



IEA HEV TCP Task 43 Seminar

EV4EU: Addressing VGI barriers

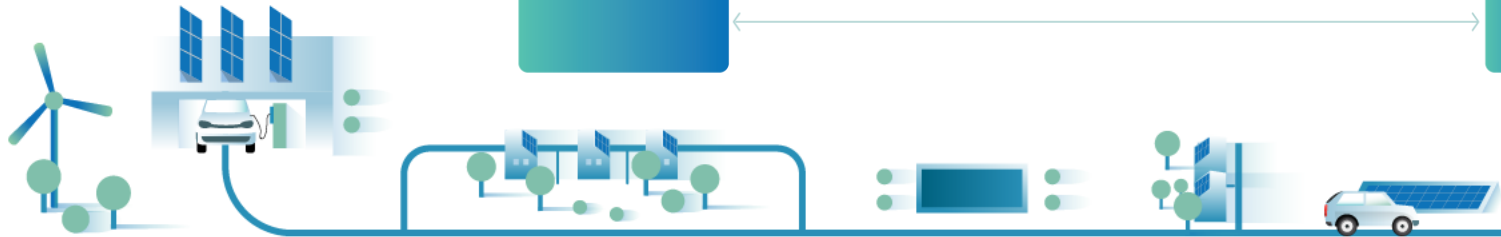
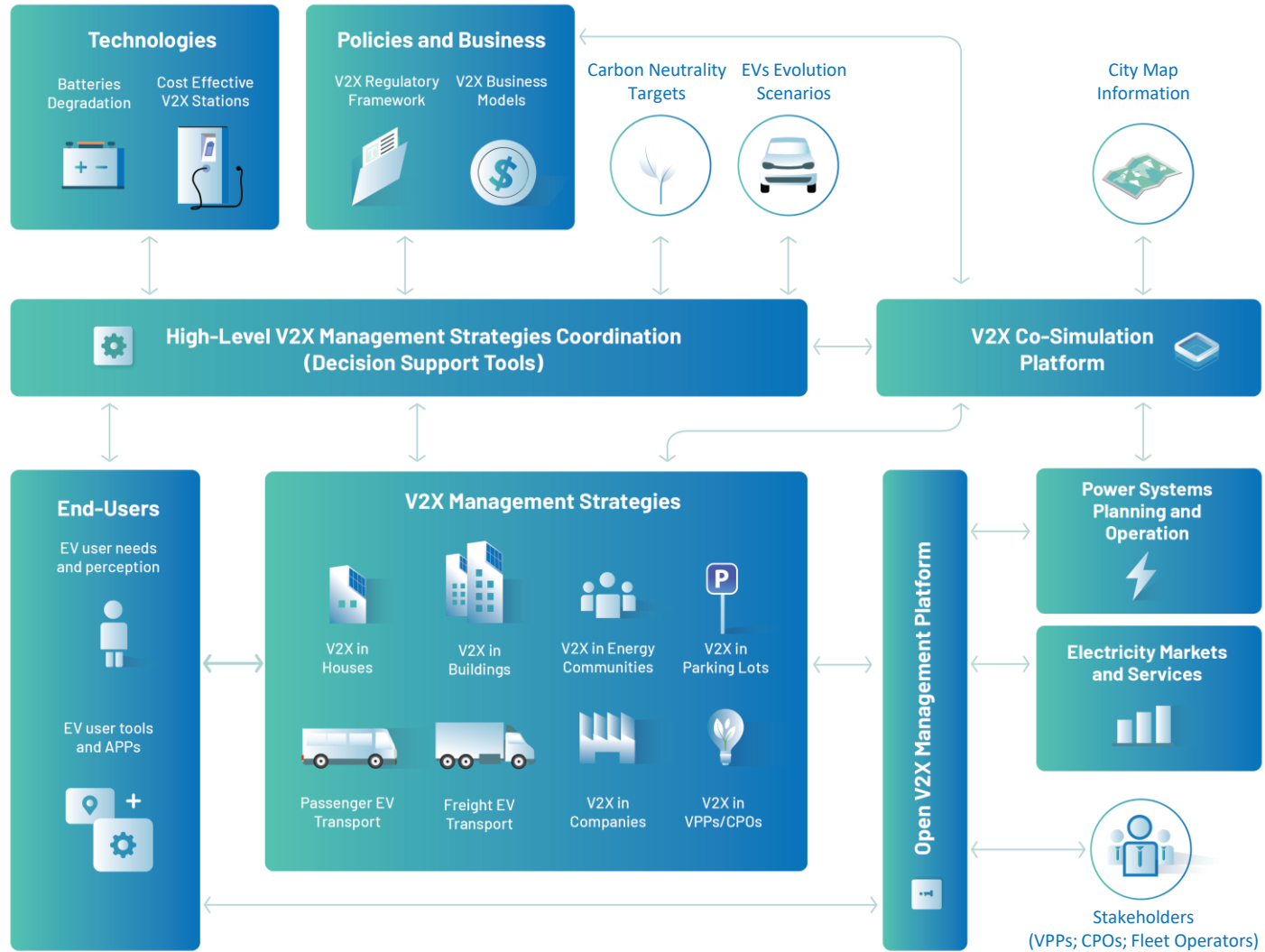
Hugo Morais / Panagiotis Pediaditis
2023 / 05 / 15
hugo.morais@tecnico.ulisboa.pt
panped@mail.ntua.gr



EV4EU – Consortium

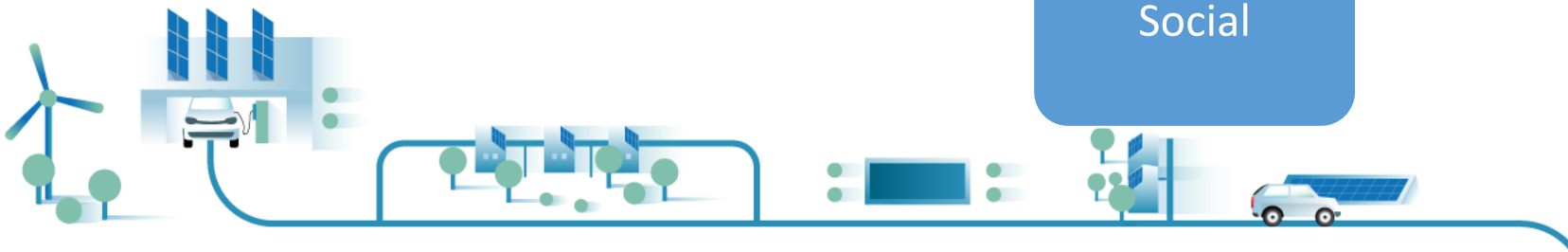
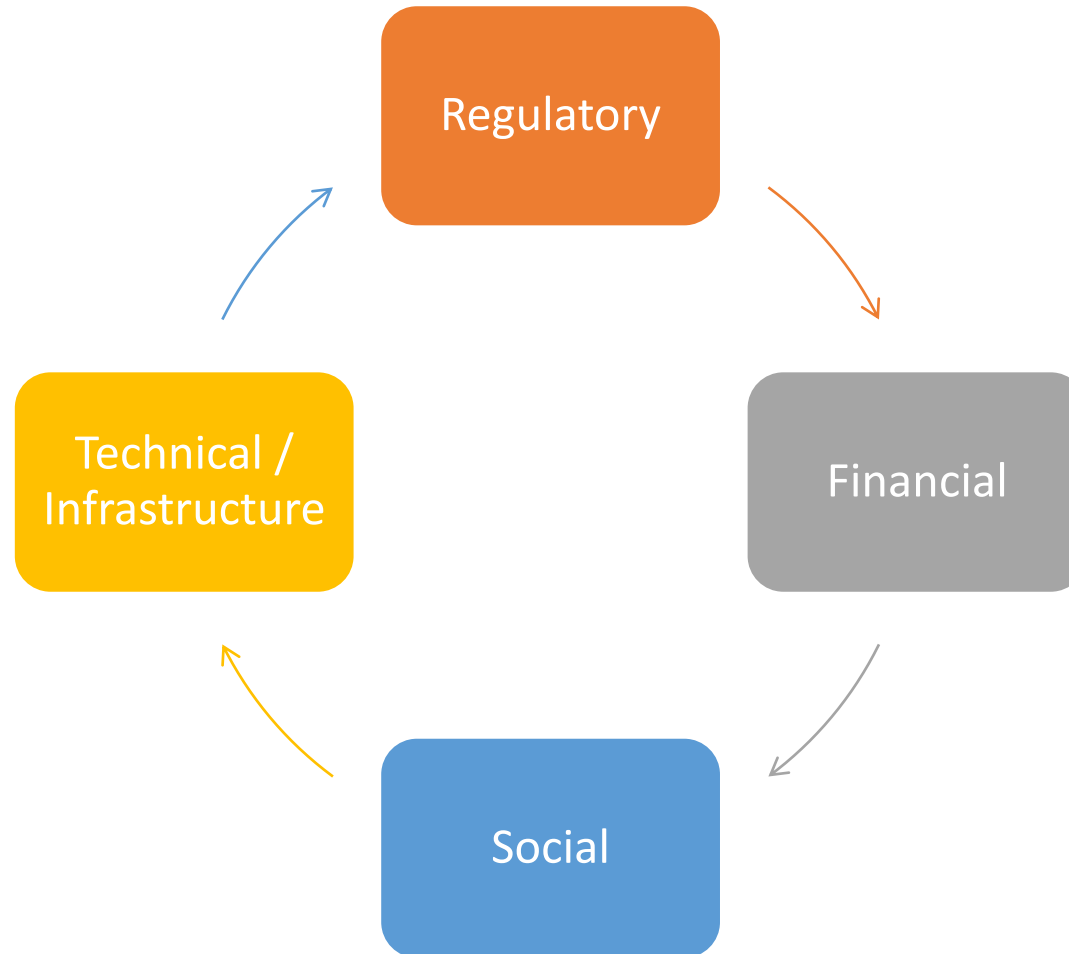


EV4EU – Concept



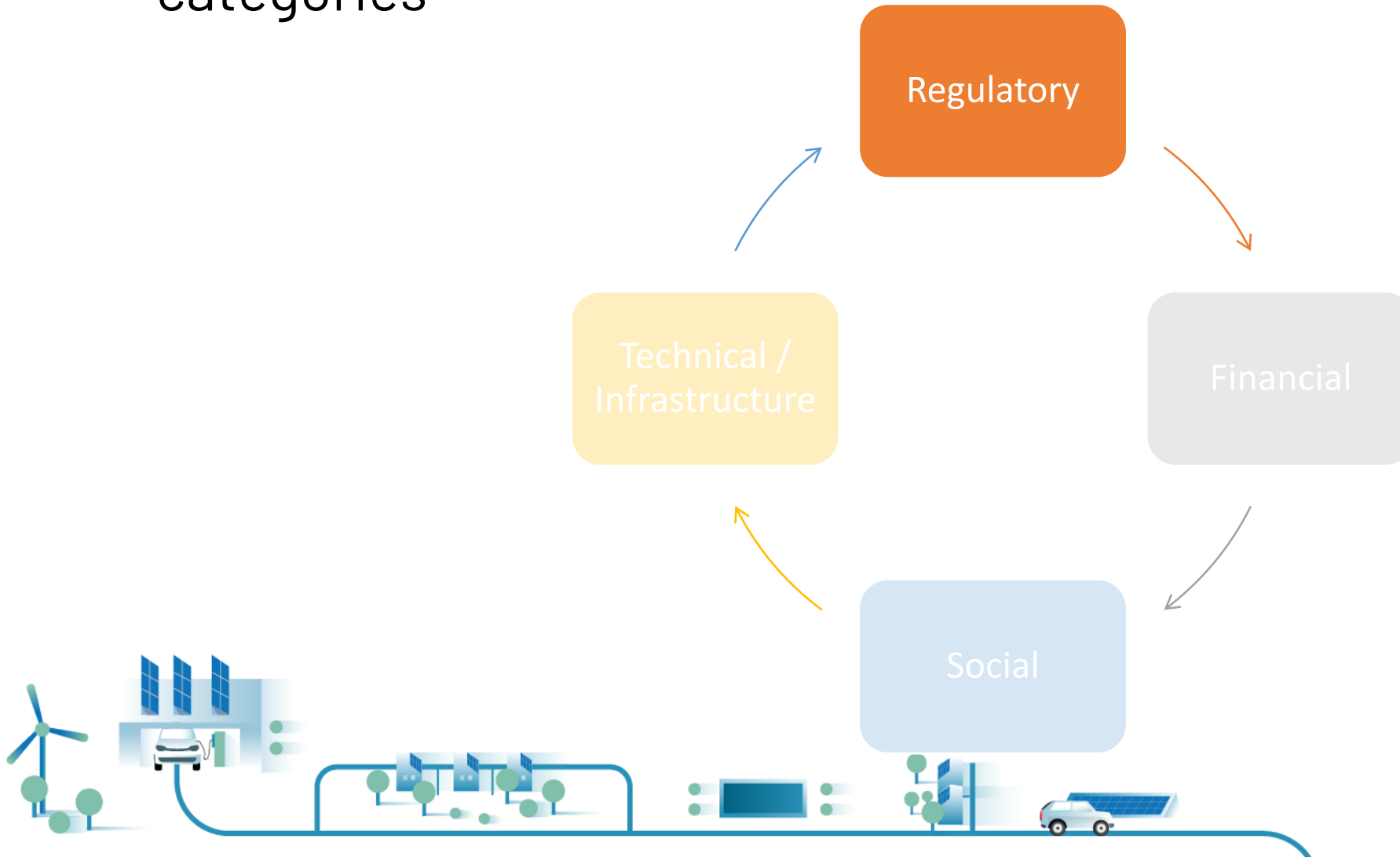
Barriers for the V2X integration

- The main barriers for V2X integration can be separated into four categories



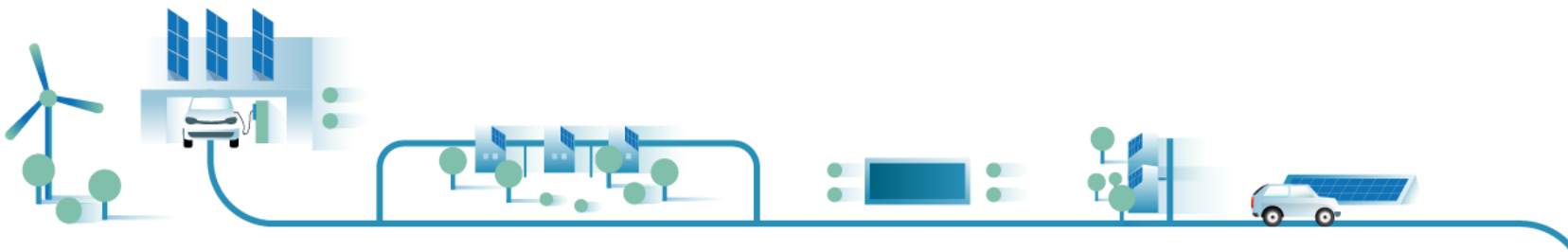
Barriers for the V2X integration - Regulatory

- The main barriers for V2X integration can be separated into four categories



EU regulation on EVs

- Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action: requires each EU member state to develop a national energy and climate plan. Final target -> climate-neutral economy by 2050
- Directive 201/94/EU: Setting the requirements for EV charging points -> 1 EV charging point per 10 EVs by 2020
- Regulation (EU) 2019/631: setting CO2 emission performance standards for new passenger cars and for new light commercial vehicles -> 35% zero- and low-emission vehicles' benchmark for new passenger cars by 2030

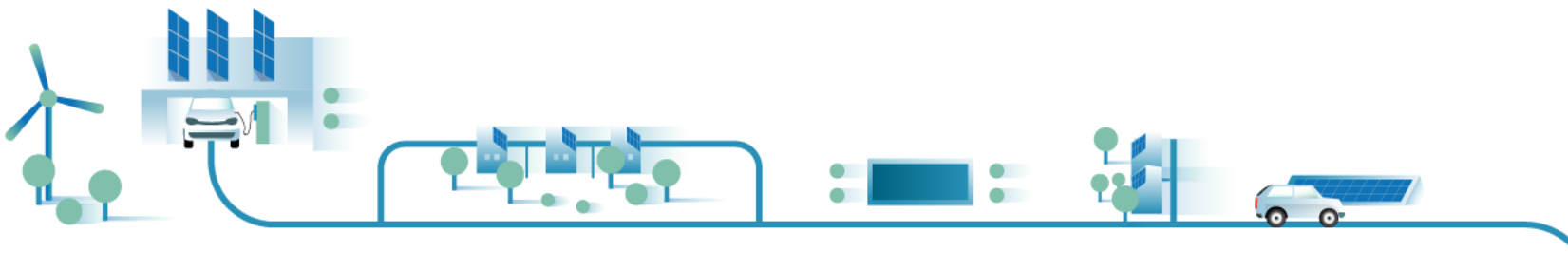


National regulation on EVs

- Many NECPs and National regulations include targets for PHEV & BEV penetration increase (Greece, Denmark)
- Most of the European countries are providing incentives and/or tax benefits for EV purchase and ownership (Greece, Portugal, Slovenia, Denmark)

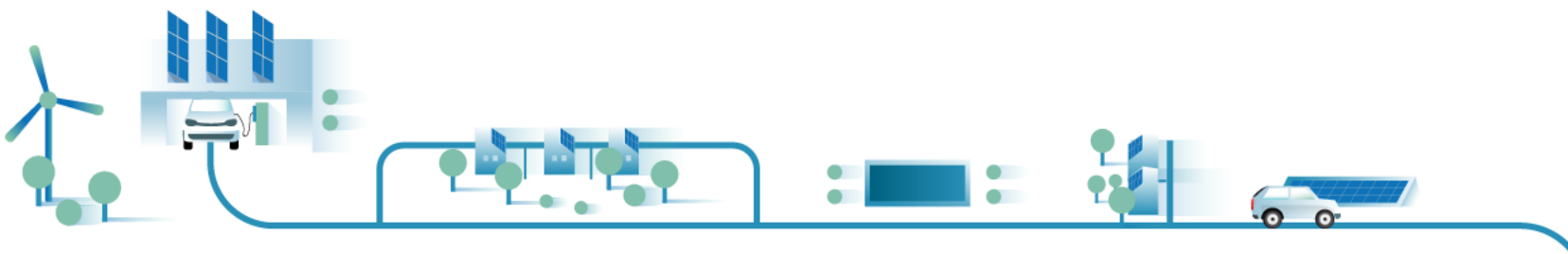
Tax Benefits			Purchase incentives
Acquisition	Ownership	Company cars	21
21	22	16	

No. of countries that provide benefits/incentives from the 27 EU member states (2022)



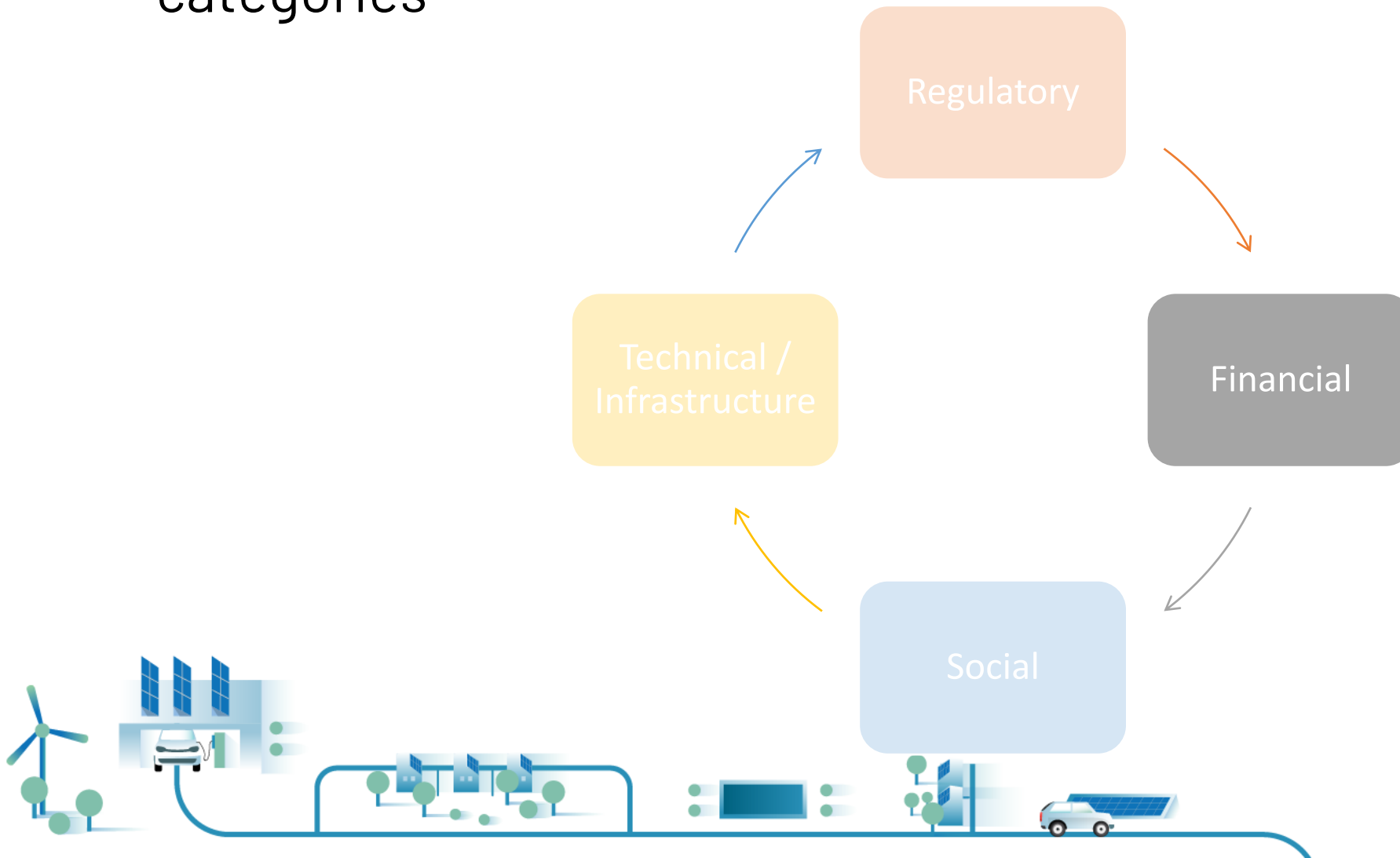
Regulatory barriers

- In most countries, there is no specific prohibition for VGI.
- Indirect barriers include:
 - Not enough incentives to buy EVs (Portugal, Greece, Denmark)
 - Installation of chargers in existing buildings (Slovenia, Portugal, Greece)
 - ...and publically (Denmark, Greece)
- V2X might be treated as generation which is or has been claimed by other types of Distributed Generation
- No incentives for V2X → no market → no V2X EVs and chargers



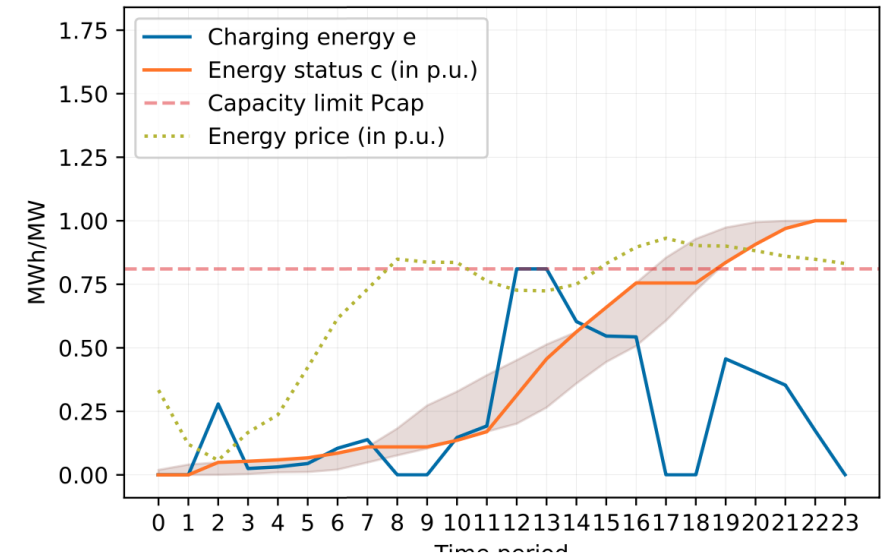
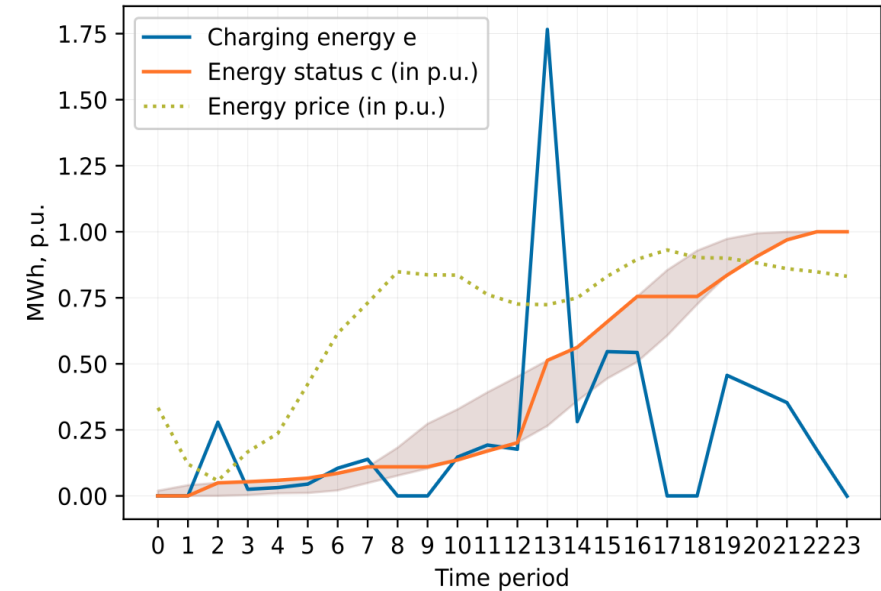
Barriers for the V2X integration - Financial

- The main barriers for V2X integration can be separated into four categories



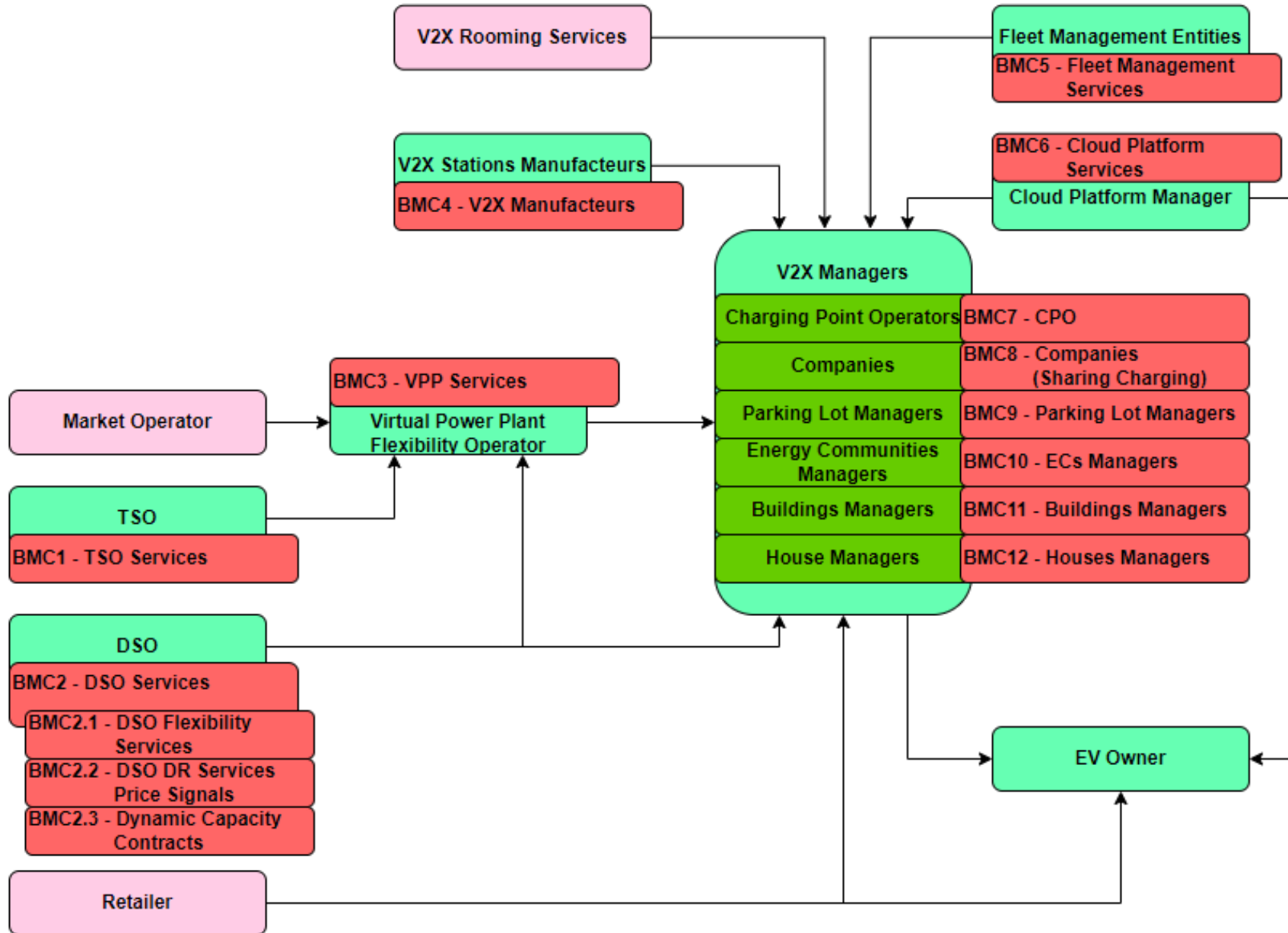
V2X as a flexibility resource

- V2X is *probably* the most important flexibility resource!
- But, exposing V2X to wholesale financial incentives is tricky for DNs
- We need a flexibility management framework for the distribution, e.g.:
 - Dynamic DUoS tariffs
 - Local flexibility markets
 - Flexible capacity contracts
- However, this is missing from the regulation!



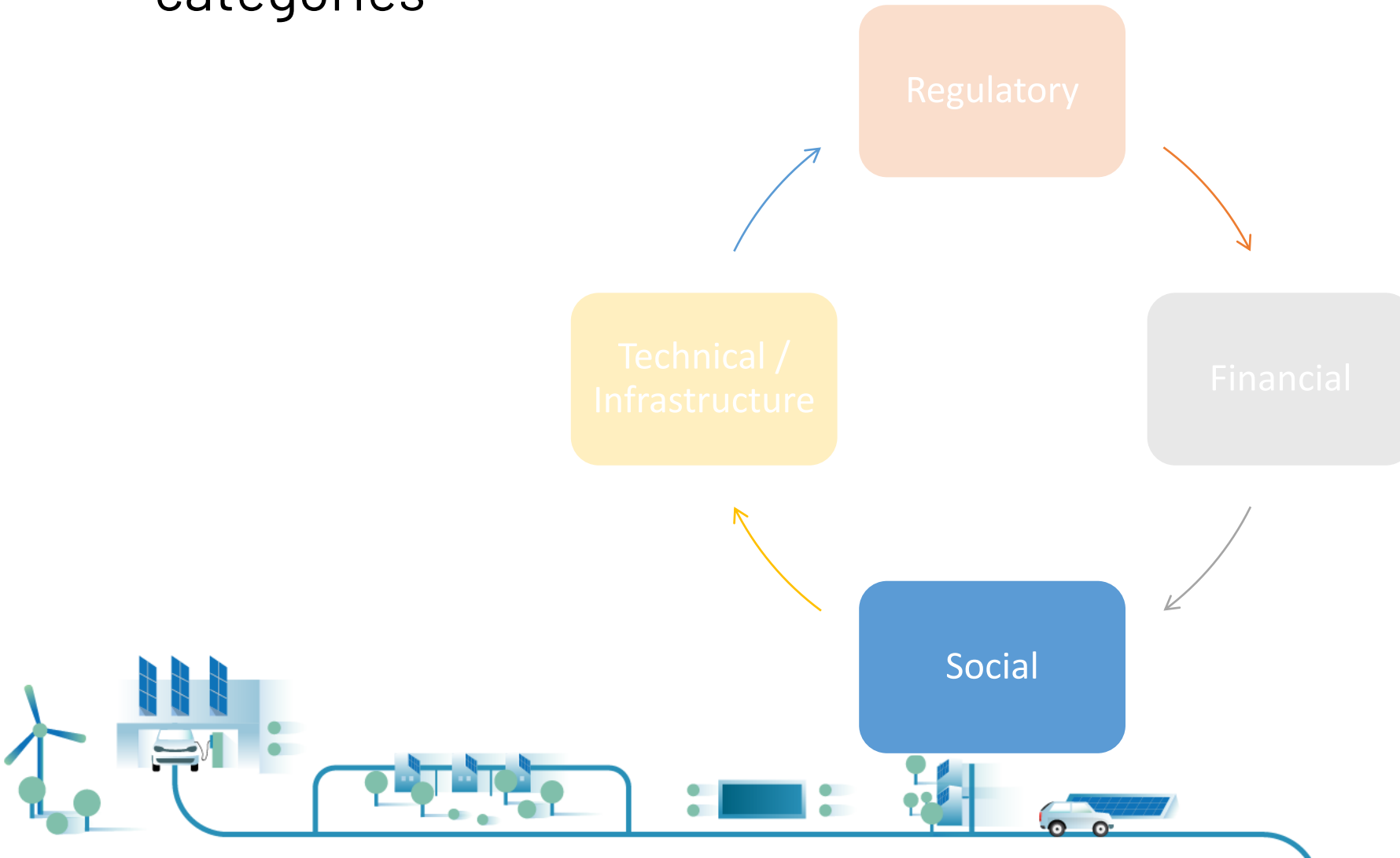
Source: P. Padiaditis, C. Ziras, D. Papadaskalopoulos and N. Hatzigiargyriou, "Synergies between Distribution Use-of-System Tariffs and Local Flexibility Markets," 2022 International Conference on Smart Energy Systems and Technologies (SEST), 2022, pp. 1-6

EV4EU – Business Use Cases and Business Models

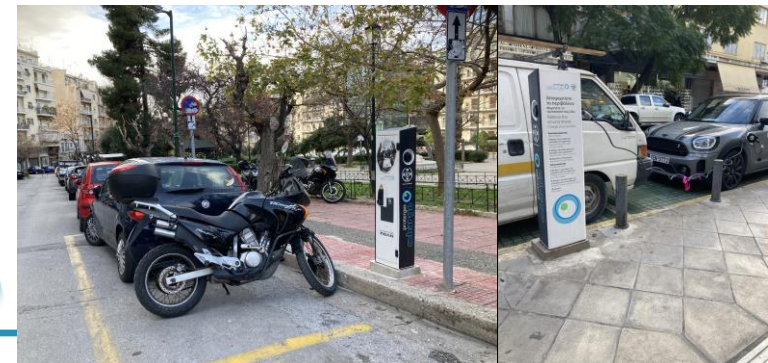
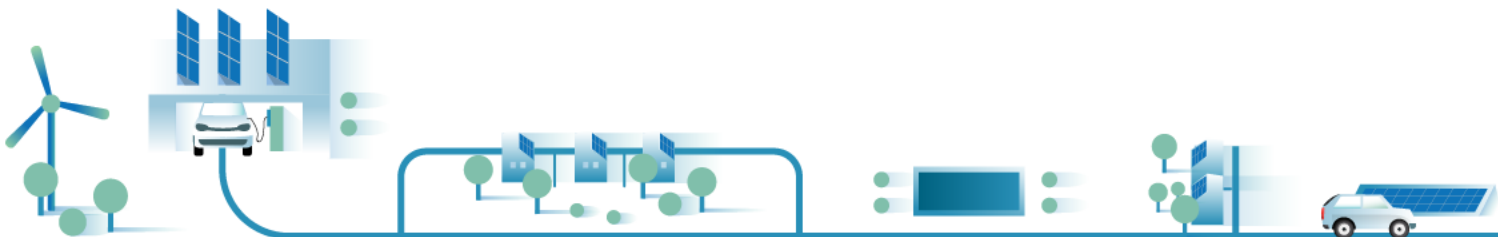
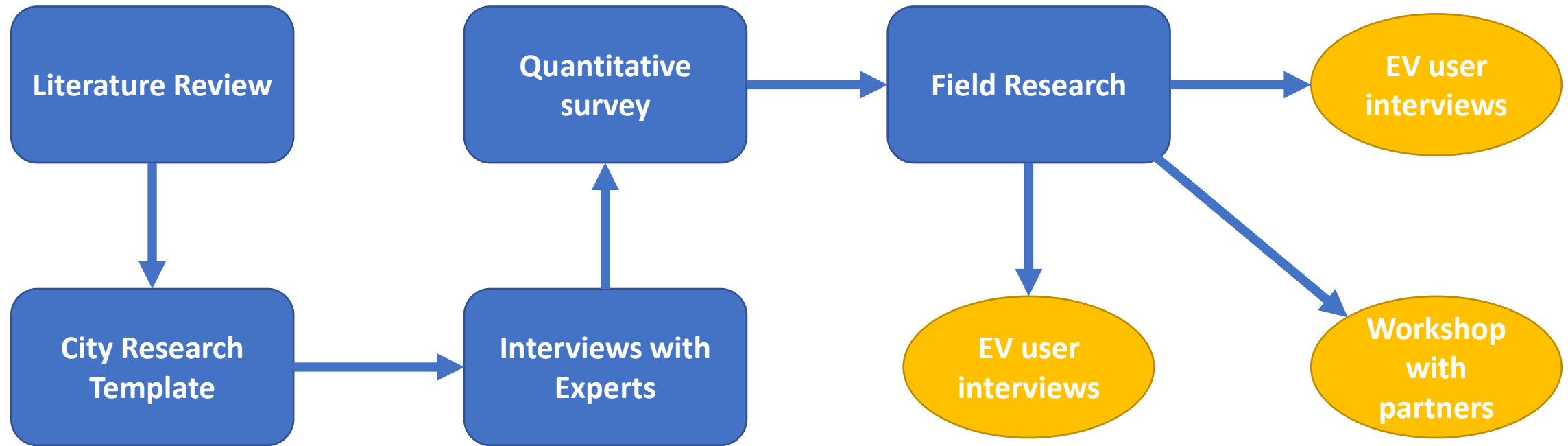


Barriers for the V2X integration

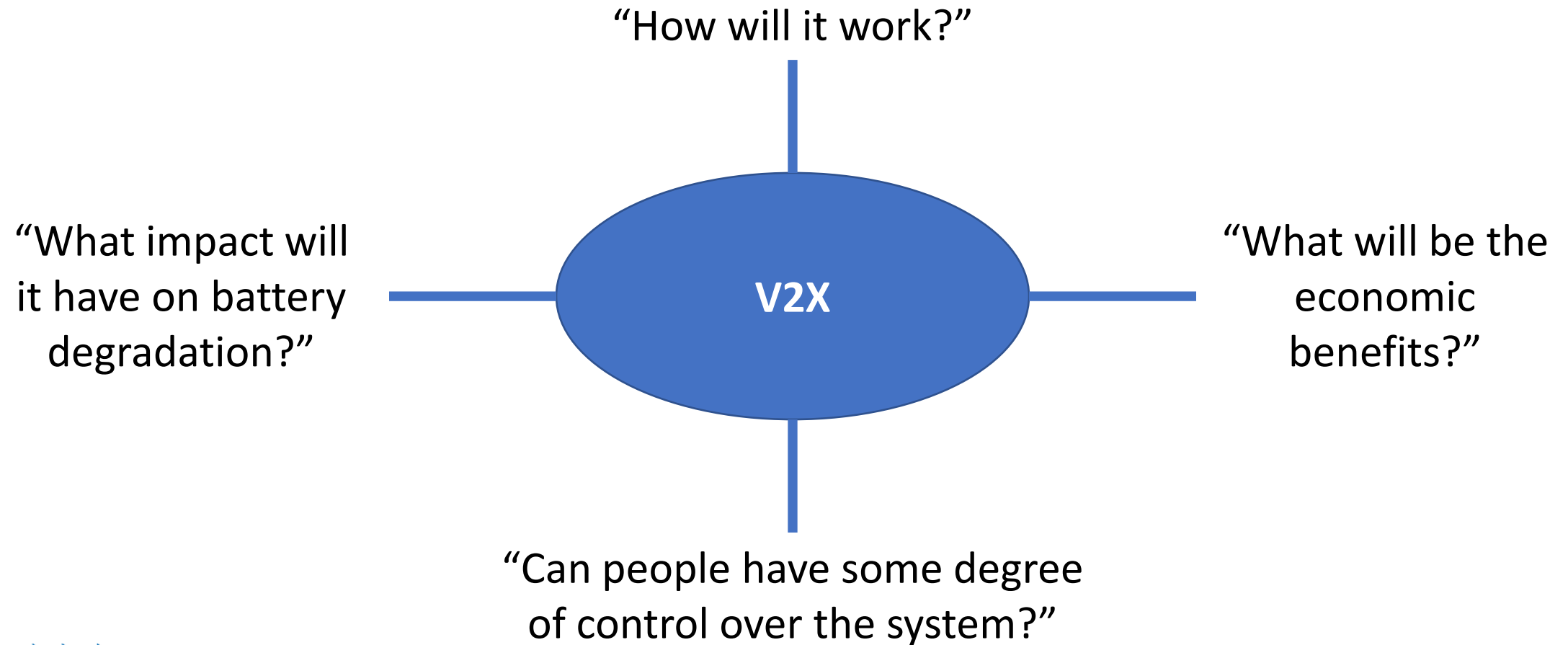
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EV4EU – Users perspectives

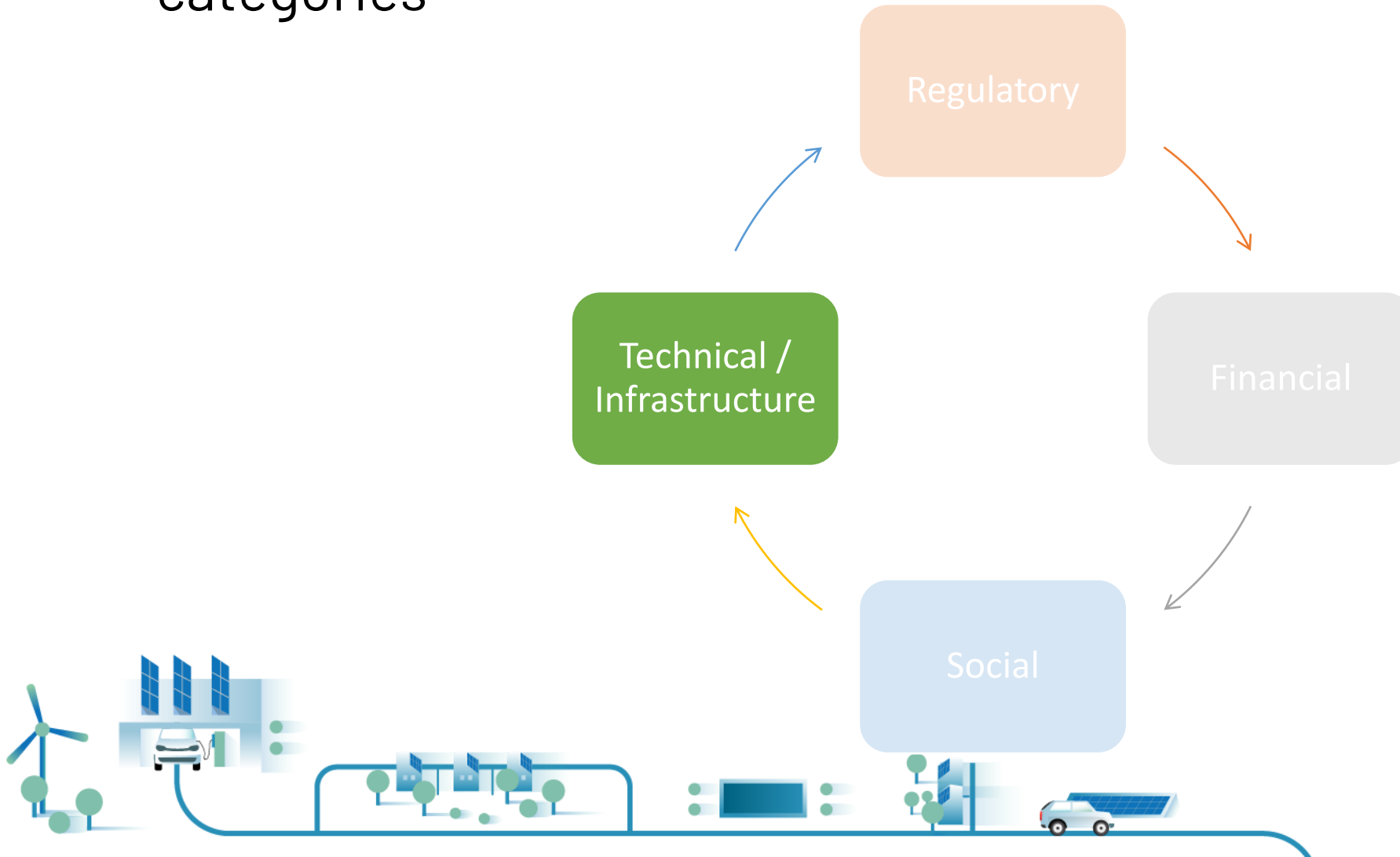


EV4EU – Users perspectives



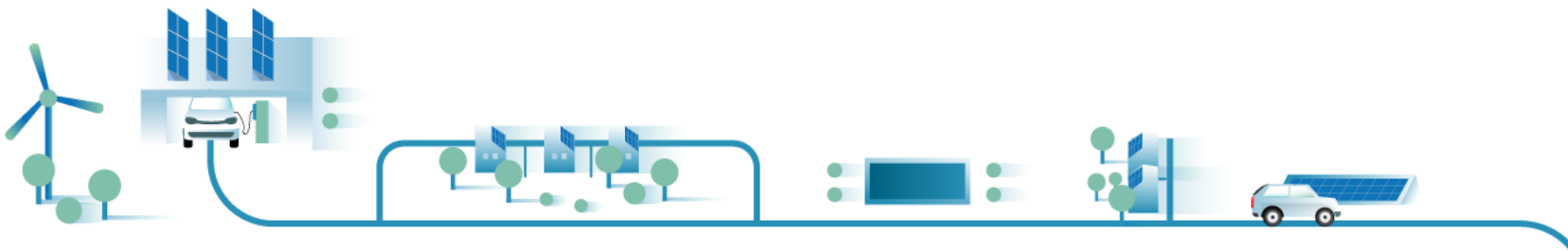
Barriers for the V2X integration - Technical

- The main barriers for V2X integration can be separated into four categories



Barriers for the V2X integration - Technical

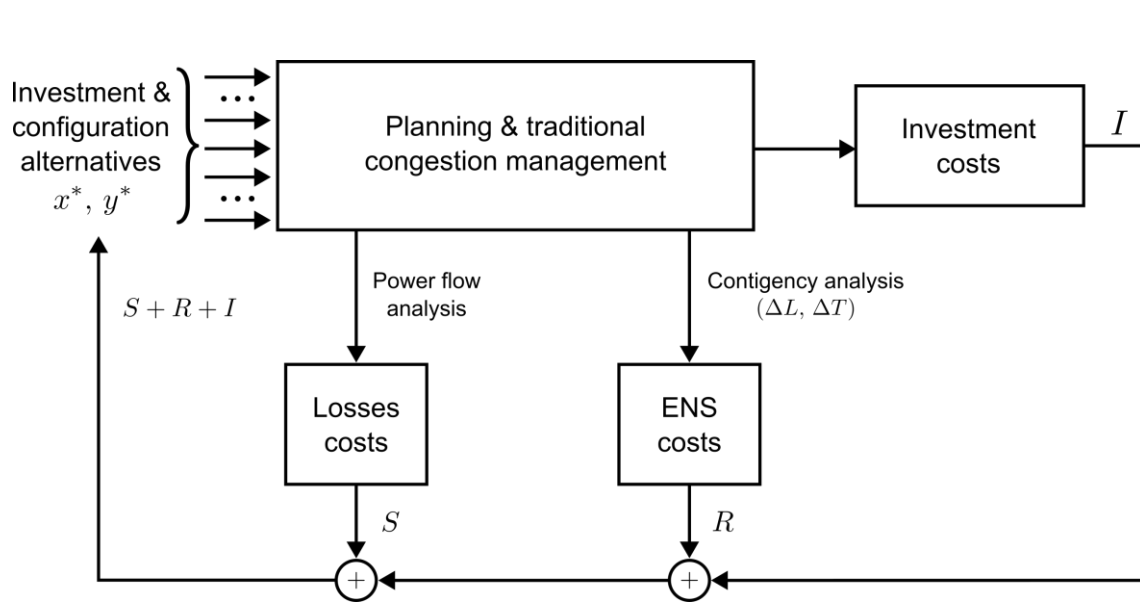
- **Degradation of the batteries** considering the participation in different services
- **Protocols and Standards**
- **Charging Infrastructure** (Quantity, Availability, Information)
- Solutions for **on-road charging stations**
- Solutions for **Condominiums and Business**
- **EVs Rooming**
- **Grid** solutions



EV4EU – Modeling EVs flexibility in distribution system planning

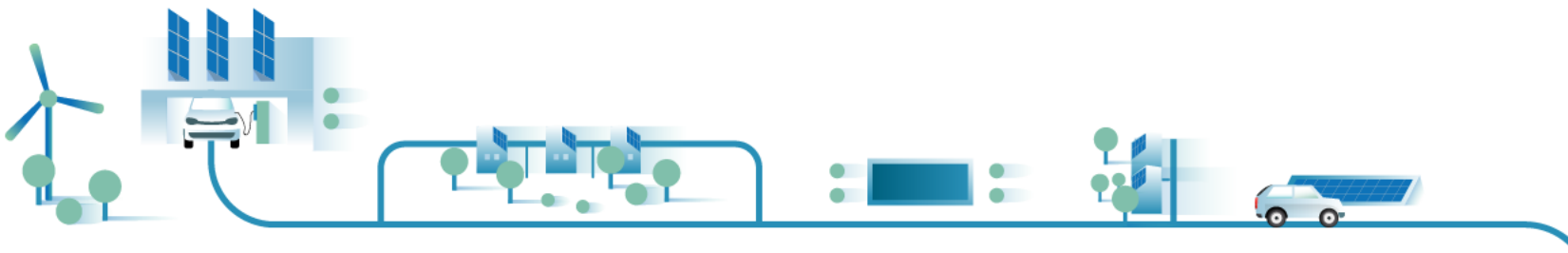
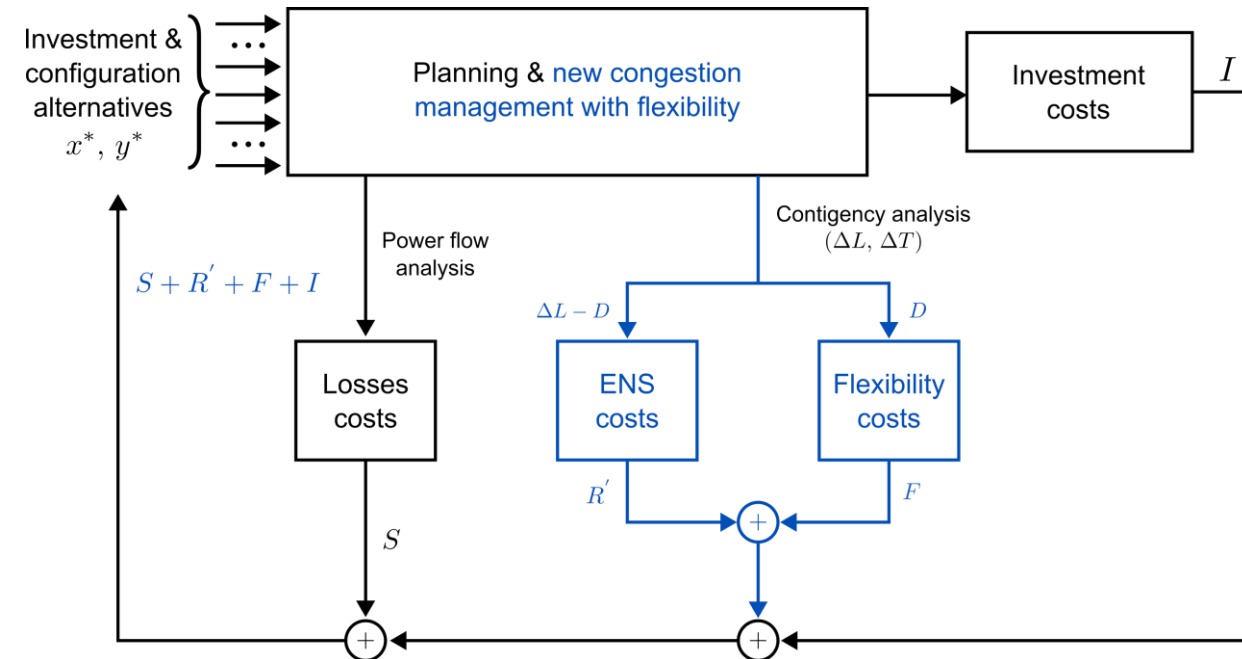
OPTION 1

Low Flexibility Availability



OPTION 2

High Flexibility Availability





@ev4eu_eu



@ev4eu



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ev4eu

Hugo Morais / Panagiotis Pediaditis
2023 / 05 / 15
hugo.morais@tecnico.ulisboa.pt
panped@mail.ntua.gr



Funded by
the European Union

Funded by European Union's Horizon Europe research and innovation programme under grant agreement no. 101056765. Views and opinions expressed in this document are however those of the authors only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.