

INTERREG Alpine Space

**“e-mobility SMART grid for passengers and last mile freight
transports in the Alpine Space – e-SMART”**

Best Practice Template

June 2021

Best Practice

1. General Information		
Title of the practice	<i>Full decarbonisation of the urban public bus system and integration of innovative on-demand services in the City of Graz</i>	
Please select the project acronym	move2zero	
Specific objective	<p>The overall goal of move2zero project is to develop a concept and demonstrate a fully zero-emission urban bus transport system, which</p> <ul style="list-style-type: none"> • includes zero-emission technologies for power generation (generation of emission free energy), • is based 100% on zero-emission technologies for the operation of vehicles (emission free operation), • supports components with low emission factors and high reuse- and recyclability (low emission production), • perfectly matches the needs and expectations of public transport users by including their voice and integrating on-demand-services, • includes several aspects of automated and connected mobility, • can be immediately implemented to system operation of the public transport system of the City of Graz and other cities. 	
Main institution involved	Holding Graz – Kommunale Dienstleistungen GmbH	
Location of the practice	Country	Austria
	Region/City	Graz

2. Detailed Description	
Detailed information on the practice	<p>With the Paris climate agreement in force, the EU is committed to a global transition towards a low carbon economy more than ever. Therefore, the EU parliament enacted the “Clean Vehicles Directive” (CVD) in February 2019 – a guideline for the procurement of zero-emission and low-emission public road vehicles. With this guideline, local and regional public transport organisations have a key role in cutting carbon emissions by upgrading transport systems, making them cleaner, more energy efficient and more sustainable.</p> <p>Going beyond traditional technically oriented guidelines, within the lighthouse project move2zero a holistic concept for a full</p>

	<p>decarbonised flexible urban transport system will be developed. The system includes zero-emission technologies for power generation and supply, is based 100 % on zero-emission operation and supports components with low emission factors and high reuse- and recyclability. Within a one-year demonstration phase of seven battery electric buses and seven fuel cell buses, real-operation data will be generated in order to optimise the planning of the full decarbonisation. An additional test operation will investigate the introduction of innovative on-demand services with automated booking and charging. The move2zero approach stands out for its integrative consideration of system components and shows a high transferability to specific stakeholders as an implementation concept for other cities and public transport operators will be developed. Besides that, comprehensive awareness and acceptance raising measures as well as communication and dissemination activities will include citizens, (potential) users, drivers, other cities etc.</p>
Resources needed	<p>Research project, funded by Austrian Climate and Energy Funds</p> <ul style="list-style-type: none"> • Total budget: € 5.684.701 • Funding: € 2.906.835 <p>Not included are costs for the purchase of buses and establishment of infrastructure. It is expected that there will be funding possibilities for the additional costs.</p>
Timescale (start/end date)	<p>May 2019 – July 2024</p>
Evidence of success (results achieved)	<p>By decarbonising the bus fleet, air quality will be improved and inner-city noise will be reduced. Therefore, the project makes a significant contribution to improving the quality of life in Graz.</p> <p>According to calculations by the Umweltbundesamt (as of 2019) emission savings in the case of complete decarbonisation will amount between 12,900 and 13,600 t CO₂equ, (approach: well to wheel) depending on the technology mix. By 2030, this represents a savings potential of around 80,000 t CO₂ equ.</p>
Difficulties encountered/ lessons learned	<p>As there are hardly no experience values of delivery times, operating procedures etc. of e-buses, charging infrastructure and hydrogen-filling stations it is hard to timely plan the whole process.</p>

	<i>Moreover, the project implementation was also affected and delayed due to COVID.</i>
Potential for learning or transfer	<p><i>As move2zero is a “flagship project”, the character of being a good practise example is crucial. With the coming into force of the Clean Vehicles Directive (CVD) on 2 August 2021, the importance of this flagship character even increased. According to the directive, 45% of new buses and coaches within public procurements must be defined as clean (everything except petrol and diesel, of which at least 50% are zero-emission). By 2030, the requirement rises to 65%. Therefore, the experiences and know-how out of the project move2zero are of great value for all public transport agencies and cities.</i></p> <p><i>For ensuring an optimal transfer to relevant stakeholders, a holistic implementation concept based on the experience and know-how gained within the project, will be developed. Thereby, spillover effects are generated and other cities are supported in their decarbonisation process.</i></p>
Further information	www.move2zero.at
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