



**CIVITAS**

Cleaner and better transport in cities

**ARCHIMEDES**

# CASE STUDY



## LOW EMISSIONS ZONE IN AALBORG

### URBAN FREIGHT LOGISTICS



The City of Aalborg has implemented a low emission zone in the city centre, covering an area of 3.5 km<sup>2</sup>. Diesel trucks and buses above 3.5 tonnes must fulfil EURO IV or have a retrofitted particle filter to access the area. The results have been impressive: emissions in the area have been reduced by approximately 25 percent, and air quality has improved. A key element in the success of the measure was the strong cooperation between the City of Aalborg and local stakeholders, including freight operators, shops and the police, which has laid the ground for a long lasting collaboration in future urban freight and city logistics projects.

#### Municipal context

Aalborg is an industrial and university city in the north of Denmark. It joined CIVITAS ARCHIMEDES to consolidate its role as a leader in local sustainable development with a particular emphasis on cycling mobility.

Aalborg emerged where the Limfjord was narrowest and easiest to cross. This location made Aalborg an important trading post in the Middle Ages and later on an industrial centre, now becoming a knowledge economy. In 2007, the municipality incorporated some neighbouring areas, making Aalborg the third largest municipality in Denmark.

The City of Aalborg is striving to make the city a place with an outstanding quality of life. Aalborg has been a pioneer in the field of sustainable development for many years. In 1994, the city made efforts to put local sustainability on the European agenda, which resulted in the creation of the Aalborg Charter - signed by over 2,500 municipalities across Europe. In 2004, this was followed by the Aalborg Commitments, a more binding statement through which cities commit themselves to work diligently for local sustainable development. It has been signed by 640 municipalities.

#### MUNICIPAL PROFILE

##### LOCATION

Aalborg, Denmark

##### POPULATION

200,000 inhabitants in the municipality, 130,000 in the city

##### LAND AREA

1,100 km<sup>2</sup>

##### CIVITAS BUDGET

EUR 6,700,000



**AALBORG IN CIVITAS**

Aalborg (Denmark) participated in CIVITAS ARCHIMEDES, an innovative collaboration between the cities of Aalborg (Denmark), Brighton and Hove (United Kingdom), Donostia-San Sebastian (Spain), Iasi (Romania), Monza (Italy) and Usti nad Labem (Czech Republic). ARCHIMEDES stands for "Achieving Real CHange with Innovative transport MEasures Demonstrating Energy Savings"

**CIVITAS ARCHIMEDES**

The ARCHIMEDES cities implemented a strong and coherent package of 83 activities to make transport more energy efficient, safer and more convenient. An increased share of clean engine technology and fuels has significantly contributed to achieving this goal. With a strong focus on education and trainings for students, citizens and practitioners, ARCHIMEDES cities greatly benefited from sharing their experiences and learning from each other. The project ran from 2008-2012.

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Heavy good vehicles in Aalborg

**Introduction**

Access for heavy goods vehicles (HGVs) in the city centre is essential to ensure a daily supply of goods. However, HGVs are a major contributor of transport pollutants and emissions. An analysis from 2005 showed that the implementation of an environmental zone – which requires minimum standards for HGVs (heavier than 3.5 tonnes) and buses - could reduce CO, HC and NOx emissions from HGVs by 25 percent and PM emissions by 20 percent.

When Danish legislation in 2007 made establishing a low emission zone possible in Aalborg, the City saw in CIVITAS ARCHIMEDES the perfect opportunity to implement the change. The project gave Aalborg the possibility to enhance the existing work with stakeholders and to gather experiences about low emission zones from other cities in the CIVITAS network.

**Taking a closer look**

From September 2008 to February 2009 (when the zone was established), a plan for signage was developed and road signs indicating the entrances to the zone were set up in the city. By the end of 2008, a first licence plate registration of lorries and buses was carried

out to determine their compliance with Euro norms. The data collected was later compared with another measurement to assess the results of the environmental zone.

The zone was inaugurated on 1 February 2009 by the Alderman for Technical and Environmental Issues, Mariann Nørgaard. It began operation with Euro III or particle filter requirements until 2010, when the requirements were altered.

During this period of time, freight operators were informed about the requirements and meetings with freight operators, city associations and others were held with the aim of continuously evaluating the process and the implementation of the zone.

As of July 2010 the requirements were changed and the signs were updated. Information about the new requirements was distributed to freight



Signalling the environmental zone



operators in the region. The cities of Odense and Aarhus, where environmental zones were also in place, changed the requirements at the same time as Aalborg.

In October 2010 a second licence plate registration was carried out to assess whether newer and cleaner models of lorries and buses were operating in the city. Data was analysed during the winter of 2010/2011 to quantify emission reductions.

#### BACKGROUND INFORMATION

An important driver for this measure was the strong cooperation between the City of Aalborg and local stakeholders.

Since 2000, the City has had regular meetings with stakeholders from logistics companies, the city commerce organisation, the police and the port authority to find solutions to the challenges identified by each of the stakeholders.

Citizens wanted the city centre to be a nice environment, while shop owners wanted their goods to be delivered when employees are at work, but before customers arrive, and freight operators called for efficiency. Various schemes and solutions were studied to meet all these needs, and stakeholders were involved in the low emission zone process from the start. This process has eased the implementation of the zone and as a result, the zone is currently operational and no major problems have been reported.

#### Results

In analysing the results, the City of Aalborg used a framework for air quality modelling developed by the National Environmental Research Institute (DMU).

The pollution level was evaluated through air quality indicators such as levels of CO, NOx and particulates. NO<sub>2</sub> levels have dropped by approximately 1 µg/m<sup>3</sup> compared to a situation with no environmental zone, and particulates by approximately 0.3 µg/m<sup>3</sup>.

Vehicle emissions were also measured to assess the effects of this measure, by using the licence plate registration data collected before and after the implementation of the environmental zone. Results show a reduction in emissions by approximately 30 percent.

The share of trucks with engine Euro IV or higher increased from 28 percent in 2008 to 54 percent in 2010, while trucks with engine standard Euro II or lower decreased from 26 percent to 15 percent over the same period. The average

age of registered trucks in and around the low emission zone is around six years, whereas, according to Statistics Denmark, the average age of all HGVs in Denmark in 2010 is 8.2 years.

Finally, the image of Aalborg as a green city improved, encouraging migration of people, companies and students to the city.

#### Lessons learned

The main lesson learned is that good cooperation with local stakeholders is essential to guarantee a smooth process.

The information and views collected in meetings with operators, retailers and the police made it possible to design a zone that could actually work.

The stakeholder involvement strategy continues in the development of a heavy traffic strategy, which aims to explore solutions that can benefit more people by analysing the situation from more angles.



A Euro IV truck in the low emission zone



The involvement strategy adopted by Aalborg was presented to an international audience at the third CIVITAS results workshop in Rotterdam in autumn 2012, and the City hopes that its lessons learned will be recognised by the European Commission.

### Upscaling and transferability

Low emission zones are realistic when they are introduced according to national policy, and if the city has the required stakeholder support.

The measure is fairly easy to replicate. No advanced technology was required, and markers such as signs and stickers for HGVs and buses were used.

In order to secure good cooperation with freight operators and federations, these groups should be included in the planning process. The

identification of relevant freight stakeholders is central in the preparation phase of a low emission zone, as it guarantees that the right people are involved in the whole process.

There are currently no plans for upscaling the project in Aalborg, as the limits for air quality are not currently being exceeded. However, the Danish Government is working on a concept of "Clean Air Zones" which could replace the low emission zones in the future. The City of Aalborg is looking into this as the concept develops.

As the low emission zone is gradually losing its effect due to newer vehicles, the requirements might be altered in the future.

#### Key contacts

Gustav Friis  
City of Aalborg  
[Guf-teknik@aalborg.dk]

#### References or sources

ARCHIMEDES deliverables, available online at [www.civitas.eu](http://www.civitas.eu)



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#### Series editors

Ciara Leonard  
Sean Carroll  
Gloria Spezzano (ICLEI)

#### Layout

Stephan Köhler (ICLEI)

