

# Market engagement report

ZERO EMISSION TRANSPORT OF  
MAINTENANCE AND REPAIR SERVICES AND FACILITY WASTE

Author Geir Rossebø

DATE 2019.02.08 | CITY OF OSLO



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 724101



THE CIVITAS INITIATIVE  
IS CO-FINANCED BY THE  
EUROPEAN UNION

# Table of Contents

|                                                            |    |
|------------------------------------------------------------|----|
| 1. Summary.....                                            | 2  |
| 2. Method .....                                            | 3  |
| 2.1. Maintenance and repair services (craftsmen) .....     | 3  |
| 2.1.1 Experiences from other public purchasing bodies..... | 3  |
| 2.1.2 Research activities and projects .....               | 3  |
| 2.1.3 Supplier dialogue meetings and workshops .....       | 5  |
| 2.2. Facility waste.....                                   | 7  |
| 2.2.1 Experiences from other public purchasing bodies..... | 7  |
| 2.2.2 Research activities and projects .....               | 9  |
| 2.2.3 Supplier dialogue meetings and workshops .....       | 11 |
| 3. Results and conclusions.....                            | 11 |
| 3.1. Maintenance and repair services (craftsmen) .....     | 11 |
| 3.2. Facility waste.....                                   | 15 |
| 3.3. Guidance on environmental criteria .....              | 17 |
| 4. Abbreviations.....                                      | 19 |
| 5. About BuyZET .....                                      | 20 |
| 5.1. Partners Logos.....                                   | 20 |
| 5.2. Contact details .....                                 | 20 |
| Appendix A.....                                            | 21 |
| Appendix B.....                                            | 22 |



# 1. Summary

This report describes the market engagement and research activities undertaken in Work Package 3. The Central Procurement Unit<sup>1</sup> (KOS) in the Agency for Improvement and Development<sup>2</sup> (UKE) had the main responsibility in carrying out the tasks. Representatives from the Agency for Climate<sup>3</sup> (KLI) and the Agency for Urban Development<sup>4</sup> (BYM) also supports the project, and have contributed to this deliverable. In Appendix A an organizational chart for the City of Oslo is presented.

The report elaborates on the market engagement and research activities for the two priority areas:

- › Maintenance and repair services (craftsmen)
- › Facility waste collection

The conclusions from the market activities with the suppliers in both areas is that they are positive to invest in zero emission vehicles (ZEV). All of the suppliers agree that greatest challenges in using ZEV's are associated with technology aspects as well the access to charging infrastructure. The suppliers believe the risk is still too high to invest full scale. An important lesson from the various meetings and workshops is that more effort should be put on having a good dialogue on how to facilitate the use of ZEV's in tenders.

A lesson from both procurement categories is that suppliers need predictable conditions. It is costly for them to invest in ZEV's. The proposed solution to this is to give credit to ZEV's which are introduced during the contract, rather than before the contract starts. Longer contract length is also proposed as a way to reduce the risk that suppliers are facing when investing in vehicles.

*The term zero emission vehicle (ZEV) includes both battery electric vehicles (BEV) and hydrogen fuel cell battery electric vehicle (HFCBEV). Since there are only a few hydrogen models on the market and the vast majority of ZEV's sold on the Norwegian market are BEV's, the term ZEV relates only to BEV if nothing else is specified in the text*

---

<sup>1</sup> In Norwegian: Konsernservice (KOS)

<sup>2</sup> In Norwegian: Utviklings- og kompetanseetaten (UKE)

<sup>3</sup> In Norwegian: Klimaetaten (KLI)

<sup>4</sup> In Norwegian: Bymiljøetaten (BYM)

## 2. Method

### 2.1. Maintenance and repair services (craftsmen)

The following sections describe the approach used in the market engagement and research activities on the procurement area craftsmen services. The results from these activities are elaborated in chapter 3.1.

#### 2.1.1 Experiences from other public purchasing bodies

To be able to learn and get inspired by other public buyers, both at the national and European level is an important aspect of the BuyZET project. Different methods were used to seek information from other public authorities which have achieved zero emission (ZE) transportation in their contracts for craftsman services.

- › Searches in the Norwegian national notification database for public procurement (Doffin). “Craftsman services”, “plumbing services”, “electrician service” etc. were used as keywords, as well as searching for specific CPV-codes<sup>5</sup>, such as “45330000 plumbing and sanitary works”. Tender documents from all relevant public procurements were listed. The date range was set to include tenders from the past three years, in order to have up to date results and to reduce the amount of tender documents.
- › Web searches on various websites. This includes web sites concerned with public procurement, technology and mobility. Google was also used to find information on the topic.

The searches did not yield satisfactory results. This suggests that requirements for ZEV’s in public tenders for repair and maintenance services have rarely or never been used. This hypothesis is also confirmed by the former practice at KOS, where environmental criteria on transport only included minimum requirement for Euro 5/V vehicles. Environmental advisors in the procurement units in the city of Bergen and the City of Trondheim confirm that no requirements on ZE have been used for this category in their procurements, but that this is considered for future procurements.

#### 2.1.2 Research activities and projects

##### *Collaboration with the Agency for Climate: “More efficient and climate friendly freight and utility transport”*

The City of Oslo aims to reduce its direct greenhouse gas (GHG) emissions by 36 percent by 2020 and 95 percent by 2030 compared to 1990 levels. In order to reach the 2020 target a reduction of 460,000 tonnes CO<sub>2</sub>-

---

<sup>5</sup> The CPV establishes a single classification system for public procurement aimed at standardising the references used by contracting authorities and entities to describe the subject of procurement contracts. <https://simap.ted.europa.eu/cpv>

equivalents (hereafter: CO<sub>2</sub>) per year need to take place. The Climate Budget for the City of Oslo gives an overview of adopted measures with accompanying expected emission reduction effect. In the Climate Budget for 2018 it was stated that the estimated impact of the existing measures and instruments towards 2020 would result in a reduction of 360,000 tonnes of CO<sub>2</sub>.

KLI was tasked with identifying new measures to bridge the gap between the calculated measures and political goals. This effort was divided into four action plans:

- (1) Climate friendly commuting
- (2) Fossil-free city centre by 2024
- (3) More efficient and climate friendly freight and utility transport
- (4) Increased share of zero-emission vehicles and machinery in construction

UKE contributed to all the action plans, since public procurements are relevant for all of them. It was decided that a special effort was to be put into: (3) *More efficient and climate friendly freight and utility transport*, because it coincides with the BuyZET-project. The projects lasted from the start of January to May 2018, and ended with a final report.

A project group with representatives from five different municipal agencies was created. The mandate was to identify measures and give recommendations to the Environment and Transport<sup>6</sup> (MOS) in Oslo, on which measures that are both feasible and will give results. Over 50 different measures were proposed from the project group covering the following areas:

- › Environmental criteria in procurements
- › Restrictions on parking and access to areas for fossil vehicles
- › Road taxes
- › Pilot projects
- › Grants for investments
- › Cooperation's and communication
- › New investments and establishments

As the project progressed it was clear that updated and specific data on traffic volumes and vehicle distribution were lacking. The Institute of Transport Economics<sup>7</sup> (TØI) was therefore tasked to prepare a report which describes the traffic flows thoroughly for The City of Oslo. Because of short notice, there was no time to perform new investigations. TØI therefore gathered findings and results from recently published studies into their report. Transport volumes and behaviour from suppliers on craftsman services were also a part of the report. The table below is gathered from the report, and shows the magnitude of the transport volumes for LDV's for suppliers of services. The data is collected from different sources, and unfortunately a bit old.

---

<sup>6</sup> A City Council Administration. In Norwegian: *Byrådsavdeling for miljø og samferdsel (MOS)*

<sup>7</sup> In Norwegian: *Transportøkonomisk institutt*

**Table description:** No. of vehicles, driven in kms in millions, and transported goods volumes, allocated on vehicle type transportation purpose. Data is calculated for transport volumes in Oslo for the year 2015.

| Type of vehicle         | Service deliveries |                     |              | Goods deliveries |                     |              |
|-------------------------|--------------------|---------------------|--------------|------------------|---------------------|--------------|
|                         | No. of vehicles    | Mill. km (in total) | Thousand ton | No. of vehicles  | Mill. km (in total) | Thousand ton |
| LDV (small)             | 32,608             | 320                 | 362          | 7,127            | 52                  | 704          |
| LDV (large)             | 13,632             | 131                 | 468          | 4,866            | 72                  | 375          |
| Small combined vehicles | 886                | 4                   | 12           | 355              | 2                   | 53           |
| Large combined vehicles | 593                | 4                   | 8            | -                | -                   | -            |
| HDV (less than 3,5 ton) | 973                | 7                   | 74           | 1,170            | 12                  | 193          |
| Unknown                 | 1,207              | 27                  | 8            | 41               | 0                   | 1            |
| <b>Total</b>            | <b>49,898</b>      | <b>493</b>          | <b>931</b>   | <b>13,560</b>    | <b>138</b>          | <b>1,326</b> |

### 2.1.3 Supplier dialogue meetings and workshops

#### *Business for Climate – Meeting place for the city management and businesses in Oslo*

*Business for Climate*<sup>8</sup> is a network created by the municipality and has become an important arena for dialogue with businesses in the process of achieving the City of Oslo's climate targets. KLI is facilitator and arranges minimum two network meetings and a top management meeting annually. The meetings focus on sharing of knowledge and experiences, dissemination of information about support schemes and development of measures and instruments for climate reduction. When joining the network, companies must sign a climate agreement with the City of Oslo.

In conjunction with the action plans on reducing GHG emissions (described in the previous paragraph), KLI arranged a network meeting where members of the network could respond to the ongoing work and the proposed measures. The members were also given the opportunity to share their thoughts on what they believe are the main barriers in reducing GHG emissions. The meeting took place on the 15<sup>th</sup> of February 2018 and lasted

<sup>8</sup> In Norwegian: *Næring for klima*

for 4 hours. During the meeting different workshops were carried out for each action plan. Approximately 40 companies from different industries attended the meeting, this includes: transport companies, maintenance and repair service suppliers, construction firms, banking companies and NGO's.

### *NorSulp – Sustainable Urban Logistic Plans in a Norwegian context*

BYM is a part of the NorSulp project, and thus represents the City of Oslo in the project. TØI is responsible for carrying out the project in co-operation with the research organisation SINTEF. In addition to Oslo, eight other cities are involved in the project. The NorSulp project seeks to improve the challenging situations for freight transport in the cities, both in terms of logistical performance and environmental impacts. The project overlaps and complements BuyZET in many ways in the sense that local actors are brought together, providing an opportunity to initiate actions needed to improve performance and sustainability for urban transportation.

The 12<sup>th</sup> of April 2018 a full day workshop took place with representatives from the NorSulp project group, the City of Oslo (UKE, KLI, BYM), local companies and business associations. Approximately 25 different enterprises were represented in the workshop. In addition to relevant presentations, the participants were gathered in groups to work with and give feedback on three different questions:

- (1) What functions well with the way urban logistics are carried out in Oslo today?
- (2) What are the most important challenges for urban logistics in Oslo today?
- (3) What can be done to improve the situation for goods and craft services in the city centre of Oslo?

### *One to one meetings with suppliers of craftsmen services*

UKE is responsible for several citywide framework agreements on different craftsman services. The normal procedure is to have one or two contract follow-up meetings throughout the year with each of the contracted suppliers. During autumn 2018 the agenda for these meetings also included discussions related to the city's demand for ZEV's in contracts.

A questionnaire was sent to the suppliers up front, and thus formed the basis for the discussions in the meetings. For UKE it was most important to gain knowledge on which kind of challenges the suppliers face if ZEV's are to be used in operations, and also how the municipality can best award suppliers that want to use ZEV's in new tenders. See Appendix B for questionnaire that was used.

During the autumn 11 follow-up meetings were arranged with the contracted craftsman suppliers. For most of the citywide framework agreements the city is divided into 4-5 different geographic zones, thus leading to multiple suppliers for each agreement. The suppliers that were involved in the one to one follow-up meetings sorts under the following contract areas:

- › Carpenter services (3 suppliers)
- › Painting services (2 suppliers)
- › Plumbing services (3 supplier)
- › Electrical services (3 suppliers)

All meetings were arranged at the premises at KOS in Oslo. The meetings lasted 1-2 hours, and roughly one third of the time was spent on discussions related to vehicle and transport issues.

### *Market dialogue for the renewal of the citywide framework agreement on Locksmith services*

The contract for locksmith services expired in December 2018. UKE considered this to be a great opportunity to test whether the suppliers were ready to offer ZEV's for the new contract period. Due to lack of time there was unfortunately no time to arrange a joint meeting with all relevant suppliers. The market dialogue activities were instead focused on sending out surveys to the suppliers on the market. Parts of the questionnaire described in the previous paragraph were used. The reason not to include all questions was that the contract strategy for the procurement had already been carried out, and it was highly important to know whether the suppliers actually could offer ZEV's in their submissions. Five suppliers gave sufficient answers on the questions that were called for, resulting in ambitious tender documents for this kind of procurement area. Environmental performance was used as award criteria with a 25% weighting.

The outcome from the tender procedure were much greater than expected, with two out of three contracted suppliers committing to use solely light duty ZEV's for the upcoming contract period. This was the first time environmental performance was used as award criteria in the municipality and has set a new standard for what is possible to achieve in craftsman service contracts.

The requirements that were used in the tender documents is based on the new guidance that KOS has developed on environmental requirements for transport. The process of making the guidance is elaborated in chapter 3.3.

## 2.2. Facility waste

### 2.2.1 Experiences from other public purchasing bodies

It soon became clear in the project that several cities already had adopted ZE waste collection trucks. The City of Sarpsborg was the first city in Norway to implement it, which caught great attention from the media when their contract was signed. Naturally, Sarpsborg was the first city that was contacted to gain more knowledge on how to use procurement to achieve ZEV's for this area. After some time we become aware that the cities of Fredriksberg (Denmark) and London also had ZE waste collectors in operation. The cities were also contacted in order to learn more about how they have conducted their procurements.

#### *Experiences from the City of Sarpsborg (Norway)*

Sarpsborg is a city and municipality in Østfold County, Norway. In 2016, a new and important waste disposal agreement was signed in Sarpsborg. Norsk Gjenvinning Renovasjon AS won the competition for collecting waste

from Sarpsborg's residents from the autumn of 2017. In the new agreement, more attention has been paid to the environment, and Sarpsborg has secured Norway's first two electric waste collection trucks. The vehicles are used in routes in the city centre of Sarpsborg where the effects of reduced noise and local emissions are vital.

The municipality of Sarpsborg organises both the municipal waste and the facility waste through public tenders. Hence, the vehicles are not owned by Sarpsborg, but by the suppliers. The duration of the contract is limited to five years, including collection, transportation and recycling of collected waste. The contract has a value of 2.5 million EUR per year.

The procurement was carried out as a normal procedure with a performance description and minimum requirements on several environmental parameters. Additionally, they used award criteria with 60% weight on quality and 40% on price. Environmental performance was included as a part of the quality criteria. The procurement division in Sarpsborg claims that such weighting was decisive in obtaining the battery driven truck concept. Furthermore, they highlight the importance of a thorough market research, in-house understanding of the market and dialogue with the market players. Norsk Gjenvinning As was one of four companies that delivered their offer to Sarpsborg municipality. Even with the best total score, Norsk Gjenvinning As also delivered the best performing offer on price, proving that innovative solutions can be economically favourable. Initially, some scepticism was communicated based on accessibility and limited operational range, but this proved only to be speculations. Crew and drivers have given solely positive feedback on the vehicles performance.

In an interview with the Managing Director Jørgen Nikolai Pettersen in Norsk Gjenvinning As, he states:

*"We give praise to Sarpsborg Municipality, which chose a sustainable solution rather than just focusing on price in the tender process. From now on we hope that more municipalities will follow Sarpsborg's example and realise that sustainable and innovative solutions can be competitive also economically."*

#### *Experiences from the City of Fredriksberg (Denmark)*

Frederiksberg Municipality is formally an independent municipality, but is treated as a part of Copenhagen. It occupies an area of 9 km<sup>2</sup> and has a population of 100,000. The municipality's collection of waste is carried out on its own behalf, through Frederiksberg Renovation. The collection primarily concerns household waste.

Since 2013, five 27 ton electric refuse trucks have been in operation for Frederiksberg Renovation, representing 20 percent of the total fleet of refuse trucks. The electric refuse trucks run around 50 km and only need to be charged once a day. Due to the limitation of batteries, however, the truck cannot bring as much waste as a conventional truck.

Ole Philip, heading the Department of Gartner and Road Service, says:

*"Although they cost 0.5 MEUR (2-3 times more than an ordinary truck), they are far cheaper in operation - both in terms of fuel and maintenance. Looking at the lifetime of the investment, a conventional diesel truck will last for about eight years while we expect the electrical truck to last twice as long."*

Drivers of the electrical refuse trucks emphasise the low level of noise operating the trucks. However, the trucks must be operated at lower speeds and carry slightly lower load than conventional trucks in order to complete the scheduled route. The electric trucks are similar to diesel trucks in terms of reliability. Delivery times for spare parts could, however, be somewhat longer.

### *Experiences from the City of London (UK)*

London is made up of 32 London Boroughs (Local Authorities) plus the City of London. This totals 33 separate areas that have individual responsibility for waste management and street cleansing within their own area/borough. Each of the 33 areas have independent arrangements for delivering the waste collection and street cleansing services, they use either contractors selected using European procurement process, in-house provision or Teckal companies.

The City of London, covers an area of approximately 2.6 km<sup>2</sup>, currently provides municipal waste collection, recycling and street cleansing. This service is provided via an external provider/contractor. Facility waste (known as commercial waste in the UK) is collected by the private sector and the individual businesses have responsibility to arrange their own collections using a registered waste collection company. In February 2018 Electra, the UK's first fully electric refuse truck, was introduced in the City of London as part of an initiative to drive down air pollution. The 26-tonne vehicle is manufactured by Electra Commercial Vehicles and runs on lithium-ion batteries that can last a full 10-hour shift. It is fully electric, both for compression of the waste and for powering the vehicle, and are planned to be used on all routes and services involving street cleansing and waste collection.

The vehicle is not owned by the City of London, but purchased as part of a service on a contract tender with a duration of 8 years. The scope of the contract includes waste collection, recycling, street cleansing and vehicle maintenance. Ahead of the tendering process, the procurement division did several runs of market testing and industry consultation to identify barriers for successful implementation. The procurement procedure was carried out as a tender competition with negotiation. The tender documents had a detailed service specification, and included award criteria with 60% weight on quality and 40% weight on price. Carbon footprint improvements was included in the quality criteria.

Jeremy Simons, chairman of the corporation's environment committee, said:

*“Our ambition is to have a full fleet of clean refuse vehicles. We are taking responsibility for the cleanliness of our fleet and encouraging the use of low and zero emission vehicles with our partners. It complements the work we are doing to help City businesses cut back on vehicle deliveries and use more hybrid models.”*

## 2.2.2 Research activities and projects



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 724101



THE CIVITAS INITIATIVE IS CO-FINANCED BY THE EUROPEAN UNION

### *Difi's project on environmental criteria for waste collection and treatment.*

The Agency for Public Management and eGovernment<sup>9</sup> (Difi) is among other things responsible for guiding the Norwegian public sector on procurement related issues. During 2018, Difi has been working on environmental criteria for waste collection and treatment. Wages and working conditions has also been a part of this project.

Difi had a broader perspective than UKE and included both collection and treatment of household waste and collection of facility waste from public and private enterprises and companies. Although both areas were included, different criteria sets were made because contracts for these two categories usually are arranged differently.

UKE has partially been involved in Difi's project. Most interest has been shown in the work on the criteria set for facility waste, where information on suppliers, type of contracts and other relevant information has been shared amongst the partners. In May 2018, Difi arranged a two hour meeting with four of the largest companies on waste collection and treatment. The agenda for the meeting was discussions on how climate friendly transportation of waste from public entities could be achieved. Minutes and reflections from this meeting were shared with UKE afterwards.

Other agencies in Oslo such as EGE and REN, have also contributed to Difi's criteria set.

### *Initial research activities on a new citywide framework agreement on facility waste collection*

At the start of January 2019 MOS requested UKE to prepare a recommendation on whether the municipality should enter into a citywide framework agreement on recycling and collection of facility waste from all agencies. The recommendation is due 1<sup>st</sup> of March 2019.

This type of agreement was proposed as one of the potential pathways in the *Initial Analysis Report*<sup>10</sup>. It is therefore natural to use the obtained knowledge and results from the BuyZET project as input for this recommendation. A comprehensive survey is to be distributed to all agencies in the municipality and several meetings will be held. REN is especially important here, hence they already are responsible for the collection of household waste and waste from schools in Oslo.

The ongoing activities which are conducted are concerned about if UKE should enter into an agreement. It is therefore important to map the current waste volumes and types of waste the agencies produce. Also identifying

---

<sup>9</sup> In Norwegian: *Direktoratet for forvaltning og ikt (Difi)*

<sup>10</sup> BuyZET deliverable 3.2 – Oslo report

existing contracts for waste collecting as well as experiences with the suppliers that are used is a part of this work.

### 2.2.3 Supplier dialogue meetings and workshops

As a part of the BuyZET project UKE in collaborated with KLI in establishing buyers group in May 2018. A brief summary will only be given here, since the process is elaborated more thoroughly in the *Buyers group report*<sup>11</sup>.

The buyers group on Climate Smart Waste Transport was established in collaboration with The National Programme for Supplier Development<sup>12</sup>. The buyers group that was created represents 140 municipalities, which covers one third of the population in Norway. Most of the municipalities are organized in existing formal regional procurement partnerships, so the actual members in the working group counted 15 people.

The process that was undertaken was to explore common interests and challenges in achieving ZE from waste transportation, as well as sharing of best practice from completed tenders. The group agreed to arrange a dialogue conference with relevant suppliers on the 22<sup>nd</sup> of August 2018. The conference lasted for six hours and was divided into four different parts:

- (1) Introduction from high level speakers.
- (2) Presentations from different regions/municipalities on transportation volumes and CO<sub>2</sub> targets.
- (3) Dialogue session where suppliers could share their thoughts and respond to the challenge.
- (4) Conclusions and presentations on public funding schemes.

## 3. Results and conclusions

### 3.1. Maintenance and repair services (craftsmen)

The experience gained in this area has been interesting and educational. Several of the challenges have previously been discussed in the project and these have largely been confirmed by the suppliers. This applies, for example, to the challenges with driving range and payload capacity for ZEV's.

From KLI's action plan "More efficient and climate friendly freight and utility transport" some interesting findings were found in the report TØI prepared. The report stated that there is strong interest in using EV for Norwegian craft and service companies. Battery capacity and range were considered one of the main barriers. When the report was completed, there were still relatively few electric vans on the market and these had relatively short range compared to the models that have come on the market in recent years. The report concluded that vehicles

---

<sup>11</sup> BuyZET deliverable 4.2

<sup>12</sup> <http://innovativeanskaffelser.no/about/>

driven more than 120 kilometres per day could not be replaced by EV's without charging during the day. It was also considered that an electric range of 200 kilometres is enough to meet the needs of the vast majority of craftsmen and service sector in Oslo.

\*\*\*

At the dialogue conference and workshops at Business for Climate, there were some interesting inputs from the companies on what the municipality could do within procurement area. One of the messages was that the municipality should not specify all solutions in detail. This regards both the choice of vehicle technologies and logistic solutions. The suppliers also believe that predictable framework conditions are important. They must be sure that the vehicle technologies they invest in today, will be demanded in the future. In the larger debate that followed the workshop, there were some other remarks that relates to more general climate reduction topics. One of these was that the public needs to be more consistent in the use of different environmental terms. Many words and concepts have the same meaning but can be understood differently, for example "fossil-free vehicles", "carbon-neutral vehicles" and "climate friendly vehicles". In Norwegian, all these terms have the same meaning. There are also other words and concepts with multiple alternative definitions. It was suggested that public buyers should agree on fewer terms, in order to avoid misunderstandings. Another remark was that some of the transport and goods companies believe that it should be possible for the municipality to receive goods outside ordinary opening hours. For the time being, there are a lot of deliveries to the city centre during daytime, resulting in considerable traffic during the rush hours. According to the suppliers some of the goods volumes could easily be delivered in the evenings or at night time, but that the contracts prevent this.

\*\*\*

At the city logistics conference that was arranged as a part of the NorSulp project there were many good discussions on how to reduce GHG and improve the conditions for goods and utility services in the city. At the Business for Climate conference there were many participants which represented different interests. From the workshop on craftsman services many of the challenges addressed were related to technological issues. The overall concern from the industry was that there are still not ZEV's in Norway that satisfy all needs. The driving range is still too low, meaning that a craftsman needs to charge the vehicle at least once during work hours. Most ZEV's also lack tow bars and four-wheel drive, making them unsuitable for many tasks. In addition, the load capacity is too small for some of the heavy materials and equipment they need to transport. The lack of charging infrastructure was also highlighted as a difficulty. Even though the charging infrastructure is improved each year, there are still many areas in Oslo which are not satisfactorily covered. Craftsmen that bring their company cars to and from home, are dependent on available chargers when the working day is over. In most areas with blocks of flats or flat complexes in Oslo, there are few privately owned chargers. In these areas it is up to the municipality or the housing cooperatives to offer this. It was pointed out that despite all these issues, some companies do invest in ZEV's and use them whenever possible. Maintenance and repair service companies hope that car manufactures will develop HFCBEV's. There is a strong opinion that hydrogen as fuel will solve all the uncertainties caused by charging infrastructure and charging time, since vehicles with this technology operate in the same way as fossil fuelled vehicles.

The City Management in Oslo has decided to improve the conditions for pedestrians and cyclists in the city centre. New bicycle lanes have been created and pavements have been improved in recent years. This has caused a reduction in public parking spaces. The attendees at the NorSulp conference experience that there is less traffic in the city centre and thus easier to navigate. At the same time there are not enough parking spaces for businesses operating in the city centre. To describe the situation it was referred to examples where craftsmen companies have an extra employee just driving around in the streets, while the others are inside different locations and doing the actual job. It was suggested to improve the overall parking facilities and also create designated parking spaces for ZEV's with charging infrastructure.

From the other workshops a need was communicated for new digital solutions in order to prevent unnecessary driving. GPS guidance and street signs showing real time information on driving directions and where to find available parking spaces should be developed. Several argue that there is lack of a comprehensive plan for urban logistics in the city centre. A plan would give all the different stakeholders, from businesses to building owners, better opportunities to prepare for the future urban development.

\*\*\*

During autumn 2018 KOS arranged follow-up meetings with the craftsman suppliers as a part of the contract management. These meetings were very helpful in understanding how the companies actually think and relate to the city's ambitions on emission free transportation. Most of the suppliers answered all the questions which were sent in advance. Some clarifications were done in the meetings, because the suppliers interpreted the questions slightly different.

The results from the questionnaire show that most of the suppliers' vehicle fleets consist of light duty vehicles (LDV), like medium sized vans. Some of them also use passenger cars for inspections or other tasks that do not require a van. Three of the suppliers have already invested in ZEV's: one painting, one plumbing, and one electrical service supplier. The painting supplier has a battery electric passenger car, the other two have battery electric vans. The remaining suppliers answered that most of their vehicles have the Euro 6 standard. None of the suppliers use biofuels or intend to use this in the future.

The main impression is that none of the suppliers have an action plan on how or when they want to use solely ZEV's. Planning is characterized as short-term. This is due to the constant technological development and an insecurity if they are able to use those kind vehicles in their future operations. Even if ZEV's could give them an advantage in public tenders, they were concerned of investing in the right type of vehicle that suit their needs. Only two of the suppliers said that it was not appropriate to invest in ZEV's at the moment. One of the paint companies stated that on an upcoming contract with UBF they would buy three ZEV's.

Five of the suppliers believed that using award criteria for ZEV in tenders was a good solution. As expected all of the suppliers which already have ZEV's were positive, since this will give them extra credit in the evaluation. Only two of the suppliers were positive about minimum requirements for ZEV's. The others believed that this was too strict and that this was a requirement they would not be able to manage. Using contractual requirements such as requiring fossil vehicles to be replaced with ZEV's during the contract period was also not

believed to be a good solution. Only three of the suppliers were positive. The rest believed that it was challenging to know in advance if they were able to manage the investments that this would require.

On the remaining questions which applied to aspects other than tendering, the responses were also quite interesting. All of the suppliers believed that designated EV charging stations for craftsmen at the municipality's own locations or addresses was a good measure. This will reduce the time spent on locating a charger and would also decrease the risk of running out of battery.

The suggestion to provide a possibility to store equipment, materials and tools at central locations in Oslo, was not regarded as a good measure. All except one painting service supplier thought that it was either not a good measure or that it would not have an effect. The suppliers thought that it would only cause extra driving, and since the locations they visit vary all the time it would be impossible to find a storage place that will work in practice.

The last question was whether the municipality should provide guidance to suppliers on how to apply for public funds for purchasing of vehicles and charging infrastructure. This was regarded as a good measure from all the suppliers. The suppliers are aware of some of the public funds that exist, but it seems that the application process itself for funding is a barrier. None of the suppliers have applied for funding before. It is not clear if this is caused by the time it takes to fill out the forms or if they want to avoid the paper work.

In conclusion, it was important to have meetings with the suppliers. Everyone was more or less positive about ZEV's, as long as the vehicle could perform at a satisfactory level. Some of the companies were a bit hostile at the beginning of the meetings. This is believed to be because the suppliers have an impression that public authorities and public buyers only demand new solutions without talking with them about the challenges. When the suppliers understood the context better and the purpose of the BuyZET project, they were happy to contribute and share their thoughts.

Some of the suppliers noted that it should be possible to make the investments after they have signed contracts. Requirements for ZEV's are still not widespread, and they believe there is a risk if they invest in vehicles that are not demanded from the private market or by other customers.

In the end, all the suppliers have an understanding that in the long run a complete transition to ZEV's is inevitable. They are only unsure when they should make the shift.

\*\*\*

The main impression is that the vast majority of service and maintenance suppliers are positive about moving to ZEV's. The technology and the range of vehicles are satisfactory for parts of the industry. This suggests that rewarding suppliers that have taken the first steps, can have a good effect.

Better dialogue is an important keyword. There are often misunderstandings between the municipality as a client and craftsman companies. They want to be listened to and included in how to find the best solutions. The willingness to make a transition to ZEV's is absolutely present, but for many it is still not possible with today's

technological solutions. No one has stated that they are not going to invest in the ZEVs' or that they do not welcome the transition.

The companies are clear on that they want predictable conditions. It is costly for them to invest in ZEV's if they cannot use them. This can be solved by giving credit to craftsmen that introduce ZEV's during the contracts. It is also interesting that they want help with guidance on how to apply for funding for ZEV's and EV infrastructure.

An impression after the market engagement activities is that there is often a misunderstanding between the challenges craftsmen have and what the municipality can solve through tenders. Several of the challenges are directly connected to infrastructure problems such as access to chargers, both at the places they visit and at home. There are also problems with parking access in the city centre. These are conditions that UKE can disclose with the agencies in the municipality who work on these subjects. The technological development on HFCBEV's are completely outside UKE's control. The municipality is preparing energy stations that will offer hydrogen. Time will tell if the car manufacturers can provide hydrogen models which are competitive with BEV's

### 3.2. Facility waste

The supplier dialogue conference that was arranged in August 2018 showed that transportation of refuse is a complex and difficult matter. Over 70 participants joined the event with represents from public authorities, business associations, public funding schemes, transport companies, NGO's, biogas producers, ZEV infrastructure suppliers, waste management corporations as well the represents from the 140 municipalities from the buyers group. Difi was also present at the conference.

After the keynote session, a broad open discussion followed where all participants could respond to the municipalities demand for carbon neutral transport of waste. Discussions varied over different topics, and in the text below, a summary of the different opinions are given.

The waste management corporations state that municipalities have done a good job already in requiring carbon neutral transportation of waste in city centres. This has resulted in biogas as a common fuel for household refuse collection contracts, and also some examples of BEV's. For waste from private business and from municipal agencies biogas is seldom used. The reason for this is that many contracts do not have requirements for environmental friendly transportation. They only specify the different fractions of waste and frequency for collections. Contracts are often given to suppliers with the lowest price. The suppliers agree that public tenders should have minimum requirements for ZEV's or biogas vehicles if they at the same time have increased contract lengths. Normally the contract length is set to maximum four years, but the depreciation cost for new vehicles is often seven to eight years. This leads to an increased risk for suppliers since investments and maintenance of trucks represent a significant cost. Tenders should also reward suppliers that intend to introduce vehicles during the contract period.

The waste management corporations wanted to challenge the public buyers to use a higher weighting percentage when using environmental performance as award criteria. For some tenders they believe the percentage must be up to 50% to give satisfactory results.

For longer transportation routes biogas is the preferred fuel. Both the suppliers and the biogas producers claim that more public filling stations must be built. For the time being many stations are owned by the different companies that have biogas vehicles, thus making it difficult to travel over long distances.

The waste companies want to be included when the tender specifications are developed. Their opinion is that many public purchasers are unaware of the potentials which can be realized. It was suggested that innovation partnerships could be appropriate for tenders where the technology is still mature and the risk is high. Waste collectors using liquid biogas (LBG), hydrogen or electricity as fuel, are still not common, and developing and piloting must take place before these are introduced full-scale.

For many contracts on waste handling the collection and transport is included along with type of end treatment. It was suggested by the Buyers group to split this into two different areas. Most suppliers responded negatively to this. Many of the suppliers are both responsible for transportation and operating many of the facilities. They meant that this will result in insecurity and a lower degree of performance.

At the end some comments were made from different parties on total carbon footprint. Transportation is just one part of the waste handling. If requirements are too strict it could lead to results which are worse for the environment. This could be caused by situation where for example EV trucks cannot deliver to the preferable end treatment facility, because of low driving range.

\*\*\*

The outcomes from the market engagement activities on facility waste collection share many of the same characteristics as for the craftsman service. Hopefully, the most important positive impact from the dialogue conference is the message to the suppliers that many municipalities will request carbon neutral transportation in future procurements. This shows a clear direction and gives suppliers predictability when choosing which type of vehicles and technology to invest in.

### 3.3. Guidance on environmental criteria

UKE is the municipality's centre of competence and driving force for environmental concerns and social responsibility in procurements. Procurement is considered as an instrument in achieving the municipality's overall climate and environmental goals. The City Management expects that UKE initiates, develops, implements and coordinates the necessary measures such that the City of Oslo succeeds in reaching these goals.

At the same time as the BuyZET project has been going on, different approaches and methods in using environmental criteria have been piloted in new tender processes. After some very satisfactory results where suppliers for both services and goods contracts delivered offers with solely ZEV's, it was decided to gather best practices and develop guidance on the field. The process of making the guidance started in April 2018, and the first version was published on the municipality's intranet on the 5<sup>th</sup> of November 2018. At the start different types of models were developed, depending on the type procurements, e.g. goods, services and transport services. During the work with the different types of criteria, it was clear that the different procurement areas had so many similarities that it was not necessary to have multiple guides. This has resulted in one common guidance with generic text, which can be applied in all types of procurements which involve some kind of transport.

The process involved broad collaboration with purchasing officers, legal advisors and contract managers at KOS. In October draft versions were shared with other agencies, such as KLI, BYM, Waste-to-Energy Agency (EGE)<sup>13</sup> and the Agency for Waste Management<sup>14</sup> (REN), to ensure that the proposed environmental criteria were sufficient and to get relevant feedback on the material.

While working on the guidance it was decided to first develop guidance on somehow easier environmental criteria. This guidance material was named *“Recommended environmental requirements for transport”*. The plan is to develop guidance that is more advanced and ambitious during spring 2019. The “advanced” guidance will use the same layout as the “recommended” guidance. The structure for these guides are as follows:

- › **Recommended environmental requirements for transport**
  - Requirements regarding vehicles and fuel types.
  
- › **Advanced requirements for transport**
  - Requirements regarding vehicles and fuel types.
  - Requirements regarding use of alternative means of transport (bicycles, public transport, etc.)
  - Requirements regarding route optimisation
  - Requirements regarding efficient driving (eco-driving)

---

<sup>13</sup> In Norwegian: Energigjenvinningsetaten (EGE)

<sup>14</sup> In Norwegian: Renovasjonsetaten (REN)

Both types of guidance use a combination of award criteria, minimum requirements and contract requirements. As a part of the tender documents the suppliers must fill out a list of vehicles they intend to use. The highest score is given to suppliers which have ZEV's ready from the contract start date. Extra credit is given to suppliers with larger vehicles. This is included to boost demand for large ZEV's, since the amount of ZE heavy duty vehicles is somewhat poor for the time being. The minimum requirement is set to Euro 6/VI, but suppliers offering vehicles with this standard and using fossil fuels will not get credit for those vehicles in the award criteria.

The knowledge gained from the market dialogue and the research activities in the BuyZET-project has been crucial in developing the guidance. The project has been an effective way to channel relevant information into the work on the guidance and make it both robust and relevant. How to implement the methods from the guidance as well as dissemination will play an important role when developing the Procurement Plans for the two priority areas.

The guidance material as well as evaluations forms will also be included in the BuyZET-handbook, which will be published by the end of the project.

## 4. Abbreviations

|               |                                              |
|---------------|----------------------------------------------|
| <b>BEV</b>    | Battery electric vehicle                     |
| <b>BYM</b>    | Agency for Urban Environment                 |
| <b>CBG</b>    | Comprised biogas                             |
| <b>DIFI</b>   | Agency for Public Management and eGovernment |
| <b>EGE</b>    | Waste-to-Energy Agency                       |
| <b>EV</b>     | Electric vehicle                             |
| <b>GHG</b>    | Greenhouse gases                             |
| <b>GPP</b>    | Green public procurements                    |
| <b>HDV</b>    | Heavy duty vehicle                           |
| <b>HFCBEV</b> | Hydrogen fuel cell battery electric vehicle  |
| <b>KLI</b>    | Agency for Climate                           |
| <b>LBG</b>    | Liquid biogas                                |
| <b>KOS</b>    | Central Procurement Unit                     |
| <b>LDV</b>    | Light duty vehicle                           |
| <b>MOS</b>    | Department of Environment and Transport      |
| <b>PC</b>     | Passenger car                                |
| <b>REN</b>    | Agency for Waste Management                  |
| <b>TØI</b>    | Institute of Transport Economics             |
| <b>UKE</b>    | Agency for Improvement and Development       |
| <b>ZEV</b>    | Zero emission vehicle                        |

## 5. About BuyZET

BuyZET stands for BuyZET ‘Procurement of innovative solutions for zero emission urban delivery of goods and services’.

The BuyZET project will develop innovative procurement plans to help the participating cities achieve their goals of zero emission urban delivery of goods and services.

### 5.1. Partners Logos



### 5.2. Contact details

Reach us:

Visit the project website: <http://www.buyzet.eu>

Join the discussion at the BuyZET Procurement Forum Group: <https://procurement-forum.eu/>

Follow BuyZET on Twitter: [@BuyZETproject](https://twitter.com/BuyZETproject)

Join the BuyZET LinkedIn Group: [BuyZET Project](#)

For more information:

Please, contact the project coordinator at ICLEI EUROPE:

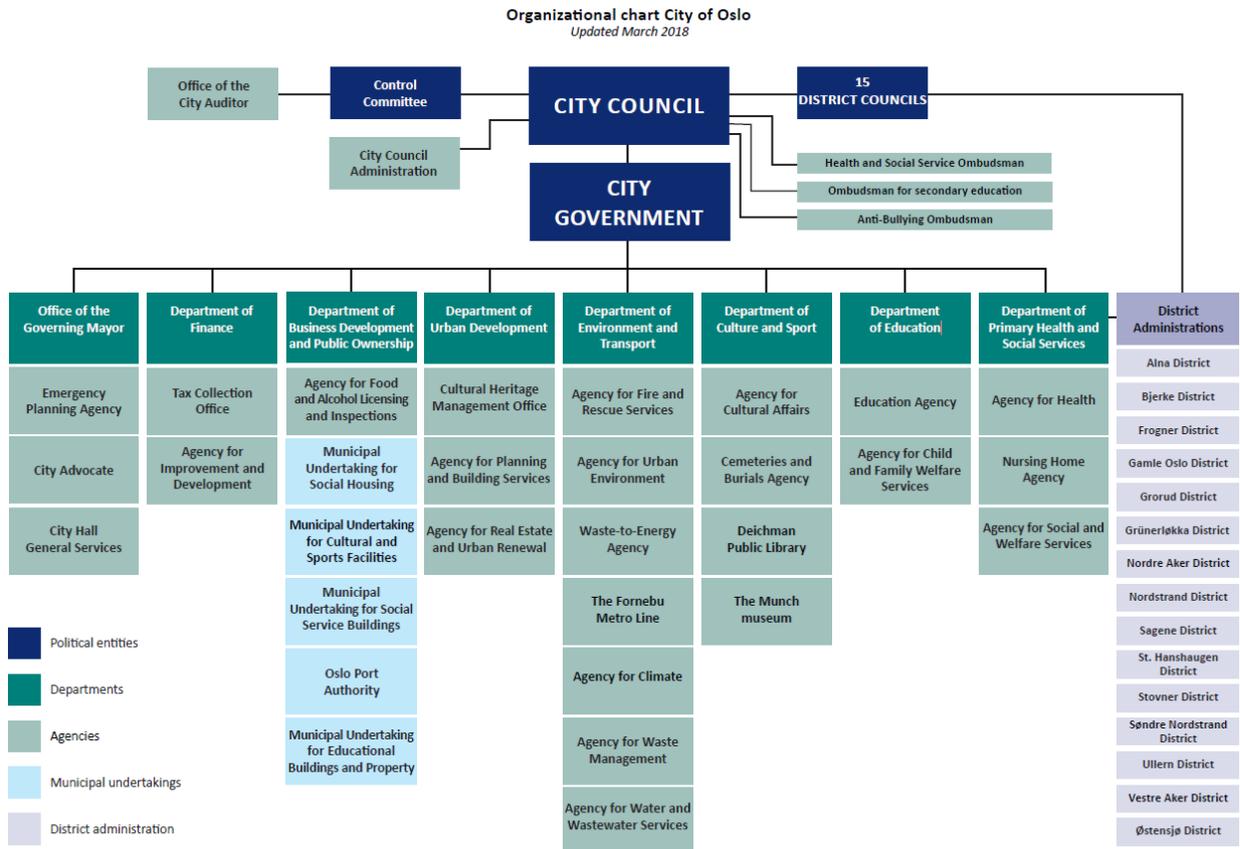
Simon Clement  
Phone: +49-761 / 3 68 92-0  
Email: [simon.clement@iclei.org](mailto:simon.clement@iclei.org)

Or the project communication manager at Polis:

Giacomo Lozzi  
Phone: +32 2 500 56 86  
Email: [glozzi@polisnetwork.eu](mailto:glozzi@polisnetwork.eu)

# Appendix A

## Organizational chart – City of Oslo



# Appendix B

Questionnaire used in follow-up meetings with contracted craftsman suppliers

## (1) Current vehicle fleet

- › Total number of vehicles?
  - Number of vans? Number of passenger cars?
- › How many zero emission vehicles (electric or hydrogen)?
  - Number of vans? Number of passenger cars?
- › Is biofuel used for any of the vehicles? (if yes, which types of biofuels?)
- › How many vehicles have Euro 6/VI?
  - Number of vans? Number of passenger cars?

## (2) Strategy and targets for a transition to zero emission vehicles

- › Does your company have any goals for zero emission vehicle fleet?
- › How is the time perspective for such a transition?

## (3) How can the municipality facilitate an increased share of zero emissions vehicles in new contracts

*Please choose the alternative that reflects your opinion for each of the statements below:*

1. The measure will have a good effect
  2. The measure will not have an effect
  3. The measure will have a negative effect
- 
- › Use “Environment” as an award criteria for zero emission vehicles in new tenders.  
In other words: Promote the suppliers with highest proportion of zero emission vehicles.
  - › Use minimum requirements in tenders such that all vehicles used in operations must have zero emission.
  - › Use contractual requirements such that fossil vehicles must be replaced with zero emission vehicles during the contract period.
  - › Designated EV charging stations for craftsmen at the municipality's own locations/addresses.
  - › Provide a possibility to store equipment, materials and tools at central locations in Oslo.
  - › Provide guidance to suppliers on how to apply for public funds for purchasing of vehicles and charging infrastructure