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Other Business

Submitted by CORTE on behalf of the Consortium led by Panteia in association with ARMIS, AustriaTech, CORTE, MAPtm, TRT, and Sadler Consultants

This document summarizes the outcomes of three stakeholder workshops organized by UVAR Exchange on the signage for LEZs and ZEZs in March, April and May 2022. It provides recommendations aimed to address the fragmentation of road signs used in Europe for LEZs and ZEZs.



UVAR Exchange

UVAR SIGNAGE

Recommendations on Low Emission Zone and Zero Emission Zone signs – v1.0

1. Introduction

This note was prepared within the framework of the European Parliament Preparatory Action User-friendly information tool on urban and regional vehicle access regulation schemes 2 ([UVAR Exchange project](#)), managed by the European Commission – Directorate General for Transport and Mobility (DG MOVE) and implemented by the Consortium led by Panteia in association with ARMIS, AustriaTech, CORTE, MAPtm, TRT, and Sadler Consultants.

The activity is part of a task focusing on **improving the communication of information to drivers in the vicinity of UVARs through different road signs** and is the result of the collaborative work initiated with a group of stakeholders and local authorities aimed at understanding how to provide harmonised, easily understandable, clear, complete and updated information regarding **Low Emission Zone (LEZ)** and **Zero Emission Zone (ZEZ)** through signage.

This document summarises the outcomes from three stakeholder workshops organised by UVAR Exchange on the signage for LEZs and ZEZs in March, April and May 2022. It provides recommendations aimed to address the fragmentation of road signs used in Europe for LEZs and ZEZs.

CORTE, as a member of the UVAR Exchange consortium, initiated a close collaboration with the UNECE Group of Experts on Road Signs and Signals (EGRSS) which has been mandated to assess the new signs for a possible inclusion in the 1968 Vienna Convention on Road Signs and Signals in a number of priority areas, including LEZs. UNECE invited CORTE to prepare recommendations regarding LEZ signs for the EGRSS and participated to the three stakeholder workshops. The present document will be presented by CORTE to EGRSS as a result of this process. In addition, the recommendations will be taken into consideration during the demo activities with cities aimed at improving other UVAR-related signs that will be carried out within the UVAR Exchange project.

2. Low Emission Zone (LEZ)

MAIN PANEL

General characteristics

- The LEZ should use signs having a **zonal validity** indicating the entry to/exit from the zone with the sign displayed on a **rectangular panel with a light-coloured ground**¹ as described in Annex 1, section E (special regulation signs), subsection II, paragraph 8 (a) to the Vienna Convention on Road Signs and Signals.² This means that the sign applies to all roads in a zone and thus avoiding the repetition of the regulatory sign (alone and with no rectangular zonal panel) at every road junction.
- On zonal signs indicating the beginning of the LEZ, **the word "ZONE" or its equivalent in the national language** may be displayed above or below the sign on the panel.
- Since the Convention allows to include specific details of the restrictions/prohibitions below the sign on the main panel (e.g., time validity), there's a **preference for placing the word**

¹ This is mainly white, but may also be yellow in some countries for greater recognisability when there is frequent snow on the roads.

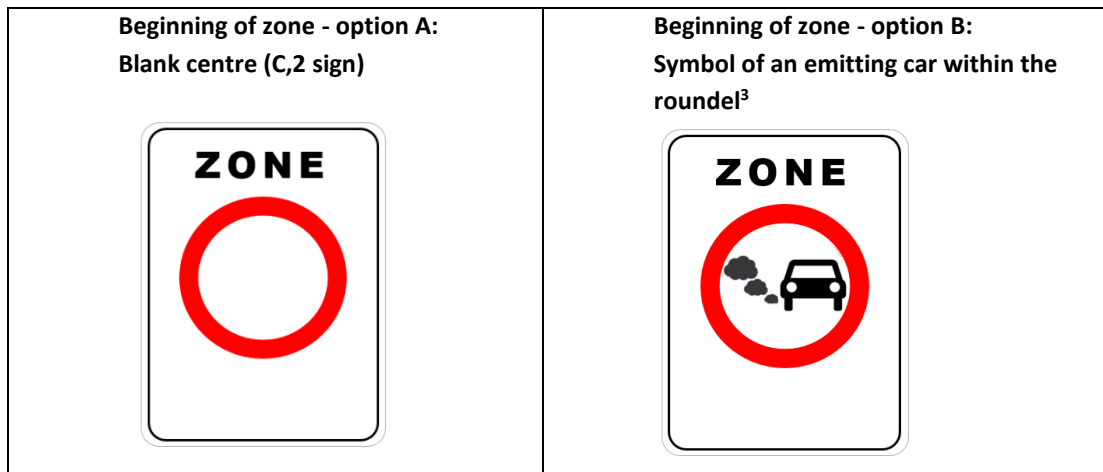
² https://unece.org/DAM/trans/conventn/Conv_road_signs_2006v_EN.pdf

“ZONE” above the sign.

- The **layout line** on the main panel should be **black and slightly recessed**.
- The sign displayed on the rectangular panel should be based on the prohibitory/restrictive signs as in Annex 1, section C of the Vienna Convention, featuring a **red roundel with a white or yellow background**.
- As a general recommendation, the organization of elements and information on **zonal panels should be as simple as possible**; the use of symbols should be favoured instead of words.
- In order to further increase the clarity and recognition of the main zonal panel, additional information should be preferably placed on additional separate panels below the main one.

Characteristics of the red roundel and use of symbols

- There are **two recommended possibilities** regarding the red roundel that could be adopted for (new) LEZs as in the following options for entry zonal signs (beginning of a LEZ).



- Based on workshops discussions, **the stakeholders noted that the specific symbol in option B helps in conveying the message of the LEZ**. Therefore, the recommendation is to develop and use a common symbol of an emitting car/vehicle at international/EU level in order to make the message of the sign easier to understand and also to differentiate LEZ signs from other UVAR typologies, e.g., Limited Traffic Zone or Pedestrian Zone (for countries using the prohibitory red roundel).
- If the LEZ sign is to contain the proposed symbol of an emitting car, the silhouette of **vehicle should be preferably depicted from the front view**, taking into account the following considerations and limitations:
 - A/ The Convention car symbol in section C (section covering the road signs for prohibition) is seen from the front view (and also applies to the back view per Convention symbol design). **The (C,3^a) sign prohibits all motor vehicles**, including motorcycles with side cars, **but does not prohibit 2-wheeled motorcycles and mopeds**. Some countries include symbols for cars and motorcycles when they wish to prohibit both vehicle types or all motorvehicles (C,4^a sign).

³ Tern symbols used along these note (credit: Mr Stefan Egger. <https://iidre.weebly.com/symbols.html#/>)



C, 3^a

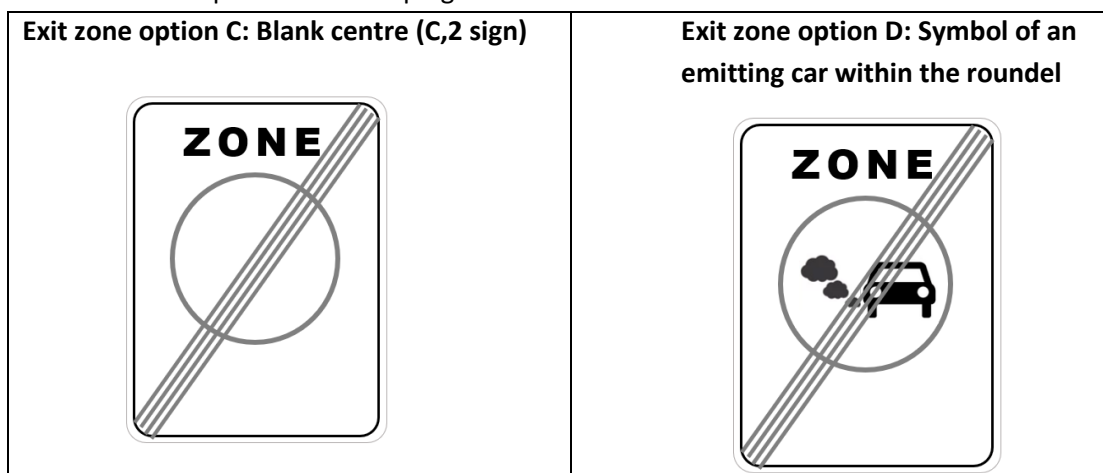
C, 4^a

- B/ On the other hand, the car's **side view** stands for and is used by Convention Contracting Parties to mean passenger car specifically (except for Convention warning signs) so to specify rules applicable to that vehicle type only. The side view of a polluting vehicle could be used, for example, for schemes applying to certain vehicle types only as in the Netherlands for LEZ restricting access only to lorries (see Convention C,3^e sign).



C, 3^e

- To indicate the exit from the LEZ, the same sign displayed on a rectangular panel shall be set up as that placed at the entry to the zone but it shall be **grey on a rectangular panel with a light-coloured ground**. A black or dark grey diagonal band (or parallel grey or black lines forming such a band) shall slope downwards across the sign **from right to left**.
- According to the Vienna Convention amendments, the preferred way to end zone is with **four thin parallel lines** rather than with the bar because with some images it makes it easier to see what is beneath the prohibition symbol. For the same reasons, the smog emitting from the vehicle should be depicted on the left sign within the roundel, in order for it to be visible under the parallel lines sloping downwards.



- No other elements should appear on the panel (such as text 'end of zone').

Information about the LEZ scheme

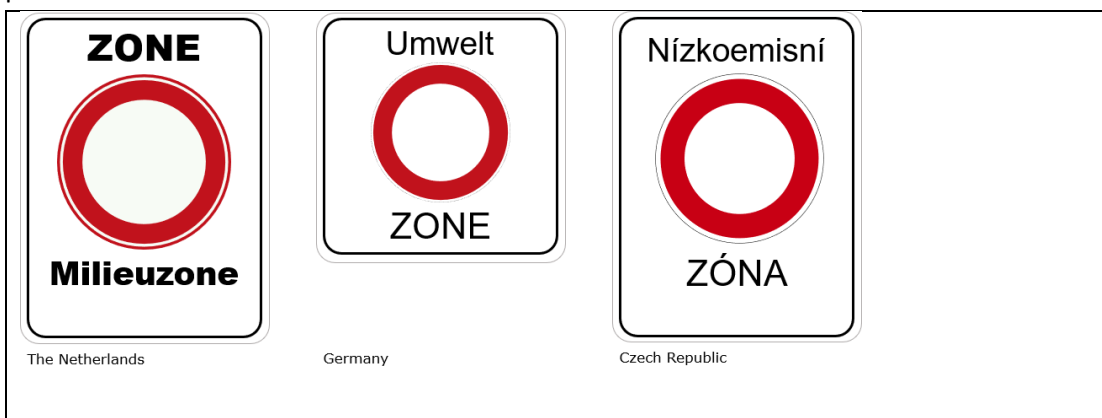
- **No inscription (text) related to the LEZ** should appear **within the red roundel** (e.g., as in use in Germany, the Netherlands and Czech Republic)



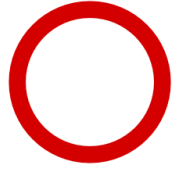

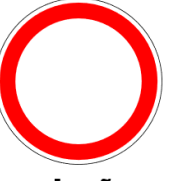


- **Use of abbreviations** for low emission zones (such as ‘LEZ’ or national equivalent of the scheme) **should be avoided** for reasons of readability and comprehension by drivers.



- Depending on national legislation / practice, the **extended name of the scheme may be spelled out in national language on the main panel**. Also, it **may appear in multiple languages** (for example in multilingual regions/countries or in areas with a lot of foreign drivers). In such cases and particularly in absence of a specific symbol (i.e., polluting car) for the LEZ sign, the **word “ZONE” should be displayed alone above or below the red roundel, followed or preceded by the text “Low emission”**.
- The word “emission” allows for similar meaning and spelling in many EU national languages and should be preferred to the scheme name “Environmental zone” used in some countries (e.g., Netherlands, Germany, Denmark, Sweden).
- In the following, **proposals** for some harmonised LEZ entry zonal signs (main panel) are presented.






<p>Zone</p>  <p>Miljøzone</p>	<p>ZONE</p>  <p>FAIBLES EMISSIONS</p>	<p>Niska Emisja</p>  <p>STREFA</p>
Denmark	France	Poland
<p>zona</p>  <p>basse emissioni</p>	<p>zona</p>  <p>emissões reduzidas</p>	
Italy	Portugal	

Pros:

- ✓ This allows for a distinction between LEZs and other types of UVARs, such as ‘Limited Traffic Zones’ (LTZ), as it is the case of zonal signs in Italy, Portugal, France, Belgium and other countries.
- ✓ Providing the information to drivers to understand the rationale for the prohibition may increase compliance by drivers.⁴

Cons:

- ✓ It adds more information that needs to be processed by the driver in a short amount of time as opposite to the use of a specific symbol within the roundel as in the following proposals.

<p>ZONE</p> 	<p>ZONE</p> 	<p>ZÓNA</p> 
The Netherlands	Germany	Czech Republic

⁴ Several studies support this in relation to variable-message signs (VMS), notably:

Steinhoff, Christiane, Keller, Hartmut, Kates, Ronald, Färber, Brigitte & Färber, Berthold (2000). Driver Perceptions and the Effectiveness of Preventative Traffic Management Strategies. Proceedings of the 7th World Congress on Intelligent Systems, Turin, Italy, 6–9 November, 2000. de Craen, S. & de Niet, M. (2002). Extra information on Dynamic Message Signs: possibilities and effects. (Extra informatie op matrixborden: mogelijkheden en effecten.) Stichting wetenschappelijk onderzoek verkeersveiligheid SWOV, R-2002-13, p. 37. Netherlands.

SUPPLEMENTARY PANELS

Harmonisation of additional panels would be very difficult. Therefore, we recommend the following guidelines for organising the elements in such panels in order to promote a more uniform approach.

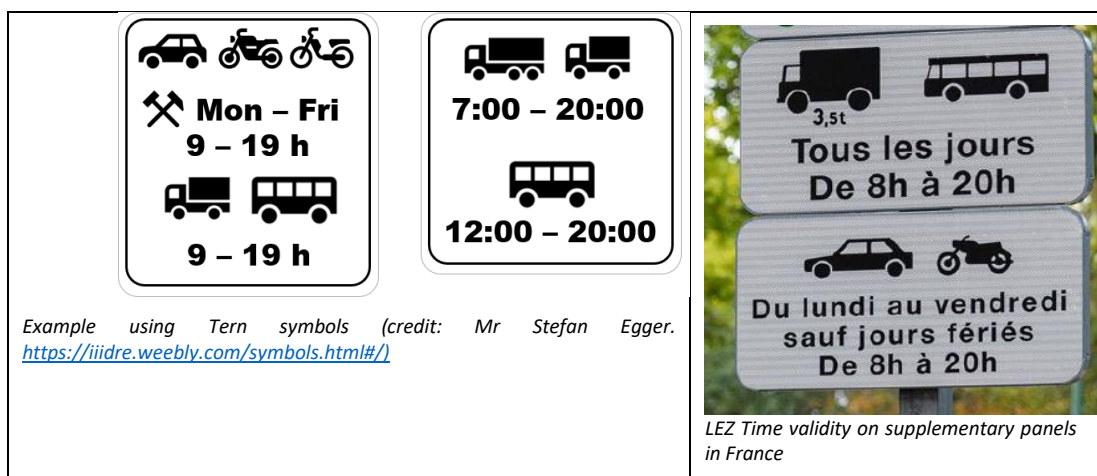
- All additional information should be organised in one or more supplementary (additional) panels, including:
 - o **Time validity** of the scheme, if applicable (i.e., in case of not “permanent” LEZ H24/365).
 - o The vehicles that are **permitted to enter** through the general LEZ rule, i.e., Eurostandards / vehicle categories to which the prohibition **would not apply**.
- Whenever the use of symbols is not possible, **information** on additional panels should be **clear** and provided in a **short text**. Where possible using words that are simple, and similar to other European languages.

Time validity

- It is recommended to first list the **time validity of the prohibition right under the main panel**. For better clarity, **symbols** (rather than text) should be used. Some countries such as Italy have already adopted corresponding symbols to differentiate between weekdays (a crossed hammer) and weekends (cross). Below are some suggestions on how to present the information regarding time validity.


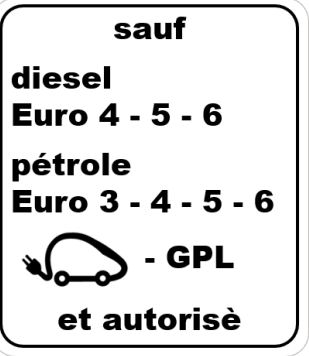






- In case of different time validity applying to different vehicle types, the vehicle type symbols (**using the side view**) should come first.



Emission standards and other exceptions

- **Type and number of emissions categories are different from country to country**, and sometimes between cities in a certain country. Furthermore, stickers/vignette systems can combine different Euro standards for different vehicle types (see example of [France](#)). Harmonisation of sticker/vignette system at EU level would be extremely difficult given the number of current schemes, and cause confusion in changing currently understood schemes. However, it is strongly recommended that countries where such system is not yet introduced (particularly in neighbouring ones) should try to align with a currently used scheme.
- **There is a need to differentiate between symbols for stickers and Euro standards**, as there are Member States where camera enforcement (automatic number plate recognition) is used instead of stickers and there is no intent by the EC to harmonise these rules at EU level due to the difficulties mentioned above.
- To list the exceptions to which prohibition does not apply, the word '**Except**' in a national language/s should appear on top of the supplementary panel listing these exceptions. The use of other words to refer to exceptions (such as the word 'allowed' as is currently the case in the Netherlands) is not recommended, as it is less easily understood in other languages.
- **Vehicle-specific exceptions to the ban**, i.e., vehicle types that may enter the LEZ according to different rules, if applicable, **should be depicted using symbols of corresponding vehicles** (for example van, bus, etc.). These should be depicted from **side view** (as opposed to the front/back view). If **fuel type** needs to be specified, it should appear **in text**.
- **All Euro emission standards or stickers of vehicles that are allowed to enter the LEZ** should be indicated on a supplementary panel.
- Euro standards should be spelled out, to allow for a differentiation compared to stickers, e.g., Diesel Euro 4-5-6. Zero emission / electric vehicles (depending on the scheme) would ideally have to be added, and the signs changed when Euro 7 comes in.
- The wording "**and authorised**" in national languages should appear right after the Euro standards/stickers and on the same supplementary panel to refer to all other types of exceptions to the rule that may exist in the LEZ scheme (in addition to the general emission-related rule); this avoid to indicate on the panel a significant amount of information (as is seen in an example below on the left side from Italy – see 3rd panel 'eccetto', which is not recommended).
- In the following, **proposals** for some harmonised LEZ supplementary panels are presented.

 <p><i>Euro standard, fuel and vehicle type exceptions in Dutch</i></p> <p><i>Tern symbols credit: Mr Stefan Egger. #/">https://iudre.weebly.com/symbols.htm</i></p>	 <p><i>Euro standard and fuel exceptions in French</i></p>	 <p><i>Euro standard and fuel exceptions in Italian</i></p>
 <p><i>Sticker system in Spanish</i></p>	 <p><i>Sticker system in French</i></p>	 <p><i>Sticker system in German (the word "free" instead of except is used to allow for prompt application)</i></p>

In case of a **sticker system**, information to drivers that they must obtain stickers in advance should appear on advance warning signs and/or VMS panels before entering the zone and also in English language. Currently, the European Commission receives a lot of complaints from drivers related to fines and lack of information related to the obligation to obtain/purchase the stickers prior to enter the zone.

Enforcement and further information

- A symbol of a (surveillance) camera should be displayed on a supplementary panel (but on the main one) where the LEZ is enforced using automatic number plate recognition (ANPR). The use of additional text (such as “camera” or “electronic control”) is not recommended even if a further specification might be requested in some countries.

 <p><i>Symbol only</i></p>	 <p><i>Symbol and text in Italian</i></p>	 <p><i>Symbol and text in Spanish</i></p>
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- A further additional panel should provide a **website and/or a phone number** (as applicable in some countries, for example Italy) that can be consulted by drivers for **more information and registration**.

**información e
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**lezvitoria.es
800 02-02-02**

Proposal for an application in Spain

USE OF VARIABLE MESSAGE SIGNS (VMS)

- Variable Message Signs (VMS) allow for additional panels and can combine text and graphic signs or symbols (the same that are used on metal road signs). These could be used as advance warning signs or at the entry of an LEZ to reinforce the attention to the prohibition (particularly when the LEZ is not permanent but linked to certain time validity or conditions – i.e., emergency schemes) and to allow also information to be displayed in English.
- In addition, information on camera enforcement and fines could appear on VMS panels placed well in advance or prior to the start of the LEZs, to reduce the amount of information on the LEZ main / supplementary panels and warn the drivers to obtain stickers or authorisations for entry, where applicable. Information on where to get, for example, stickers or authorisation could be given on the VMS.
- The following example is of a small VMS panel prescribed by the Italian guidelines on LTZs. It can be placed on top the main zonal sign or as separate element in the proximity of the zone.



ADVANCE WARNING SIGNS

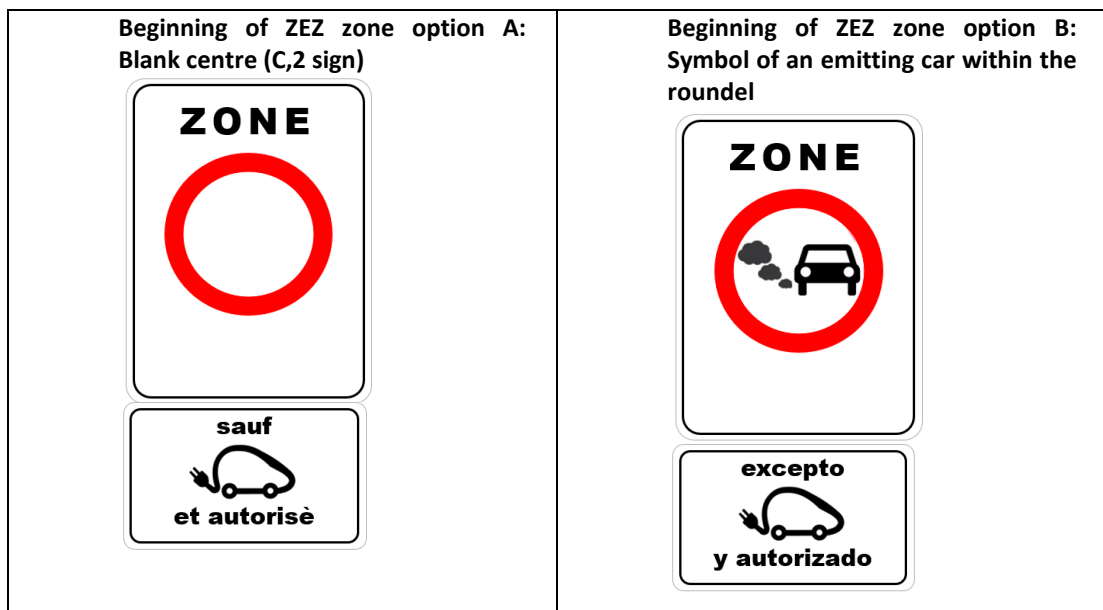
- Advance warning signs may be used to inform drivers they are approaching a LEZ. However, these signs should be used in such a way that they do not give the impression that a driver can bypass it (as can be understood in the example from Belgium here below).



Belgium

3. Zero Emission Zone (ZEZ)

- **Recommendations for LEZ signs also apply to the ZEZ sign.** The main panel for ZEZs should be the same as for LEZs, with a dedicated symbol inside the red roundel or, if not in use and applicable, the text “Zero emission” should appear below the sign in national language.
- The difference is the supplementary panel referring to **zero emissions vehicles (ZEVs)**, the only category allowed to enter the zone. The UNECE working group on electric vehicles may well recommend an electric vehicle symbol, in which case this symbol should be used. In the meanwhile, **we recommend the following symbol from France (or similar)** to be used in between the word “except” and the text “and authorised”.



4. Next steps

Some preliminary recommendations to address the fragmentation of road signs used in Europe for LEZs and ZEZs are listed here below as follows:

- Using a zonal sign featuring a red roundel, with additional panels.
- Symbols are preferred as opposed to text where possible.
- Additional panels should be used to specify the time validity.
- Exceptions should be referred to as: 'except permitted / authorised / with permit', rather than listing all categories of exceptions.
- In addition, information where a permit can be obtained may be displayed on VMS.
- Many of the recommendations for LEZ signs could be used similarly for Low Traffic Zones (LTZs), in terms of the logic of the signs.

The recommendations provided in this note will be taken into consideration during the demo activities with cities (UVAR Exchange demonstrator on signage) aimed at improving other UVAR-related signs that will be carried out within the UVAR Exchange project. The UVAR Exchange demonstrator on signage aims to share common practices of UVARs' information provision across the EU and above all to foster cooperation to enable completeness, clarity and harmonization of UVAR physical road signs.

UVAR Exchange Demo on signage involves city officials dealing with traffic management and UVARs, different city authority departments (e.g., transport, environment, data) but also key representatives from the Transport Ministries as well as other relevant stakeholders.

Representatives of EU cities having different characteristics in terms of UVAR schemes will join the Demo either as demonstrators (for testing changes and improvements in their local context) or observers (to take part in collaborative activities and discussions). They will be asked to share their views, experiences and resources (including photos of installed signs at different locations) and to take part in plenary discussions that will make use of digital workspace for visual collaboration⁵.

The collaborative work will focus on the analysis of elements affecting UVAR information provision, use of mandatory signs and symbols, basic/minimum information and wording, legally prescribed vs. optimal signage sizes, use of UVAR sign typologies for advance warning, entry/exit gates, VMS, etc.

Results will feed into the final version of the report, foreseen in late 2022, with a set of agreed recommendations and an Annex of collected UVAR signage practices across Europe.

⁵ Preliminarily accessible through this link https://miro.com/app/board/uXjVODiVRqE=

