

Tendering process for e-buses, Procurement and LCA for e-bus tendering



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SOL+ Latin America Regional Training

Módulo 4: Buses eléctricos / Module 4: Electric buses



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no 875041

UITP – A world wide organisation for Public Transport

Connecting the world of public transport

The International Association of Public Transport (UITP) is the international network for public transport authorities and operators, policy decision-makers, scientific institutes and the public transport supply and service industry.

UITP cover all modes of public transport: metro, bus, light rail, regional and suburban rail, and waterborne transport.

UITP act as a platform for worldwide co-operation, business development and the sharing of know-how between our 3,100 members from 90 countries.

UITP is the global advocate for public transport and sustainable mobility, and the promoter of innovations in the sector.

Today's focus points

Tendering process

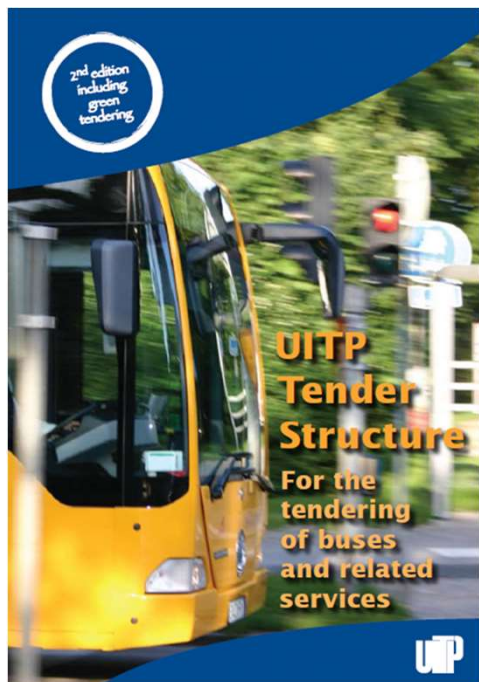
- Minimum qualifications for bus operators
- Bus specifications
- Range and Energy Consumption
- Bid variable & financial evaluation
- LCA for e-bus tendering



• 28/10/2022

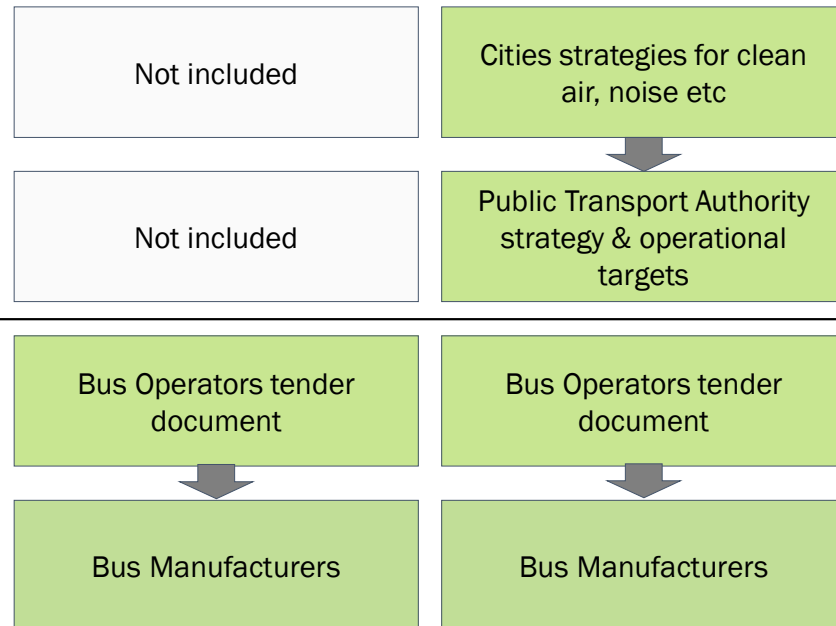
- First edition issued 2005
- Second edition issued 2009
- Revision Annex EURO VI 2014
- Third edition issued November 2018
- Version 3.1 edition issued in 2020
- Life Cycle Assessment 2021-2022

> Update and expansion (3rd Edition)



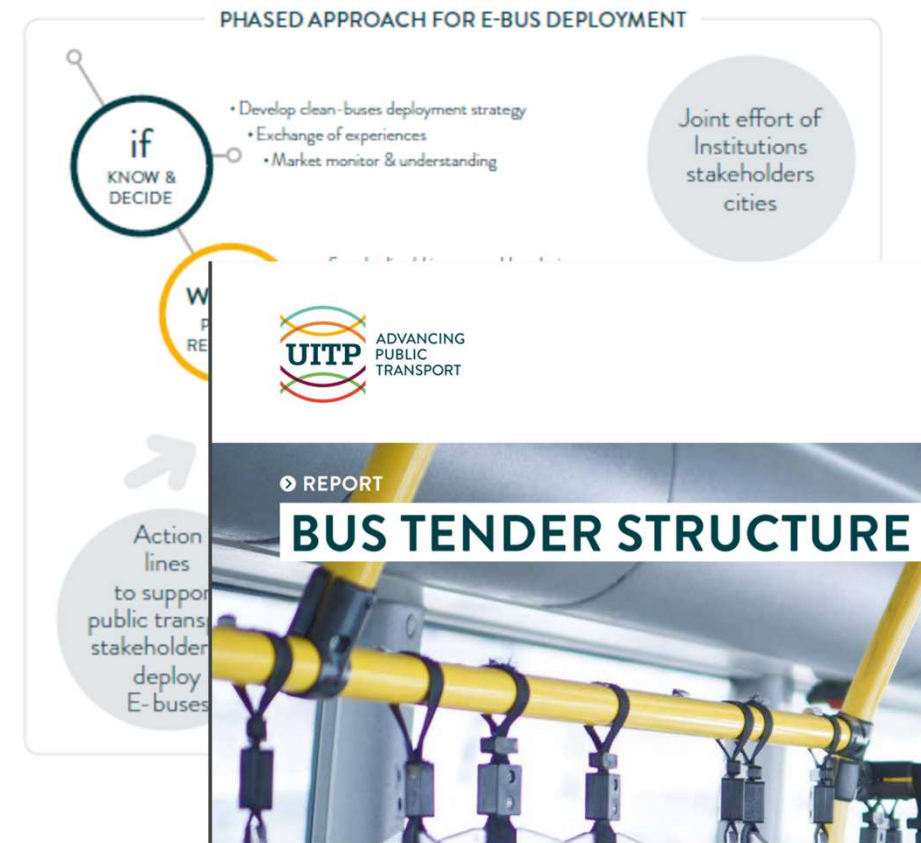
Old document

*New document
(2 stages)*



From Vehicle to System procurement

- The vehicle and the charging infrastructure are to be planned together as a new transport system
- Key actors involved are the PTA, PTO and the bus manufacturers. In addition:
 - The local authority, if the city authority is not the PTA
 - The energy supplier
 - The charging infrastructure supplier
- Early involvement of involved stakeholders strongly recommended, as well as a joint feasibility study.



NEW document 1 (4)

- Foreword
- Introduction
- Part A: City strategies
- Part B: PTA and operational targets
- Part C: Structure and content of the tender document
- Chapter 1 (Main characteristics of the tender)
- Chapter 2 (Buyer and contact persons)
- Chapter 3 (Procedure)
- Chapter 4 (Tender time table)
- Chapter 5 (Legal requirements and standards)

➤ NEW document 2(4)

- - Chapter 6 (Company information)
- - Chapter 7 (Tender evaluation criteria incl. LCC concept)
- - Chapter 8 (Presentation of the offer)
- - Chapter 9 (Functional and technical specification)
- - Chapter 10 (Maintenance documentation)
- - Chapter 11 (Spare parts)
- - Chapter 12 (Training)

➤ NEW document 3(4)

- - Chapter 13 (Financial conditions)
- - Chapter 14 (Vehicle warranty)
- - Chapter 15 (Vehicle availability/unavailability)
- - Chapter 16 (Change and acceptance procedure)
- - Chapter 17 (Electromobility)

NEW document 4(4)

- - Annex 1 (Glossary of terms)
- - Annex 2 (Legal requirements and standards)
- - Annex 3 (Main business models)
- - Annex 4 (Environmental calculations)
- - Annex 5 (UITP Publications)

> Main Areas

- Company (Experience, future proof, long term support)
- Purchase price vs. LCC
- Passenger satisfaction
- Safety
- Driver support (Features, driving, training – towards autonomous drive)
- Connectivity (Vehicle / Fleet)
- New business interaction (PTA/PTO/Industry/Energy suppliers etc)
- Operation flexibility (charging strategy)
- SORT (Climate for Electric buses)
- Energy contracting guidelines
- Turn key offers
- Recommendations to Cities
- Recommendations to PTA's

Understanding of e-bus procurement process

- An example of a new introduction project in The Netherlands
- NL : Landscape of competitive tendering based on area concessions (bus network)
- Set-up of Public Transport Framework and place of the PT actors
- About the role of PTA, role of PTO

Task and responsibilities

Province of Brabant is the public transport authority:

- Setting the goals
- Responsible for contracting
- Selecting public transport operator after public tendering
- Terms of reference (functional)
- ITT-documents, including awarding criteria
- Giving subsidy to operator



220Xpress

Task and responsibilities

- The operator is responsible for:
- Buying and maintaining: rolling stock, infrastructure, depot(s) Bus manufacturer coordinates the setup of the new system (integrator)
- Operating the services: timetable, chauffeurs, fuels
- Fare collection



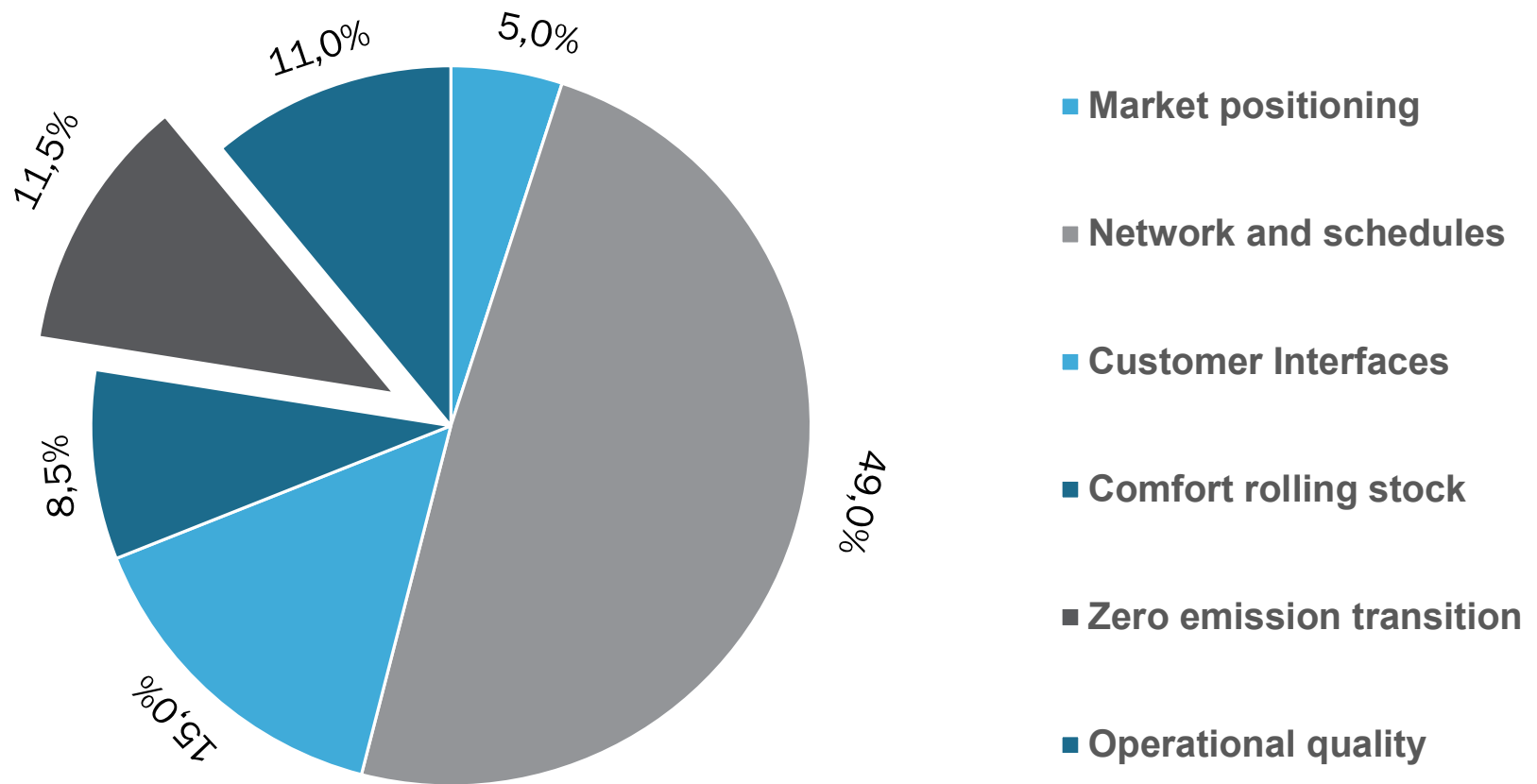
Induction Power Transfer Bus

Main goals of the tender

- Good network of services
- Focus on customer
- If possible within financial, operational and technical means: zero emission
- Gradual transition for state of the art technique
- Vehicles will be transferred to the next concession



Awarding criteria



Lessons learned in NL

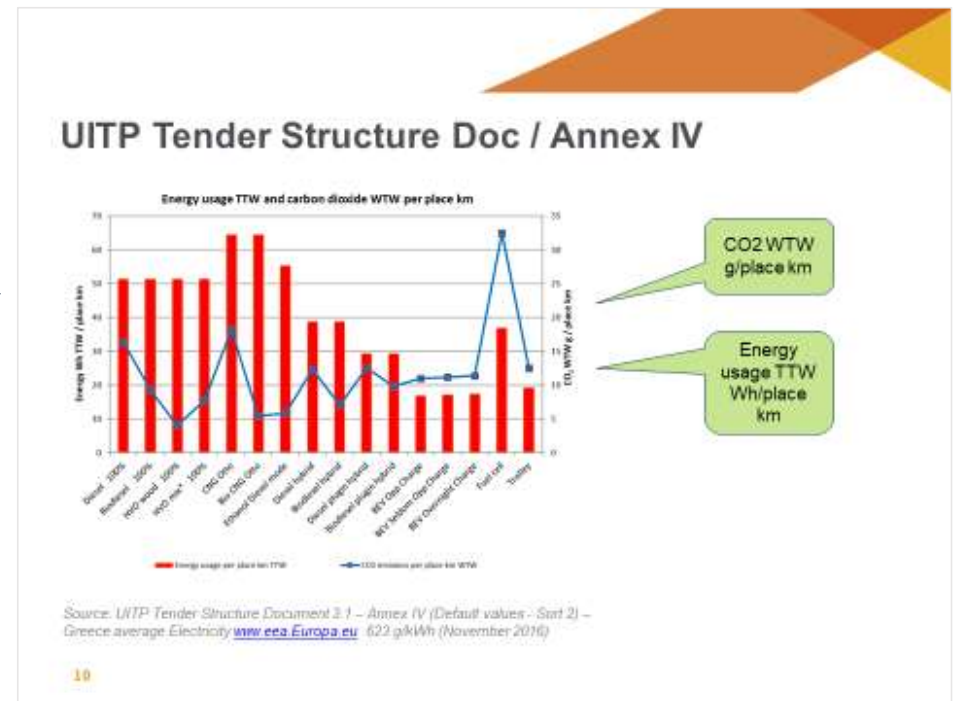
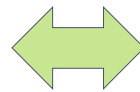
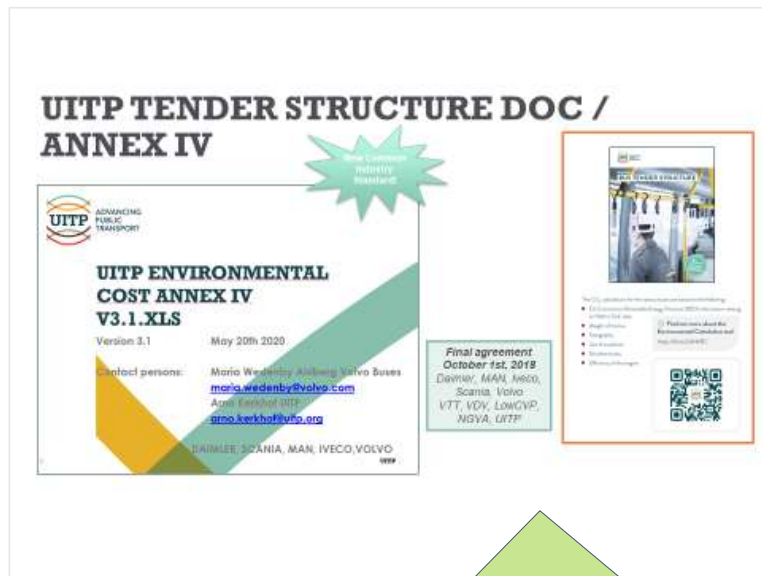
- Step by step procurement
- Properly award zero emission in your tender
 - ZE-buses at start
 - Transition to 100% ZE
 - Participation in pilots
- Allow PTO to start with used buses (EEV)
- Guided phased transition
- Stakeholder cooperation during pilots
- Risks have to be managed
- Take longer concessions (15 years) in consideration
- Takeover rules buses and infrastructure to next concession



UITP Tender Structure Document – New next annex on LCA

UITP Tender Structure Document – Annex IV

- Environmental Calculations



Environmental Calculations developed within UITP – first issue agreed autumn 2018 (example of graph to the right with energy and CO2 presented for all types of city buses)

LCA

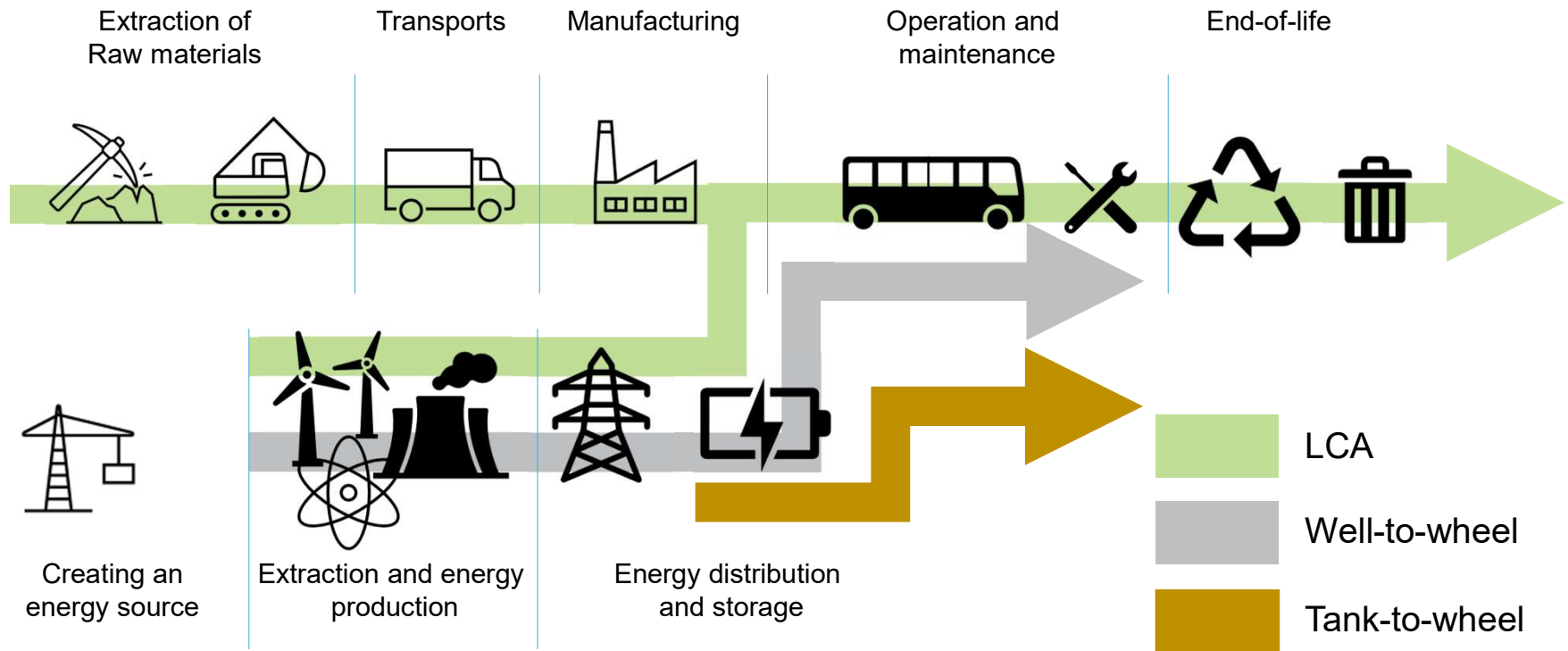
Life Cycle Assessment (LCA)



LCA describes environmental aspects and impacts throughout the whole life cycle, i.e. raw material extraction, production, use and end-of-life management.

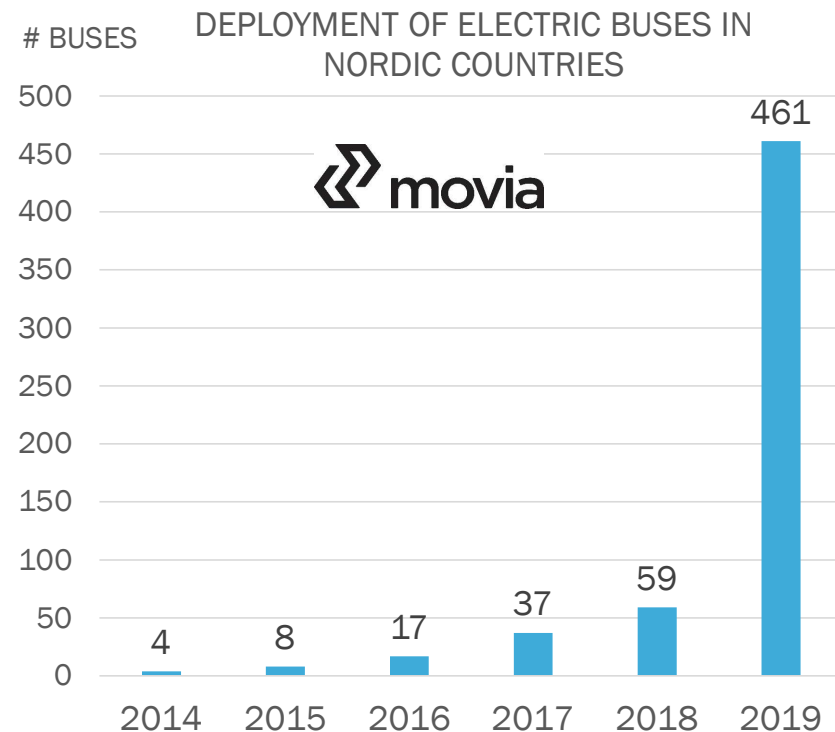
[Definition of LCA / ISO 14040+14044](#)

LCA - Carbon dioxide emissions through the lifecycle



Why life cycle assessment for buses?

- A green transition of public bus transit is requested – strong political desire for cleaner public transit and cleaner cities
- Large scale deployment of electric buses takes off in Countries , example : the Nordic countries
- Increasing public request for carbon footprint, resource usage and environmental impacts from the manufacturing of buses
- PTA lack information on such issues
- No common methodology to account for buses throughout their life cycle
- Existing KPIs for environmental performance no longer applicable as award criteria



Source: Survey of zero emission bus systems in the Nordic countries, Movia 2019

Targets of Life Cycle Assessment

- **Strong political desire for cleaner public transport**
- **Large scale deployment of e-buses will occur**
- **Increasing request for carbon footprint, resource usage and environmental impacts over lifetime**
- **Need for common methodology/ regularities to account for buses throughout their life cycle**
- **Need for comparable structure in tender-process**

What is the project about? ➤ Purpose is to facilitate the provision of a product declaration for buses based on life cycle assessment

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