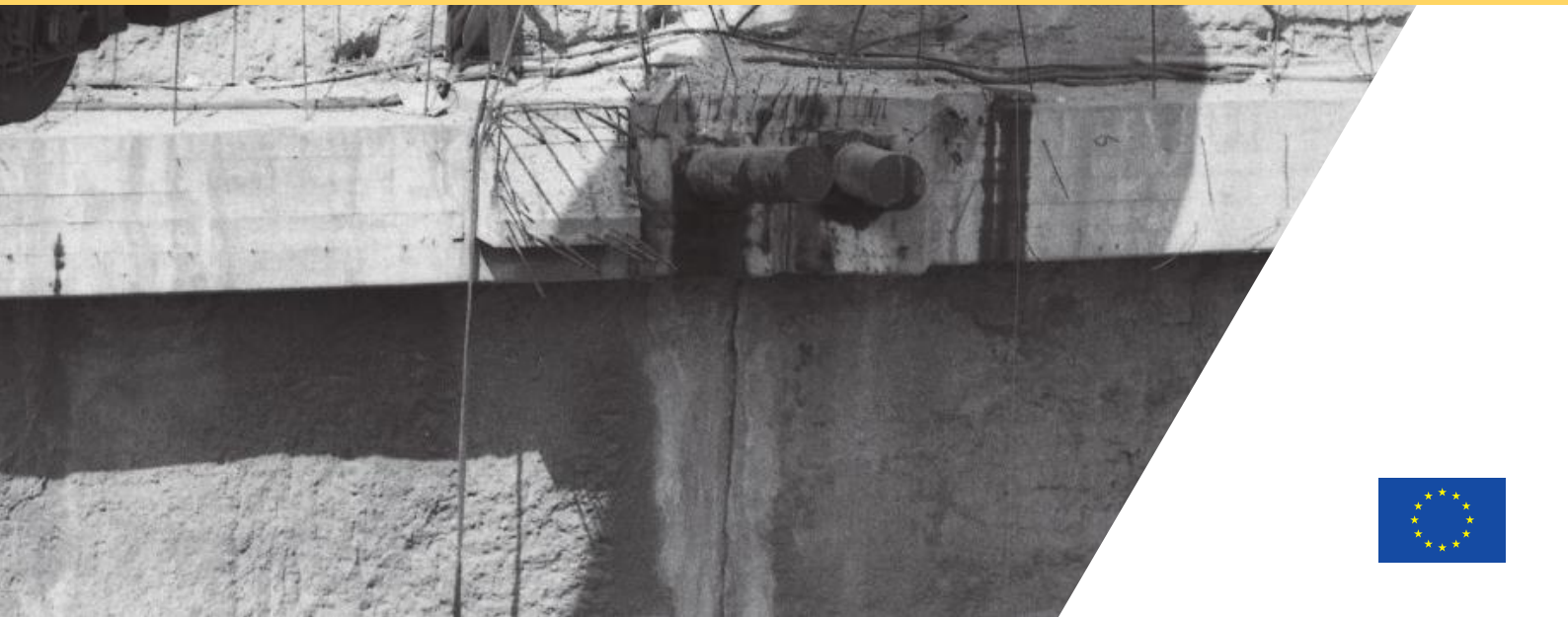




TOPIC GUIDE

PUBLIC PROCUREMENT OF SUSTAINABLE URBAN MOBILITY MEASURES



Imprint

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Guide to the reader

This document provides guidance on a specific topic related to *Sustainable Urban Mobility Planning (SUMP)*. It is based on the concept of SUMP, as outlined by the European Commission's Urban Mobility Package¹ and described in detail in the European SUMP Guidelines (second edition)².

Sustainable Urban Mobility Planning is a strategic and integrated approach for dealing with the complexity of urban transport. Its core goal is to improve accessibility and quality of life by achieving a shift towards sustainable mobility. SUMP advocates for fact-based decision making guided by a long-term vision for sustainable mobility. As key components, this requires a thorough assessment of the current situation and future trends, a widely supported common vision with strategic objectives, and an integrated set of regulatory, promotional, financial, technical and infrastructure measures to deliver the objectives – whose implementation should be accompanied by reliable monitoring and evaluation.

In contrast to traditional planning approaches, SUMP places particular emphasis on the involvement of citizens and stakeholders, the coordination of policies between sectors (transport, land use, environment, economic development, social policy, health, safety, energy, etc.), and a broad cooperation across different layers of government and with private actors.

This document is part of a *compendium of guides and briefings* that complement the newly updated second

edition of the SUMP Guidelines. They elaborate difficult planning aspects in more detail, provide guidance for specific contexts, or focus on important policy fields. Two types of documents exist: While 'Topic Guides' provide comprehensive planning recommendations on established topics, 'Practitioner Briefings' are less elaborate documents addressing emerging topics with a higher level of uncertainty.

Guides and briefings on how to address the following topics in a SUMP process are published together with the second edition of the SUMP Guidelines in 2019:

- **Planning process:** Participation; Monitoring and evaluation; Institutional cooperation; Measure selection; Action planning; Funding and financing; Procurement.
- **Contexts:** Metropolitan regions; Polycentric regions; Smaller cities; National support.
- **Policy fields:** Safety; Health; Energy (SECAPs); Logistics; Walking; Cycling; Parking; Shared mobility; Mobility as a Service; Intelligent Transport Systems; Electrification; Access regulation; Automation.

They are part of a growing knowledge base that will be regularly updated with new guidance. All the latest documents can always be found in the 'Mobility Plans' section of the European Commission's urban mobility portal Eltis (www.eltis.org).

¹ Annex 1 of COM(2013) 91

² Rupperecht Consult - Forschung & Beratung GmbH (editor), 2019 Guidelines for Developing and Implementing a Sustainable Urban Mobility Plan, Second Edition.



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1. Executive summary

This Topic Guide aims to provide answers to the question: “How can transport products, services and works be delivered sustainably?”. Public procurement accounts for about 19% of the European Union’s GDP and thus is a powerful lever to support the transition of urban mobility. The purchasing power of municipalities and regions can create a critical demand for innovative and green goods, services and business models such as low emission vehicles or shared mobility solutions. Public procurement can increase their competitiveness and availability, and thus trigger the market penetration of innovative products and services.

The Guide discusses the general concept of sustainable public procurement, the legislative environment in the EU and leads through the different stages of a procurement process for SUMP measures in a stepwise approach. It also discusses different inherent principles of sustainable public procurement in the field of urban mobility such as life cycle costing and how these can be applied. In so doing, it points to relevant further guidance discussing specific issues and concepts.





2. Introduction

This Topic Guide aims at informing public authorities, procurers, urban mobility practitioners, and policy makers about innovative procurement processes that facilitate the transformation of urban mobility systems towards sustainability. While this guidance cannot explore all options in detail, it may serve as a source of inspiration for innovative procurement actions.

Public procurement accounts for about 14-16% of the European Union's GDP (16% in 2017, Becker et al. 2019). It is therefore a powerful lever to support the transition of urban mobility. The purchasing power of municipalities and regions can create a critical demand for innovative and green goods, services and business models such as low emission vehicles or shared mobility solutions. Public procurement can therefore increase their competitiveness and availability, and thus trigger the market penetration of innovative products and services (Bergek & Berggren 2014). Moreover, almost all public spending has an impact on transportation flows in urban areas.

Rather than awarding a contract solely based on the lowest price, the European Commission encourages public authorities to purchase based on cost-effectiveness and quality-based criteria (COM(2017) 572). In order to purchase innovative and green products,

works and services, public authorities need (scarce) specialist knowledge. This guidance provides examples of public procurement activities which foster sustainable urban mobility, provides a step-by-step approach for practitioners, and points to further sources of information.

Many cities have to deal with budgetary limits. While procuring innovative products and services may reduce life-cycle costs, cost saving potentials often are not instantly discernible. Procurement of innovative products may require additional efforts, information and expertise and can also lead to additional upfront costs. Private and public mobility investors often are reluctant to invest in sustainable transport and mobility projects, as they do not expect high financial returns, benefits tend to be diffuse and barely monetisable, and impacts are causally difficult to trace (see Shergold & Parkhurst 2016). However, sustainable urban mobility solutions tend to bring about high socio-economic benefits.¹

¹ The Topic Guide on "Funding and Financing Options for Sustainable Urban Mobility" includes options of public authorities to tap funding sources, to increase financial viability of their mobility measures, and to engage the private sector in the development of the transport system, see <https://www.eltis.org/guidelines/second-edition-sump-guidelines>.

3. The 8 SUMP principles in the context of public procurement

1. Plan for sustainable mobility in the 'functional city'

All procurement decisions should consider the needs of the entire 'functional urban area', rather than only a single municipality. Ensuring the continuity and connectivity of transport services, infrastructures and ticketing systems throughout the entire catchment area is a precondition for attracting commuters and other voyagers towards low carbon mobility options. This requires regionally aligned planning and mobility analysis.

2. Develop a long-term vision and a clear implementation plan Exemplary

Procurement decisions and investment priorities define development pathways of the mobility system. Infrastructure assets and choices for specific technologies (e.g. e-buses and charging infrastructure) generate long-lasting path dependencies that are hard to change in the short- to mid-term. A clear long-term vision that informs procurement decisions is a precondition for targeted investments that support the SUMP objectives.

Targeted procurement decisions will require clear implementation plan that defines the roles of different actors involved (municipalities, regional agencies, private and public transport operators etc.) and the division of investment costs, operation costs and potential revenues.

3. Assess current and future performance

Procurement decisions will be based on a description of a specific need that has to be met, either in form of a product or of a function that needs to be fulfilled. The assessment should also consider different technological solutions and innovations. Defined minimum requirements for procuring will be aligned to the assessment of the current and future performance of the urban transport system in the functional urban area (e.g. in terms of public transport capacities) and to targets set out in the SUMP (e.g. modal share of public transport, the length of the cycling network, or the share of e-buses).

4. Develop all transport modes in an integrated manner

Integrated transport can be achieved through procurement decisions, most importantly the contracting of public transport services. Procurement can address integrated ticketing systems for the public transport network or the provision of sharing services at bus and tram stations to increase last mile connectivity.

5. Cooperate across institutional boundaries

Beyond planning departments, procurement decisions will also involve city treasurers, dedicated procurement departments with expertise regarding the administrative and legal framework, and also technical staff. The European Commission suggests to set up an evaluation committee to cover project management, procurement, legal, finance, technical, audit and other skills.

6. Involve citizens and relevant stakeholders

A crucial element of sustainable public procurement is to approach the market or provider community. Prior to determining what to buy, and before considering criteria in a procurement procedure, it is worthwhile for public authorities to gain an understanding of transport products, services and works.

Undertaking a preliminary market analysis provides information on the availability of products or services and is useful for informing the type of procurement procedure to adopt as well as how to best formulate and include certain requirements into tendering processes.

A dialogue with market parties before the procurement process begins can help identify innovative solutions which the public authority may not have been aware of. It can also assist the market in meeting the criteria which will be applied in the procurement process, by providing information about the public authority's expected requirements.

7. Arrange for monitoring and evaluation

Adequate and timely monitoring and reporting are key to ensure compliance and a good performance of suppliers and service providers. Monitoring and reporting can be conducted by the supplier who is asked to provide evidence, the contracting authority can conduct the monitoring by checks and surveys, or a third party can be contracted for monitoring. Depending on the subject of the procurement and complexity of the monitoring tasks, any of these can make sense.

A number of EU regulations also require dedicated monitoring to comply with.

8. Assure quality

High quality is at the heart of sustainable public procurement. High social and environmental standards should be demanded to be met throughout the supply chain. Any step in the procurement procedure described in this guidance should be part of a public authority's due diligence.



photo © Frederic Rudolph, Stuttgart

4. Sustainable urban mobility planning steps for public procurement

This Topic Guide relates to the 4th phase of the SUMP cycle (Implementation and monitoring) and aims to provide answers to the questions “Who will deliver?” and “How can transport products, services and works be delivered sustainably?”. After having selected appropriate measures and identified funding and financing, it is now time to approach and cooperate with the market. This represents Activity 10.2 (Procure goods and services) in the SUMP cycle.



5. Public Procurement to foster sustainable urban mobility

Sustainable public procurement is a voluntary instrument that aims at

1. minimizing negative social and environmental impacts of purchasing decisions,
2. facilitating the diffusion of innovative technologies and services.

Innovative public procurement practices can contribute to overcoming mobility-related problems and to transforming the urban mobility system and thus help saving scarce public money in the long run – even if sustainable products and services seem more costly at first glance. Almost all (publicly procured) services have an impact on transport and may in consequence contribute to the reduction of transport-related negative impacts such as its carbon footprint. That is, not only transportation services contracted to private operators for the transportation of people and goods, such as bus services, disabled transport, parcel delivery, waste

collection etc. have a transportation footprint, but also a wide array of other services, such as cleaning, catering, plumbing, or locksmith services, all of which require the movement of people and goods in their delivery (Clement et al. 2019).

Beyond the direct financial cost advantages, sustainable procurement may provide additional benefits for a city: In procuring low-emission vehicles for municipal fleets, the administration can serve as a good practice example and encourage other fleet holders like taxi companies and enterprises to go green – and by that reduce the level of pollutant and save money for potentially costly ad-hoc measures to stay within mandatory air quality and noise limits.

In other words, procurement decisions will not only contribute to sustainable budgeting and to easing the pressure on city budgets in a mid- to long-term perspective, they also provide an opportunity for local authorities to make cities more liveable.



photo © Stefan Werland (Graz)

5.1 Implementing sustainable public procurement

The implementation of sustainable public procurement in urban and regional administrations requires some planning and preparation. It helps to be clear about the targets of sustainable procurement, to define the scope and set responsibilities.

Targets and priorities

Since it is hard to change several practices at once, it makes sense to determine specific fields, products or service groups to start with sustainable procurement. It might be advisable to initially test the new processes and knowledge in simple projects. The prioritisation of products, services and works should take into account

- the objectives and targets of the SUMP,
- the expected impacts on other city level strategies such as the sustainable development strategy,
- the market availability of innovative and green products and services and the strategic potential to influence the respective market,
- the function as a lighthouse project and the number of potential imitators,
- the budget situation and potential additional costs,
- the availability of measurable sustainability criteria and key performance indicators.

Approaches to procurement of sustainable urban mobility

Public procurement can help greening the transport sector in several ways:

- It can set requirements for the energy efficiency and the energy use of public vehicles, or the impacts on natural resources for constructions.
- It can be a means to push new technologies, such as electric vehicles or innovative business models such as shared mobility.
- Public procurement can also set quality, accessibility and other standards for existing services and make them a viable and convenient alternative.
- And finally, public procurement of services like car-, bike- and ride-sharing can provide new mobility options, and thus help changing travellers' behaviour and the urban mobility system.

Depending on the desired depth of the intervention (degree of change), city authorities can use different approaches. Table 1 provides an overview of options for sustainable procurement.

Table 1: Approaches to sustainable public procurement. Source: Own compilation

Approach	Aim	Examples	Comments
Re-direct investments towards sustainable mobility modes	Conversion of the transport system towards sustainable modes	Focus investments on public transport and active modes rather than on motorised individual mobility	This might be a political decision with limited or no influence from procurement agencies
Procure services instead of products (outcome based, functional procurement)	Reduce direct costs; save scarce urban space	Use car-sharing fleet instead of own cars for the public administration	Use functional and performance-related requirements to describe specifications
Procure more sustainable products and services	Increase efficiency of products and prefer environmentally friendly products	Use CO ₂ -, noise-, PM- and NO _x - emissions of vehicles as award criteria Retrofit existing trams or buses to increase energy efficiency Use recycled materials for road and bike path construction	European legislation allows the application of additional award criteria beyond the lowest price
Increase the quality of products and services	Increase public transport's attractiveness	Quality criteria for public transport (silent vehicles, on-board passenger information, WiFi, etc.) Bonus and malus clauses for service quality, e.g. punctuality of buses, or for number of passengers	
Procure innovative products and services	Bringing innovations into the market	Procurement of E-busses Contract bike-sharing providers as part of the public transport system	Municipalities have market power in many areas, such as public transport. Procurement may require risk management

Main models for the procurement of bus operation

Within the EU, there are several ways to organise public transport with buses.¹ For the purpose of this document, two main models for the procurement and contracting of bus operation can be considered:

1. The Public Transport Authority (PTA) buys and owns the buses. They can be then operated by the PTA (in this case PTA and operator are the same) or by a private public transport operator (PTO). The PTA procures buses from the market according to the EU regulation on procurement.
2. The PTA tenders out the operation of the bus system according to the EU procurement regulation. The operator procures, owns, and operates the buses. In this case, the operator can procure the buses without being obliged to comply with the EU public procurement regulation. The tender can be technology neutral (with specifications for low/zero emissions and low noise levels), but it could also specify the use of a given technology.

Whether one or another procurement and contracting model is being used will have an impact on how public procurement can be used in practice to promote sustainable mobility.

City to city cooperation

Many cities develop similar ideas and implement similar measures in their SUMP. Therefore, they also face similar challenges in the process to procure transport products, services and works. The SPP Regions Networks have been founded to work together on sustainable public procurement (SPP). The 7 networks involved collaborate on tendering for eco-innovative solutions, whilst building capacities and transferring skills and knowledge through their sustainable procurement activities.

Another important initiative to strengthen sustainable (zero-emission) transport is the “European Clean Bus Deployment initiative”. The Clean Bus Deployment initiative consists of a public declaration endorsing a common ambition of cities, regions, manufacturers and transport companies to accelerate the roll-out of clean buses; a deployment platform where public authorities, public transport operators, manufacturers and financial organisations can come together; and an expert group to consolidate expertise on technological, financial and organisational issues.²

¹ Annex III of UITP’s “Bus Tender Structure” report: Main business models for competitive tendering in buses can help define the most suitable concept (see UITP 2018).

² SSP networks: <http://www.sppregions.eu/home/>
Clean Bus Deployment initiative: https://ec.europa.eu/transport/themes/urban/cleanbus_en

5.2 The European legal framework for public procurement

The EU legal framework offers procedures for sustainable public procurement as a voluntary element of public procurement. It allows for qualitative, social, environmental and innovation-related criteria in each stage of the procurement process. Although the majority of the rules has been harmonised at EU level, the European Directives have been adapted to national law in specific ways. This report focuses on the EU framework conditions. The most important directives, regulations, guidelines, and criteria are outlined below.

Procurement directives and regulations

The principles and legal framework of public procurement within the EU are mainly defined under three directives:

- Directive 2014/23/EU on the award of concession contracts,
- Directive 2014/24/EU on public procurement, and
- Directive 2014/25/EU on procurement by entities operating in the water, energy, transport and postal services sectors.

Most importantly, these directives stipulate that purchases and orders from the public sector should comply with environmental, social and working standards along the whole supply chain. The award evaluation should consider non-material characteristics and the production process itself as product properties. Moreover, public authorities must award a contract to the most economically advantageous tender ("MEAT"). This can be done only if the quality criteria are properly weighted against the price criterion. Restrictions to abnormally low tender could also be considered. In the past, many contracting authorities in cities have been facing severe budgetary problems. Often, this has led to awarding contracts to the lowest bidder.

The current Directives make awarding a contract to the MEAT mandatory, but in practice, the lowest ones tend to be awarded the contract. This result is possible either by making price the only award criterion of MEAT (which the Directives allow unless the national legislator restricts it) or by giving considerably more weight to price than to quality aspects. However, a well-prepared project should have an emphasis on the quality criteria. More specific regulations exist for procuring public transport services, vehicles and large infrastructure projects.

Procurement of public passenger transport services

Competition on urban and regional public transport markets are regulated through Regulation (EC) No 1370/2007 and Regulation (EC) No. 2338/2016.

Regulation 1370 may be considered as a major step in regulating urban public transport services on a commercial basis between public authorities and PTOs. The document covers contractual issues and sets out rights and obligations for both sides.

The European legislators, first, define the players and new concepts that are present on the market and, second, touch the issue of quality standards, subcontracting, contract definition and awarding procedures as well as legal protection. As the competent authorities are allowed to work with in-house PTOs and with third parties, Regulation 1370 sets the rules for tendering procedures. These rules include references to advertising the awarding process in order "to enable potential public service operators to react".

With respect to quality standards, Regulation (EC) No 1370/2007 (17) states that "...*competent authorities are free to establish social and qualitative criteria in order to maintain and raise quality standards for public service obligations, for instance with regard to minimal working conditions, passenger rights, the needs of persons with reduced mobility, environmental protection, the security of passengers and employees as well as collective agreement obligations and other rules and agreements concerning workplaces and social protection at the place where the service is provided. In order to ensure transparent and comparable terms of competition between operators and to avert the risk of social dumping, competent authorities should be free to impose specific social and service quality standards.*"

The new procedures envisaged in Regulation 2338 are meant to build a competitive European market of public service contracts. To achieve this goal, the European legislators ask for common rules in this sector, a limited number of contracts awarded to one PTO and non-discriminatory access to suitable rolling stock (i.e. railway rolling stock).

Procurement of vehicles

While the general rules of the procurement directives allow for green public procurement on a voluntary base, the European Clean Vehicles Directive (2009/33/EC) requires life-cycle costing (LCC) as a mandatory criterion to be included in the selection criteria for purchasing public transport service vehicles. Art. 16 of the Directive states that the “costs for energy consumption and polluting emissions (CO₂, NO_X, NMHC, PM), as calculated over the vehicles overall life cycle, must be included in the list of selection criteria for purchasing public transport services vehicles”.

The Clean Vehicles Directive (CVD) is in the final stages of being revised, a final agreement has been passed over to the European Council for formal ratification. Most importantly, the new version establishes a definition of a “clean vehicle”, and sets minimum targets for public authorities’ procurements, i.e. a minimum percentage of clean vehicles in aggregate public procurement across a Member State over multiannual periods (2021-2025 and 2026-2030).

A “clean vehicle” is defined as follows:

- Cars and vans: for the first period (2021-2025), vehicles that emit up to 50g/km CO₂ and up to 80% of the air pollutant emission limits set in EU legislation; for the second period (2026-2030), only vehicles with zero-emission at tailpipe.
- Trucks: all vehicles running on alternative fuels, i.e. electricity including plug-in hybrid vehicles (but not non-plug-in hybrids), hydrogen, natural gas (both LNG and CNG, including bio-methane), biofuels, synthetic and paraffinic fuels, LPG
- Buses: all vehicles running on alternative fuels, i.e. electricity including plug-in hybrid vehicles (but not non-plug-in hybrids), hydrogen, natural gas (both LNG and CNG, including bio-methane), biofuels, synthetic and paraffinic fuels, LPG. Half of the targets for buses have to be met through vehicles with zero-emission at tailpipe.

A minimum target is defined for each Member State for the minimum share of procured vehicles which have to meet the criteria at national level. Table 2 provides the ranges of national targets; individual Member States’ targets can be found in the Directive.

Table 2: Ranges of national targets for clean vehicles in revised CVD. Source: EC

Vehicles	2021-2025	2026-2030
Cars/vans	17.5-38.5%	17.5-38.5%
Trucks	6-10%	7-15%
Buses	24-45%*	33-65%*
*For buses, half of the targets must be fulfilled through zero-emission buses.		

The revision of the CVD leaves flexibility in how the EU Member States can reach their targets, so each Member State can decide how the effort will be shared between different cities and regions. For example, a Member State could decide to assign a higher target to larger cities, or to define different targets for its regions based on e.g. their economic capacity, air quality, characteristics of their transport systems or any other relevant criteria, as long as the aggregate of all public procurement within the relevant reference period meets its overall national target. From the point of view of a local authority, this means that their specific target for the public procurement of clean vehicles will be set at national level, during the transposition phase (to be concluded by mid-2021). The targets will be calculated on the total number of vehicles procured through purchase, lease, hire-purchase, but also through public transport services contracts and other specific services contracts (e.g. waste collection). The Commission will publish specific guidance documents on how to apply these targets in practice, as well as on monitoring and reporting requirements.

Procurement of large infrastructure assets

The European Commission suggests carrying out a voluntary ex-ante assessment of the procurement process for large infrastructure projects (estimated value of over €250 million) in order to reduce uncertainties, the risk of delays and legal challenges (COM(2017) 573 final). The assessment should inter alia include how to formulate green, social and innovative considerations in a legally safe way. The Commission has set up a helpdesk that answers project-related questions at an early stage.¹

Green public procurement

The European Green Public Procurement (GPP) approach aims at facilitating the inclusion of green requirements in public tender documents by providing clear, verifiable, justifiable and ambitious environmental criteria for specific products and services, based on a life-cycle approach. GPP criteria and technical background reports for different applications are available on the Commission's website (Website EC). Guidance documents cover inter alia:

- Road Design, Construction and Maintenance (SWD(2016) 203 final)
- Road lighting and traffic signals (SWD(2018) 494 final)
- Road Transport (SWD(2019) 2 final)
- Paints, varnishes and road marking (SWD(2017) 484 final).

The Handbook on Green Public Procurement

The Handbook on Green Public Procurement is the European Commission's main guidance document to help public authorities buying goods and services with a lower environmental impact (EC 2016). It is also a useful reference for policy makers and companies responding to green tenders. It provides:

- Guidance on how environmental considerations can be included at each stage of the procurement process in the current EU legal framework (adopted in 2014)
- Practical examples drawn from contracting authorities across EU Member States
- Sector specific GPP approaches for buildings, food and catering services, road transport vehicles and energy-using products.



¹ https://ec.europa.eu/growth/tools-databases/pp-large-projects/?field_newsroom_topics_tid=229

5.3. Practical guidance for sustainable public procurement

The following suggestions are extensions to the standardised public procurement process as outlined in the EU Public Procurement Guidance for Practitioners (EC 2018). The guidance document aims at supporting procurement practitioners within contracting authorities in the European Union who are responsible for planning and delivering the purchase of public works, supplies or services. It defines the following steps in the procurement process.

Table 3: The procurement procedure. Source: EC 2018

Procurement process stages	Elements to be considered
Step 1: Preparation & planning	<ul style="list-style-type: none"> Defining the need in terms of functions Open and restricted procedure Competitive dialogue and negotiation Using joint procurement
Step 2: Publication and transparency	<ul style="list-style-type: none"> Approaching the market Using performance based specifications Additional specifications of products, services and works
Step 3: Submission of tenders & selection of tenderers Step 4: valuation of tenders and award	<ul style="list-style-type: none"> Using selection and award criteria Life cycle costing
Step 5: Contract implementation & management	<ul style="list-style-type: none"> Monitoring and reporting obligations Quality standards and bonus/malus schemes



photo © Frederic Rudolph, Dortmund

5.3.1 Step 1: Preparation and planning

Definition of the need

The first step of any procurement procedure is to identify and describe the specific need that has to be met. Defining the need in terms of functions rather than in ready-made products and solutions might provide new and innovative options. A functions-based definition requires a strong co-ordination among procurers and end-users, e.g. in internal workshops.

For public vehicle fleet management, for example, the specific need may not be the car, but to ensure mobility for a number of persons within a defined travel range and during a certain time span. A potential conclusion of the needs assessment may then to procure car-sharing services rather than new company cars.

UK Government buying standards for transport

Before procuring vehicles, the UK's Government Buying Standards for transport 2017 suggest to consider the following questions:

- Are regular journeys required at all or can they be replaced by phone, teleconference, or video conference facilities?
- Is a vehicle required for the function specified?
 - o Walking, cycling and public transport is much more sustainable than individual vehicles. Can the journeys be replaced by any of these?
 - o Is the need for a vehicle still valid or is it just a legacy arrangement? What are the specific job requirements to justify vehicle purchase/lease [Business mileage, carrying goods, out of hours, operational need]?
 - o Can journeys be better planned to improve existing vehicle utilisation and avoid further vehicle acquisition?
- If a vehicle is required, is it justified to purchase/lease one? Can car clubs or daily rental provide a more flexible and cost effective solution?

When procuring vehicles and services, it is important to consider that the market currently offers a wide array of clean powertrain technologies for different vehicles, including in particular urban buses, providing a good set of alternatives for transport operators. Such technologies present different environmental performances and operational capabilities, and the choice of the most suitable clean technology will depend strongly on the specific local operational context.

Cities therefore have two decisions to take, at political level:

- First, they must set the level of ambition they want to pursue in their support for clean vehicles deployment through integrated plans and strategies – this will be influenced by decisions taken at national level, in particular in the transposition of the Clean Vehicles Directive.
- Second, they must select the solution that will help achieve the city's targets in terms of emissions reduction, noise levels, and other environmental, economic and societal targets.

From the operational point of view, it is crucial to select technologies that improve environmental performance of vehicles without substantially affecting their key functions. This is particularly important in the case of urban buses, which have to provide efficient, reliable and comfortable transport to the passengers and an attractive alternative to personal motor vehicles.

Determine the procurement method

The Directives 2014/23-25/EU enable local authorities to conduct different procurement procedures, according to their specific requirements. In an open procedure any market participant can submit a tender. In a restricted procedure, only pre-selected businesses will be invited to submit a tender. For more complex or innovative products and services, the local authority may foresee a competitive dialogue or a competitive negotiation. The local authority submits requests to participate and selects candidates according to the qualification and selection criteria. Then it enters into a dialogue with the selected candidates in order to identify the optimum solution/s to meet the given needs, based on which the final tenders will have to be submitted.

Pre-Commercial Procurement and Public Procurement of innovative solutions

Finally, the EC also provides financing for public procurement, namely the Pre-Commercial Procurement (PCP) and the Public Procurement of Innovative Solutions (PPI). PCP is a public procurement of research and development services, it does not include their implementation into final commercial products. It can be used when off-the-shelf solutions are not available to meet the purchasers' requirements, so bespoke solutions are required. PCP allows for a comparison across alternative approaches to solutions, by designing the solutions, developing and testing the model/prototype. PCP actions target consortia of procurers

with similar procurement needs who want to jointly procure innovative ICT based solutions to modernize public services, e.g. innovative ticketing solutions. The maximum funding rate for eligible costs for PCP actions is of 90% of the procurement costs.

Joint procurement

Joint procurement means combining the procurement actions of two or more contracting authorities. The key defining characteristic is that there should be only one tender published on behalf of all participating authorities. Joint procurements arrangements may result in lower prices due to economies of scale; to administrative cost savings; and it enables the pooling of different skills and expertise between the authorities (JRC 2018).

Especially when procuring innovative technologies, joint procurement may create a critical economic mass that helps to create a business model for innovative products or services (e.g. electric vehicles). As experiences from Bulgaria showed, a consortium of four municipalities procuring the same product – in this case trolleybuses – reduces the effort for the supplier, resulting in a price reduction of 2% per vehicle. On the other hand, the process turned out to be very complicated since all documents and the entire documentation (that had to be prepared and signed with the contracting authority) had to be agreed between all parties involved. Municipalities' experiences also suggest that it is advisable to have an experienced lead partner who prepares the procurement procedure and that cities individually sign contracts with suppliers as in the Torino example (see box).



photo © Torino Wireless (Turin)

Joint procurement: Electric Buses in the Piedmont Region

In 2016, the different local transport companies in the Piedmont Region jointly procured 23 electric buses. The procurement process started in 2014 and finished in September 2017. It was based on a programme launched by the Piedmont Region that gave funding from the resources of the Ministry of the Environment for e-buses to improve air quality and foster innovative vehicle concepts. The City of Turin contributed to improve the air quality with the allocation of an extra budget. The total budget was about 15 million euros, of which 13.5 are managed by the Piedmont Region and 1.5 by the City of Turin.

Joint procurement: Electric Buses in the Piedmont Region

In a first step, the single public transport providers defined their needs, propose the number of busses, routes and charging infrastructure. Afterwards the Region as a funding agency defined one public transport provider (GTT- Torino Transport Group) as procurement agent due to its former experience with e-buses. GTT was identified as the contracting authority for all regional customers (transport companies and organizations).

After publishing and awarding the tender, each company signed independent contracts with the supplier of the e-buses. The procedure saved administrative efforts and reduced procurement costs. (SPP Regions 2016). The 23 buses cost about 8.5 million euros. The remaining amount is available for the award of other lots relating to smaller electric buses. With these two new lots, another twenty buses will be purchased, which will also be destined to other cities of Piedmont to spread and make known this type of transport.

National funding programmes usually stimulate an interest for certain products and services. In these cases cities and regions should consider a joint procurement. Experience shows that joint procurement can be very successful within the same Member State, but differences in public procurement rules across Member State make cross-border joint procurement substantially more complex.



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5.3.2 Step 2: Definition of specifications and standards

After defining the scope of the procurement (product, service or work) it is necessary to set technical specifications. Specifications are the core of the tender documents since they describe the needs to be satisfied.

When procuring vehicles and transport services, special attention must be paid to the necessary changes in operation and procurement due to the dedicated charging or fuelling infrastructure required by most of the clean vehicle technologies – for example, battery electric buses require opportunity chargers installed at the end stops of the line, at selected bus stops along the line and/or centralised charging at the bus depot during the day or overnight; in the case of fuel cell buses, a hydrogen refuelling station, typically located at the bus depot, is required; natural gas buses also require dedicated refuelling stations.

In this sense, the transition to cleaner fleets can imply a change in procurement methods, switching from vehicle procurement to system procurement, in which complexity may arise through the need to procure an integrated charging/refuelling infrastructure.

Approaching the market

In order to find companies which are able to successfully meet the tender specifications, it is essential to develop these in collaboration with relevant market actors.

Cities should apply ambitious criteria and discuss the feasibility of these requirements in meetings with suppliers for the respective procurement categories. These suppliers can be invited to join the market engagement by publishing a procurement prospectus on a dedicated tender platform. Furthermore, known applicants for contracts can actively be approached to inform them of the market engagement activities and encourage them to participate. It is also possible to carry out follow-up meetings with existing contracted suppliers with the aim to discuss the further development of future criteria and requirements.

When procuring and operating clean buses, for example, many choices are to be made in the procurement phase that will influence operations later. These are some of the main topics which should be considered, in a market dialogue with the possible bidders:

- Definition of the proposed concept for vehicles, infrastructure and operation from the specified operational requirements: required range, daily mileage, energy management, charging time, degree of necessary flexibility in line use (sufficient load times or short intervals), passengers capacity and comfort.
- Infrastructure needed to maintain, refuel/charge the buses based on technology choices (overnight, automated connection devices, hydrogen, gas...) and route constraints.
- Timely provision of all required authorisations and permits for the civil works and installation of the corresponding infrastructure: hydrogen refuelling station, gas station (including storage of a large quantity of hydrogen or natural gas), or electric installations (including lithium battery charging authorisation in the zone).
- Design and integration of the required infrastructure (availability of space, integration in city design) in the urban landscape as well as in the electricity network (adequate design of the power grid, economic use of energy, smart charging).
- Training and communication for first responders (fire brigade mainly but also police).
- Training on new skills for staff (driving service as well as workshops technicians).
- Adaptations in bus depot, e.g. technical preparation of the workshops (including high-voltage, gas and hydrogen safety aspects). Also consider the provision of technical support by the manufacturers (maintenance contract or flying doctors, availability of critical spare parts etc.).

Technical information and guidance about these and other aspects related to the public procurement of clean buses will be made available in the context of the Commission's Clean Bus Deployment Initiative. The Regional Networks for Sustainable Procurement developed a best practice guide on market engagement (SPP Regions 2018).

The BuyZet approach

The BuyZet research project has developed innovative procurement plans to help the participating cities achieve zero emission urban delivery of goods and services. The BuyZET core cities Rotterdam, Oslo and Copenhagen approached market engagement in different ways. Information on the processes followed, and the conclusions reached can be found in the Market Engagement Reports: <http://www.buyzet.eu/core-cities/>



It is also possible to develop demonstration projects which test the performance of certain products or services (e.g. zero emission vehicles). The results of such pilots could then point to appropriate selection and performance criteria to be set as part of a future tender. Local authorities may also use such demonstration projects to generate internal support for the procurement of such products and services.



Cluj Napoca: Defining technical specifications using simulations

Cluj-Napoca's Compania de Transport Public S.A (CTP) used computer simulations to achieve an optimised integration of hybrid and electric buses into the city's public transport system and to define tender criteria for the procurement of e-buses. The models compared three types of drive systems (combustion, hybrid and electric) on four selected routes. Main objectives of the computer simulation were to expand the travel range of hybrid and e-buses by identifying ideal routes that save energy and maximise the recovery of kinetic energy (with respect to the specific running conditions) and to identify optimal locations for fast loading stations. Beyond energy consumption and range, the study also considered

- the energetic efficiency and of the costs associated with different kinds of buses;
- achieving lowest possible values for pollutant emissions (locally zero), according to the norms regarding these values;
- comfort for passengers; and
- emissions of CO₂, pollutants, and noise from urban public transportation.

The results of the simulations were used to define minimum criteria and technical specifications in the tender documents.

Using Performance Based Specifications

Again, specifications can be defined in terms of technic standards or in terms of functions, using performance based specifications (PBS). The European Procurement Directive (2014/24/EU, p.79) acknowledges that *“...drawing up the technical specifications in terms of functional and performance requirements generally allows that objective to be achieved in the best way possible. Functional and performance-related requirements are also appropriate means to favour innovation in public procurement and should be used as widely as possible”*

Additional sustainability specifications for products, services and works

In this stage it is possible to define sustainability requirements that are related to characteristics of the product, service or work. These technical specifications can include compliance with

- environmental standards (e.g. EURO 6d TEMP Emission Standard for passenger vehicles),
- social standards (e.g. level of training of service staff, minimum wage requirements),
- performance and functionality (energy use or fuel consumption per 100 km),
- quality standards for services (e.g. quality of bus service, certificates for training standards for eco-driving trainers; methodological standards for mobility surveys),
- production process and materials (e.g. the use of recycled content), or
- innovative technologies (e.g. e-vehicles).

These specifications define necessary qualities of the procured product, service, or work. Alternatively or additionally, it is possible to set award criteria (see below) which are not necessary conditions, but count as selection criteria.

Additional Specifications for products

An obvious scope of a product procurement in the field of sustainable urban mobility are vehicles: a city may procure any kind of office cars, public transport vehicles, garbage trucks, or other commercial vehicles.

Another usual concern is vehicle safety. Inner city heavy vehicle circulation is one major source of accidents with vulnerable road users such as cyclists and pedestrians. In theory, advanced assistance systems and design elements to improve driver visibility are available. Vehicle owners, however, are reluctant to equip trucks and busses with assistance systems due to their higher purchasing price.

Public authorities can facilitate the uptake of such technologies, as they are owners of buses, refuse collection trucks and other heavy vehicles. The European Commission underpins that public procurement “presents an interesting opportunity to positively influence the pace of the uptake of safety technologies” (COM(2018) 293 final). In the context of the EU road safety policy framework 2021-2030, which will be elaborated in detail by 2019, the Commission inter alia attempts to explore options to facilitate public authorities’ access to appropriate financial support for procuring safer fleets.

Transport for London: Direct Vision Standard for heavy goods vehicles

In order to improve the safety particularly of vulnerable road users, Transport for London (TfL) has created a Direct Vision Standard (DVS) for heavy goods vehicles. The standard assesses how much a driver of a heavy goods vehicle can see directly from his cab. While the standard is part of a proposed Safety Permit for all HGVs entering London, it can potentially also be used as a public procurement standard.

The EU GPP criteria for road transport (SWD(2019) 2 final) mention inter alia CO₂ and air pollutant emissions of vehicles, energy consumption displays, or minimum warranties for batteries of electric vehicles.

For road lighting and traffic signals, the respective EU GPP criteria (SWD(2018) 494 final) mention inter alia the luminaire efficacy (lm/W) of streetlights, dimming control, the ratio of upward light output and obtrusive light or the life cycle costs over a defined period (e.g. eight years).

Additional specifications for services

Service contracts include public transport obligations, property management, cleaning, management, consultancy, training, financial and IT related services. There are several features specifically related to the procurement of services.

- Defining the outcome - services tend to be less tangible than products and therefore more difficult to define within a specification.
- Most service contracts are awarded based on the Most Economically Advantageous Tender and through a series of relevant and appropriate evaluation criteria. It is important with service contracts that part of the selection criteria relates to reliability of the supplier and the expertise and ability of the personnel involved.
- In estimating the value of a public contract, the value of material and equipment needed to carry out the services to be supplied by the contracting entity and which are required for the provision of the services shall be considered.

The EU green public procurement criteria for road transport (SWD(2019) 2 final) mentions inter alia vehicle specific criteria such as GHG and air pollutant emissions of buses, or tyre pressure monitoring systems.

Procurement of services other than for public transport may apply for measures in the area of parking management, congestion charging, bike sharing schemes, travel information and traffic management (see fleet management in Bremen, ICLEI 2016). For post or courier services, the GPP criteria suggest cyclelogistics as one possible award criterion

Additional specifications for works

Works contracts are generally complex in nature and occur over a longer timeframe. Large construction projects, such as the building of a new trolleybus or tramway line require expert project management and the input of several key stakeholders. Sustainability criteria can be set for the different life cycle phases of construction works: for the design, the construction itself, the management and maintenance, and finally the removal. They can include requirements and / or award criteria for a sustainable design, the material used and the processing of used substances, the soil balance, and others.

The European Green Public Procurement Criteria for Road Design, Construction and Maintenance mention inter alia

- skilled project managers and experienced construction contractors,
- purchasing and use of low environmental impact construction materials and recycled materials,
- the on-site use of demolition waste and excavation materials and the elaboration of soil management plans in order to minimise waste production, and
- long-lasting and low-noise pavements.

Recycled asphalt for road resurfacing in Hamburg

The City of Hamburg has a long tradition in using recycled materials in road construction. Since the 1980s, the authorities have increased the use of recycled asphalt – first in the deeper layers of the road, later also in the more critical surface layers.

For the resurfacing of Mönckebergstrasse, the description of work includes the milling of the top layer to a depth of 4cm, the recycling process in a state-of-the-art reclaimed asphalt pavement equipment, the rejuvenation of the binder, and the use of a low-temperature asphalt to achieve energy efficient production and laying process. As a result, energy input, CO₂ emissions and the use of raw materials were reduced. Also, the health conditions of the operating staff were improved (EC 2018).

Since this procedure is not provided for in the technical regulations on road construction, this approach is still in the experimental stage and serves as a demonstration project.

5.3.3 Step 3 & 4: Selection and evaluation of tenders

Using selection and award criteria

Sustainable urban mobility planning includes innovative procurement criteria as foreseen in the dedicated EC Directives, i.e. the local authority should account for the life cycle costs as well as for the wider costs and benefits. Apart from the specifications that are necessary preconditions for the success, selection and award criteria focus on the ability to deliver or perform the specified product or services in the most promising way.

A distinction can be made between selection criteria (or minimum compliance criteria) on the one hand and award criteria on the other.

While the choice of criteria basically depends on the needs and interests of the purchasing authority, there are certain mandatory components: The current Clean Vehicles Directive makes it mandatory to take energy and environmental impacts into account when purchasing road transport vehicles. Once the revision of the Directive is in force, this will be replaced by the minimum procurement targets for clean vehicles described above.

Selection criteria

Selection criteria are used to assess the suitability of the tenderer to carry out the contract. These criteria can help to shortlist the potential contractors. They can include:

- Implementation of environmental management systems
- Professional capacity regarding sustainable products and services
- Management of supply chain to control possible material and production process conditions.

Award criteria

It is possible to set criteria that go beyond the specifications of the subject-matter of the contract that are assessed in a pass/fail-logic and allow to award those tenders that provide especially sustainable solutions on the base of a score. Different criteria can be weighted, so that a certain number of points is available to award the full or partial fulfilment of the criteria.

It is possible to mix specifications and award criteria – by setting minimum requirements as specifications, and award a better performance with extra points. Award criteria need to be published in advance and are used in the decision process to allocate points to the tenders according to the degree of criteria fulfilment.

The award criteria need to be linked to the subject-matter of the contract, but can contain sustainability targets, such as:

- process of production or provision of the products, services and works
- specific or overall CO₂- and/ or pollutant emissions (especially NO_x and Particulate Matter) of the product or service under defined conditions
- use of innovative technology, such as alternative drivetrains
- quality of sustainable transport solutions

Award criteria: Zero emission public transport in North-Brabant

The region of North-Brabant in the Netherlands decided to improve its public transport network by additional busses and at the same time start a transition into a zero-emission public transport. Thus, the subject matter of tender for the next concession contract for the whole bus network was a service using a 100% zero-emission fleet by 2024. As award criteria, the tender defined – apart from the quality of network and schedules, customer interfaces, operational quality, comfort of rolling stock – a criteria for “Zero emission transition” with 11,5% of the points, awarding factors like pilots and innovations, number of zero-emission busses at the beginning of the contract, enhanced environmentally friendly vehicles, and a qualitatively defined “transition path”.

The result showed that the award criteria were a trigger for the successful company to take a big step in the transition towards the zero emission mobility already in the beginning of the contracting period. (EC 2018)

Using life cycle costing as award criterion

One of the most relevant award criteria is the cost. But there are different ways to define the cost of a product, service, or work.

Life cycle costing (LCC) is a method that allows to consider not only the purchase price of a product or service, but also any other connected cost component occurring during the use of the product. By that, it is possible to reach a true-cost pricing and at the same time in many cases favor sustainable choices – e.g. for low-consuming (and by that low-emission) vehicles. Thus, the use of LCC can result in a win-win situation, where the public authority can save money and procure a more sustainable product or service, since the reduction in life-cycle costs often means a reduction in energy consumption, emissions and negative social effects.

The life cycle costs (or total costs of ownership, TCO) cover the costs over the whole useful lifetime of the product or service. They can be evaluated based on different components such as the procurement price, energy and fuel costs, operation and maintenance costs (labour, consumables, spares, repair, modernisations, trainings, logistic expenditures etc.), decommission at

the end of the time period, opportunity costs (enhancing operation safety, reduction in consumption and emissions etc.) and others.

LCC assessments will generally be more revealing than the purchase price for long-lived, energy-consuming and/or high-maintenance products. The use of LCC can stimulate innovation in products and services and bring new solutions to the market.

There is a large amount of literature and software available in the public realm that can be used to define and calculate LCC, including a number of European Norms, especially EN 60300-3-3. Further information for the application and calculation of LCC can be found in the publication SPP-Regions (2017).

The life cycle cost of a car fleet depends on, inter alia, the number of vehicles to be procured, contract length/period of ownership, the (discounted) purchase price, fuel consumption and fuel price. As mentioned above, the Clean Vehicles Directive obliges public authorities to take polluting emissions into account. One way to integrating these is to assign them a cost in the evaluation of bids. The Annex to the CVD provides a set of common costs.



Clean Fleets cost calculator

The Clean Fleets project has developed an excel based tool to calculate life cycle costs of vehicle fleets.
<http://www.clean-fleets.eu/publications/>

5.3.4 Step 5: Contract implementation and management

Monitoring and reporting obligations

Adequate and timely monitoring and reporting are key to ensure compliance and a good performance of suppliers and service providers. Monitoring and reporting can be conducted by the supplier who is asked to provide evidence, the contracting authority can conduct the monitoring by checks and surveys, or a third party can be contracted for monitoring. Depending on the subject of the procurement and complexity of the monitoring tasks, any of these can make sense.

For public transport services, Regulation (EC) No 1370/2007 states that *“each competent authority shall make public once a year an aggregated report on the public service obligations for which it is responsible [...]. This report shall [...] allow the performance, quality and financing of the public transport network to be monitored and assessed”*.

The revised Clean Vehicles Directive will foresee monitoring and reporting about the attainment of its objectives through national reports by the EU Member States. The Tender Electronic Daily (TED) database will be used as the main tool for monitoring and reporting the number of vehicles procured. For this purpose, at the time of awarding the contract public authorities will have to encode in the system the number of procured vehicles, the number of clean vehicles and the number of zero-emission vehicles.

Quality standards and bonus/malus schemes for public transport services

Urban and regional public transport markets are regulated through Regulation (EC) No 1370/2007 and Regulation (EC) No. 2338/2016. These regulations allow the use of quality and social standards for public passenger transport services. Quality standards can include service quality, safety, sanitation and maintenance, staff training, protection against vandalism, protection of transport employees' rights, and others. To set incentives for appropriate contract fulfilment, they can be linked to penalties for non-compliance or bonus payments for good performance. While quality standards are relevant for the contract management stage, it is crucial to clearly outline these criteria already in the tender documents.



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Contract performance clauses: Bike sharing system in Hamburg and Berlin

After several German cities had already implemented bike-sharing schemes that turned out to be run on a low level of service quality, cities like Hamburg or Berlin decided to provide a sharing system with detailed specifications for the service provider. The tender defines the service area and the number and location of stations, requires the provision of a certain minimum number of bikes at each station within a given timespan, determines maintenance intervals, the functionality of the customer interface and many more – and defines performance clauses that set financial incentives or fines to keep within the set limits.

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