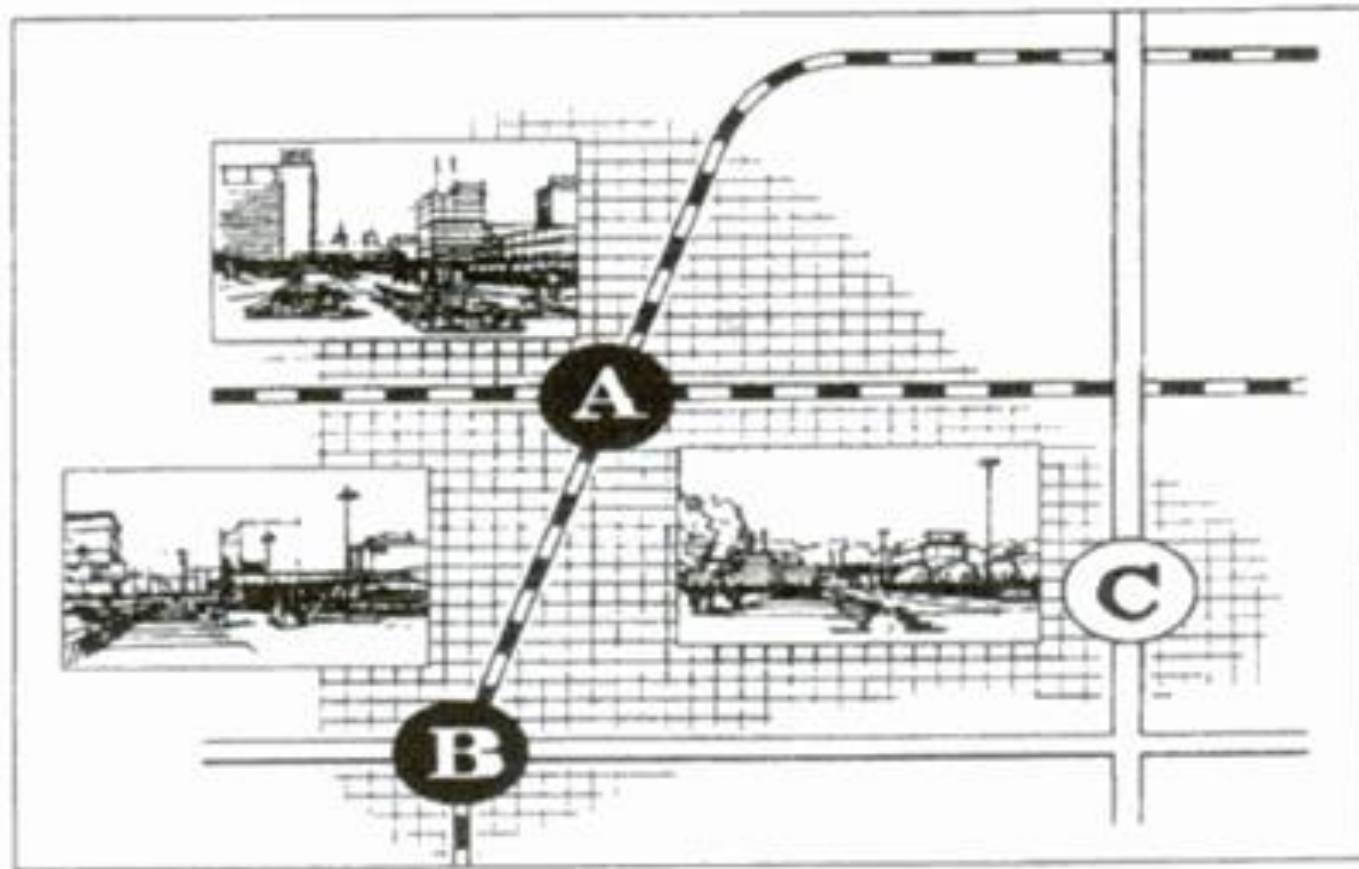
Urban mobility: Why to act at building/block level



“Real estate owners are the only real stakeholder when you want to create change (in home to work trips): companies tend to change location every 8 years, political legislations last 4 to 5 years, and people change jobs on regular basis. The real estate owners are the only ones who last for a longer period (10 to 15 years)”. (Minze Walvius, Advier)



Enable low energy mobility: spatial planning





Enable low energy mobility during construction – the SUCCESS project

- **Thematic area:** Reduction of costs and negative impacts of the construction supply chain
- **Topic:** To what extent and how can the supply chain management and Construction Consolidation Centres (CCCs) concepts bring about generic solutions to improve the construction supply chains?
- **Duration:** 36 months (Start 01/05/2015)
- **Total budget:** 3.2 M €
- **Funding:** European Commission, Horizon 2020 programme, MG-5.2-2014: Reducing impacts & costs of freight & service trips in urban areas
- **Pilots:** 4 pilots in Luxembourg, Paris, Valencia and Verona
- **Partners:** 11 partners with different backgrounds and interests into an optimized construction supply chain, including construction companies and associations, public institutions, research centres with a strong public mission



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EV4SCC contact

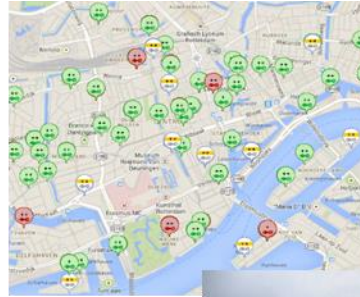


Enable low energy mobility: building design and operation

- Car free housing/car free offices
- Easy pedestrian access
- parking standards: minimum/maximum/ in function of PT accessibility
- Mixed use parking facilities (private and public)
- Bicycle parking (standards) + cyclist amenities
- Dedicated parking for car poolers, shared cars, electric cars etc.
- Freight partnerships

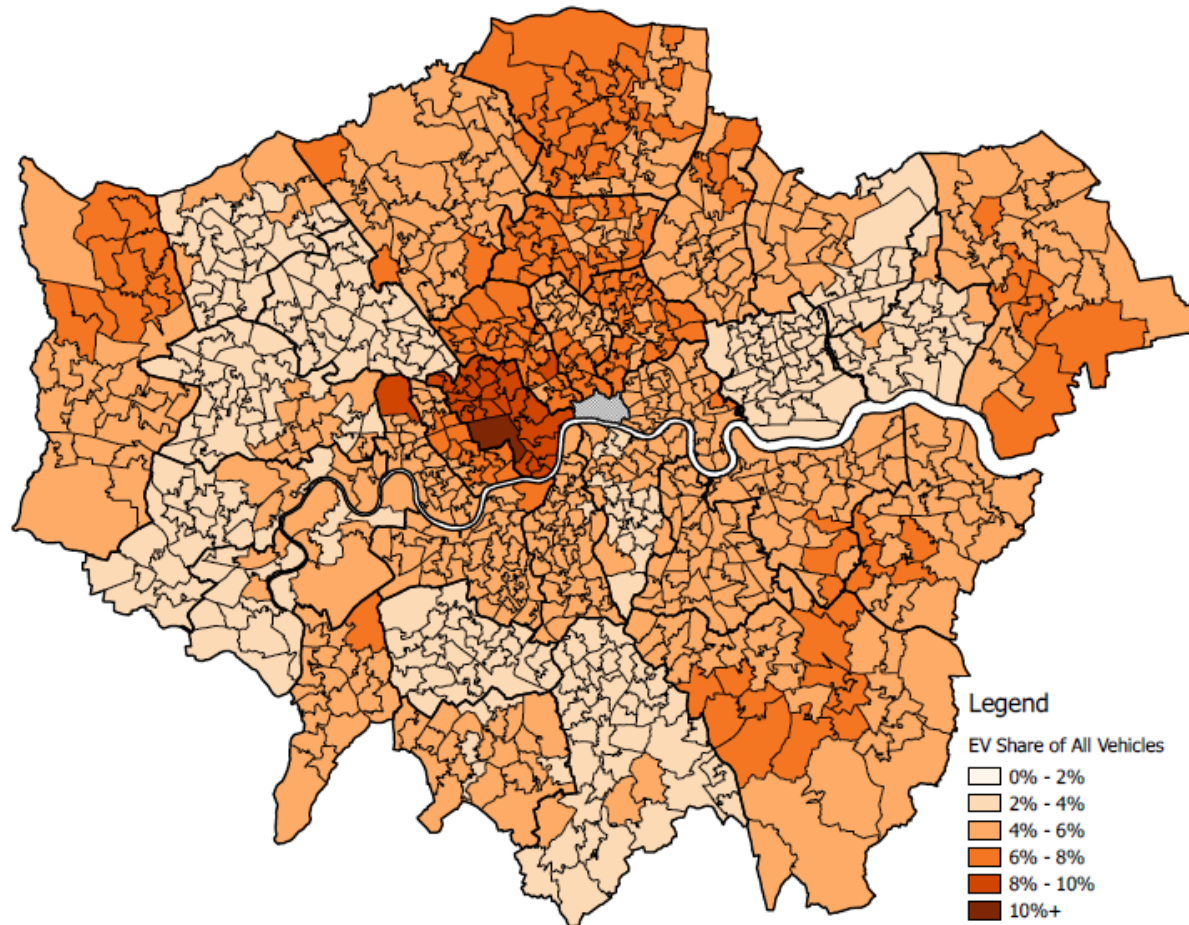


EV market is divers



Complex geographies of EV take-up (Source: TfL)

Estimated spread of ULEV uptake in 2025 (draft)



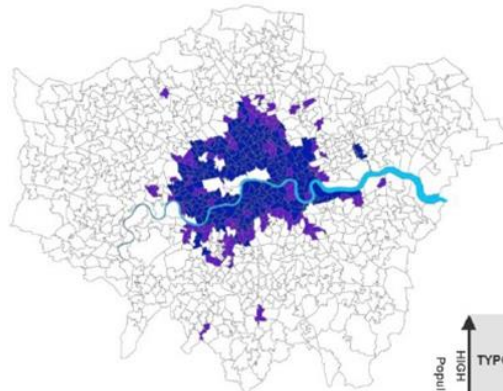


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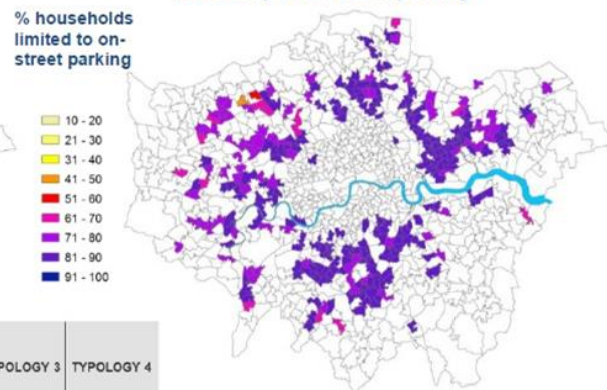
Population Density High

Population Density Low

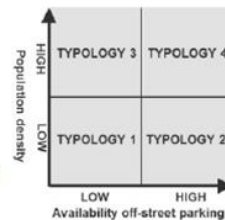
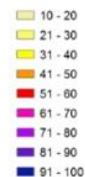
TYOLOGY 3: High population density, low availability of off-street parking



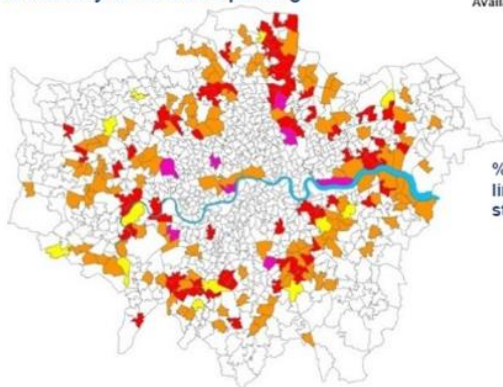
TYOLOGY 4: High population density, high availability of off-street parking



% households limited to on-street parking

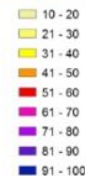


TYOLOGY 1: Low population density, low availability of off-street parking



TYOLOGY 2: Low population density, high availability of off-street parking

% households limited to on-street parking

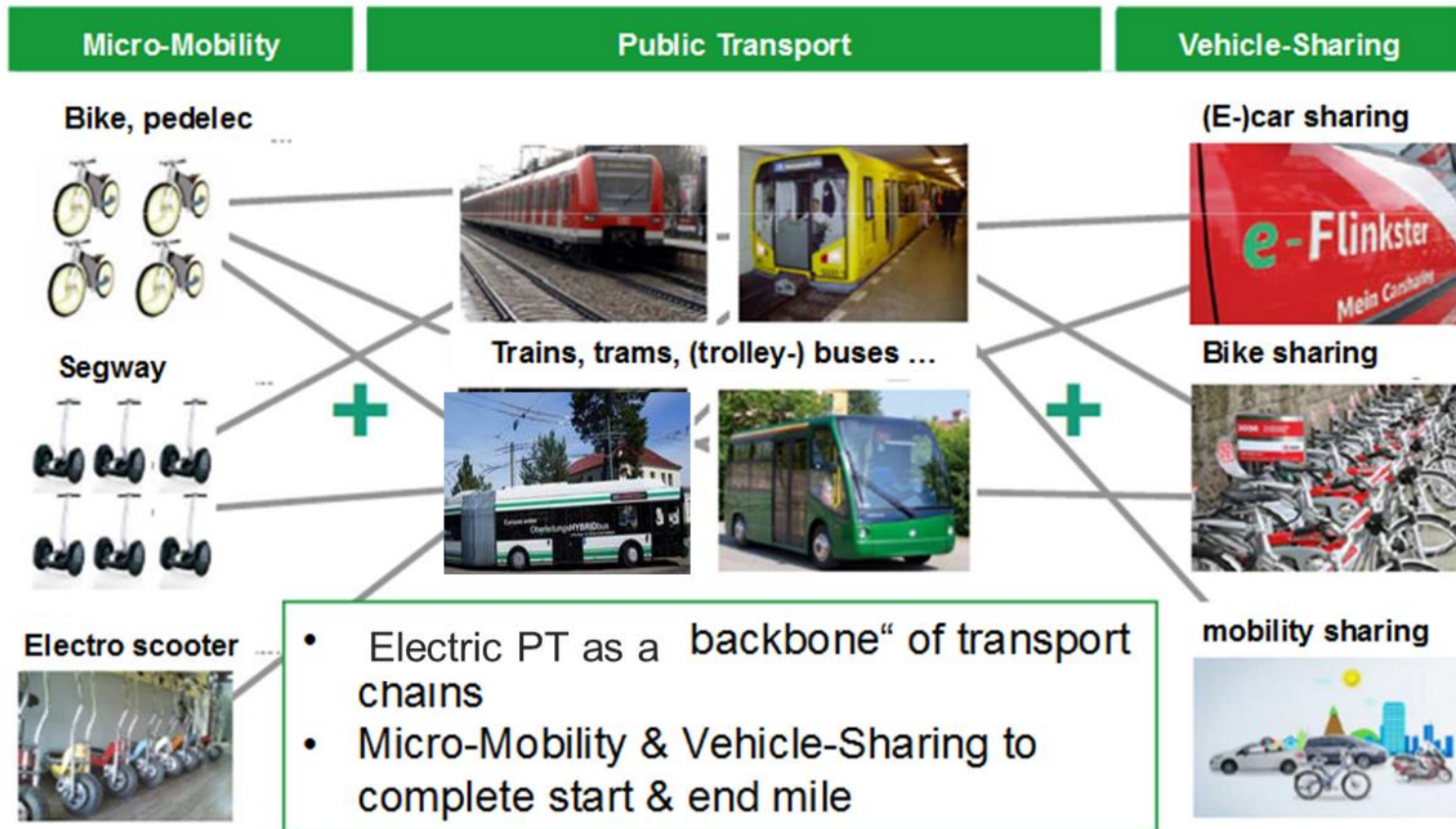


Low off-street Capacity

High off-street Capacity



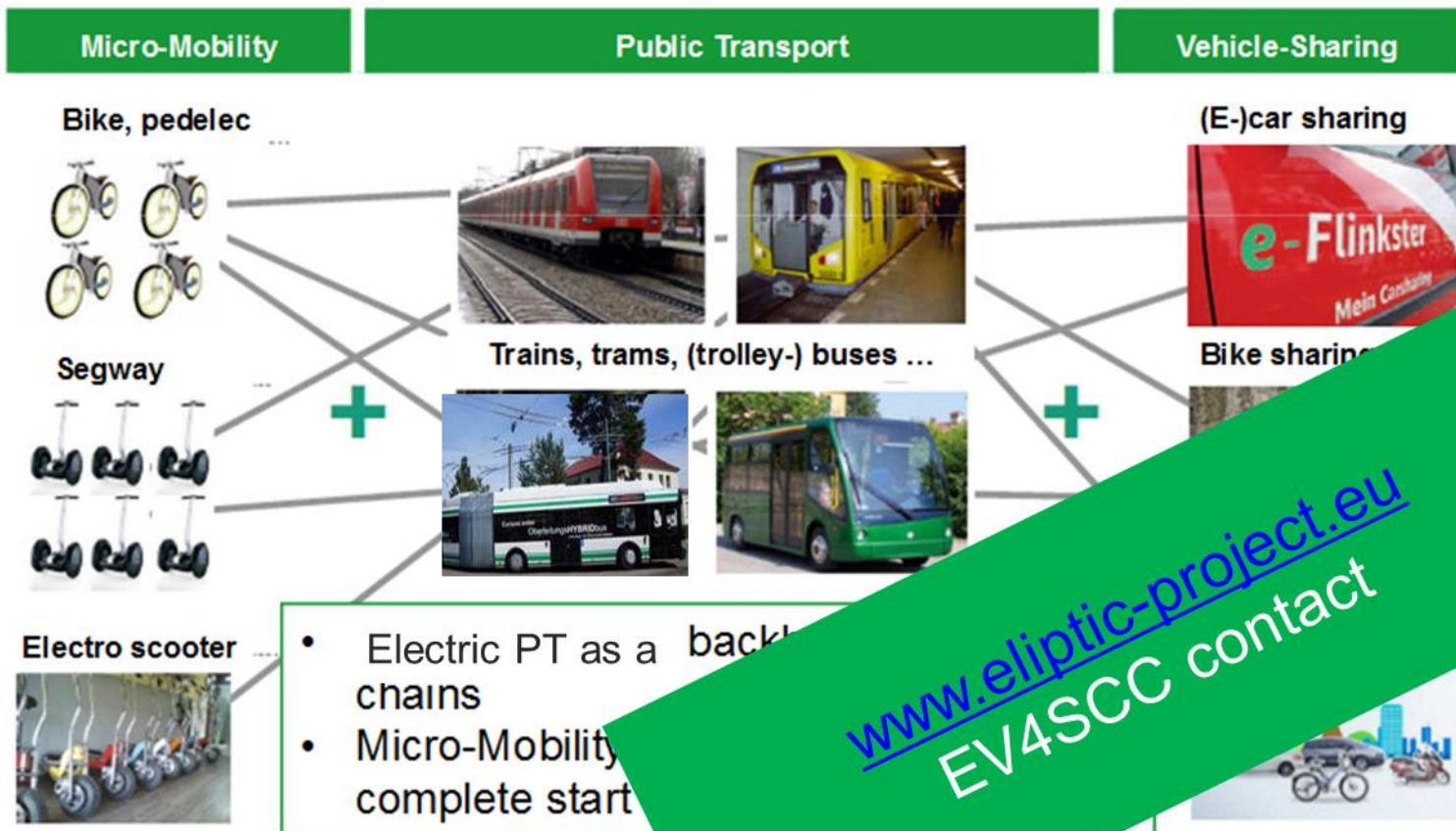
Transport infrastructures as energy hubs



Source: Spath, IAO, 2011



Transport infrastructures as energy hubs



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EVs as energy storage units

- Smart charging models are being piloted
 - Charge when demand for energy is low
 - Charge when energy price is low
 - Use vehicle battery as storage unit during production peaks / as energy source during demand peaks
 - Central / common ICT tools
- Interreg project SEEV4CITY to pilot and deploy



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<http://www.northsearegion.eu/seev4-city/about/>
EV4SCC contact



EIP SCC Initiative meetings, Brussels, 22 November

EV4SCC:

- eFreight: Declaration of Intent
- eBus: validation of European principles for procurement of buses
- E-Mobility Planning and Charging: getting to know SEEV4CITY



Interested?

Become part of the initiatives

By signing the manifestos!

(eu-smartcities.eu)

Join the EV4SCC meeting

On 22 November...





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Business Models



Relevant initiatives:

**Action Cluster on Business Models
of the EIP-SCC Market Place**

CITYinvest project





The Business Models Action Cluster

Existing business models, finance & funding instruments and procurement schemes do not fit today's challenges within our cities and communities.

There is a strong need for knowledge sharing, innovation and expertise on these areas.

Our aim: To create pace, scale and impact by acting along these 3 interconnected axes



The Business Models Action Cluster

We already:

elaborated a funding guide for projects and initiatives
published a report on Local innovation ecosystems

Now we are:

engaging a Finance Expert Working Group
gathering **business models case studies**

Participate in our webinar on 24 Nov.

How can cities enhance collaboration with businesses?

<https://eu-smartcities.eu/content/webinar-how-can-cities-enhance-collaboration-businesses>



CITYinvest

Fostering the Catalyst Role of Local Authorities to Accelerate Energy Efficiency Investments

The project focuses on supporting and replicating successful innovative financing models for energy efficiency renovations in buildings. It is now in its 2nd phase where it will support 3 pilot projects in Liege, Murcia and Rodhope.



CITYinvest

Current **results**: library of 24 case studies which reviews innovative financing and operational models for large-scale retrofits.

Conclusion - challenges related to energy efficiency financing in cities:

- lack of standardisation
- perceived risk of energy-related investments
- issues with the balance sheets of local authorities as energy efficiency contracts are seen as a cost item rather than an investment, meaning that investment may be hampered by the EU's Stability and Growth Pact (SGP).



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The role of the European Commission

*Speaking: **Georg Houben, DG ENERGY**
Responsible for the EIP-SCC Market Place*



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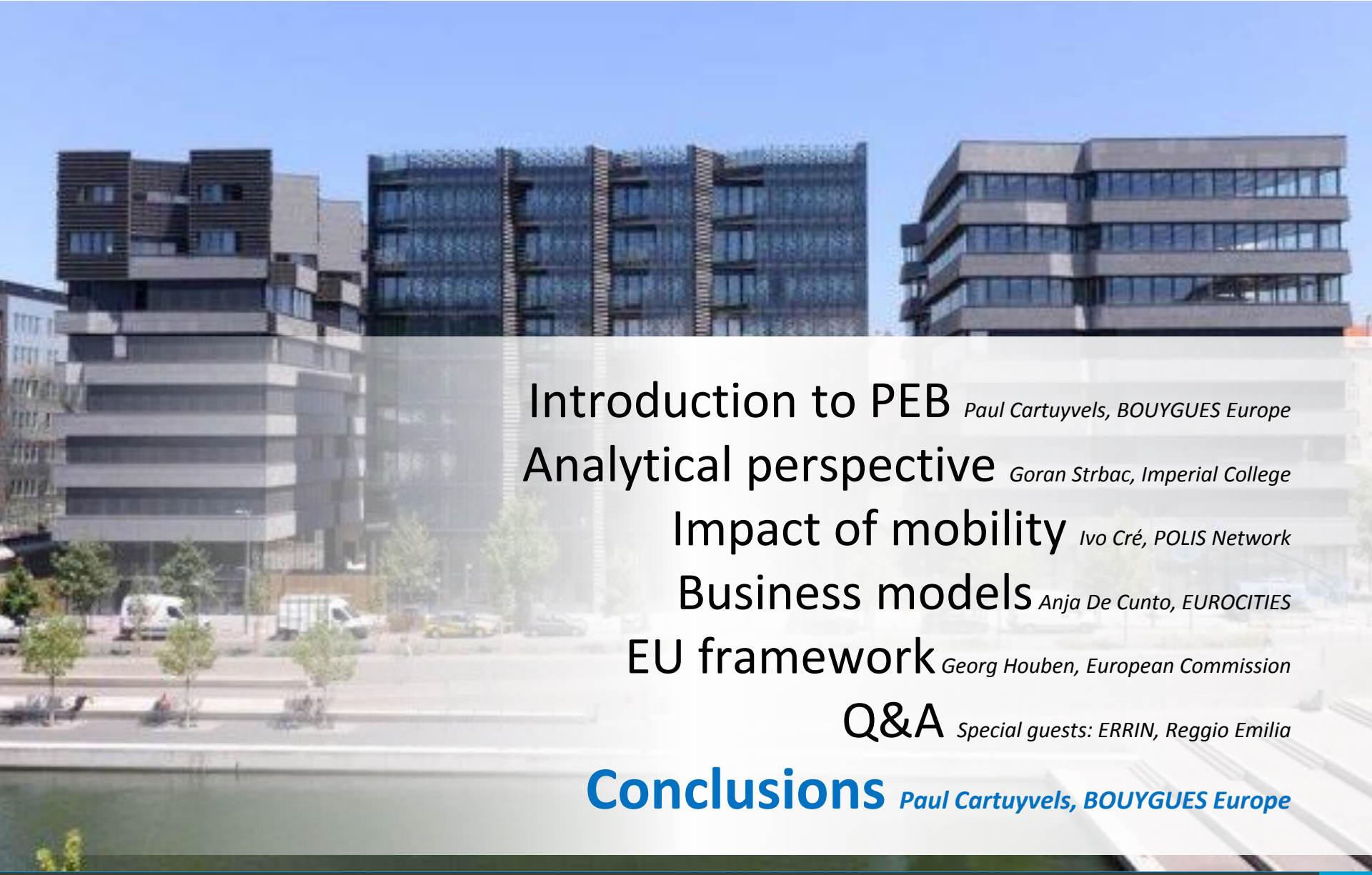
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Conclusions



*Speaking: Paul Cartuyvels, BOUYGUES Europe
Lead of the Action Cluster on Sustainable Districts and Built Environment*



Join our upcoming meeting on 22nd November!



THANK YOU!

<https://eu-smartcities.eu>

Contact: info@eu-smartcities.eu

#EIPSCC

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