



## ELENA Completed Project Factsheet

### Aarhus Light Rail

<b>Location</b>	Municipalities of Aarhus, Odder, Midtdjurs and Norddjurs in the eastern part of Central Denmark Region
<b>Beneficiary</b>	Aarhus Letbane I/S (Aarhus Light Rail I/S)
<b>CoM signatory</b>	Yes (Municipality of Aarhus signed in January 2009)
<b>Sector</b>	Public Transport
<b>Total PDS costs</b>	EUR 2 508 554.70
<b>ELENA contribution</b>	EUR 1 881 416.02
<b>Project development services financed by ELENA</b>	<p>The overall aims were to Aarhus Light Rail I/S to improve quality and energy efficiency of the transport system:</p> <ul style="list-style-type: none"> <li>• Support of studies to find the best energy efficient solutions for the power supply of the system, covering both urban and suburban environments, where the current supply systems were not the same</li> <li>• Support search of innovative technical solutions on how to transform a traditional local passenger and freight railway line into a light rail network with a freight transport capability</li> <li>• Support to ensure the necessary permits and agreements with the stakeholders and organisations included in the project</li> </ul>
<b>Description of ELENA operation</b>	<p>ELENA support has allowed the recruitment of both internal and external technical assistance. The coordinated approach for the integration of the existing railway lines into light rail operation was divided into two work packages:</p> <ul style="list-style-type: none"> <li>• WP1: Preparation for technical integration for freight and light rail</li> <li>• WP2: Studies and integration of innovative solutions for energy efficiency and power supply</li> </ul>
<b>Timeframe</b>	June 2013 – June 2016
<b>Basis for investment identification</b>	<p>The goal was that the innovative approach of forming a Light Rail Transit Corporation that benefit the future expansion of a light rail network in the eastern part of the Central Denmark Region. The key objectives of the implementation were:</p> <ul style="list-style-type: none"> <li>• A cooperative approach among several municipalities</li> <li>• An innovative and holistic planning approach</li> <li>• Innovative solutions to technologies challenges</li> <li>• Sustainable energy consumption</li> <li>• CO2 neutral maintenance facilities</li> </ul>
<b>Investment programme description</b>	The Aarhus LRT stage 1 consists of upgrading, integration and electrification of two older railway lines with 12 km of new double track light rail, as well as the construction of a new control and maintenance centre and procurement of 23 new light rail vehicles.
<b>Investment in implementation phase</b>	EUR 246 600 000
<b>Expected results</b>	The project was expected to make an annual energy saving of 47 GWh and an annual reduction of 7 300 eq t CO2 when in operation.
<b>Leverage factor</b>	131 (expected factor at the project start was 120)

<b>Lessons learnt</b>	<ul style="list-style-type: none"><li>• Standardisation of conversion of infrastructure turned out to be more complex than expected, but the PDS contributed to establishing an overview of the conversion works and identification of possible solutions.</li><li>• Numerous technical solutions for integration and conversion were identified, and included in the technical design for the system and eventually leading to savings in construction costs and savings in energy consumption and emissions.</li><li>• However a number of identified solutions for savings was postponed due to unacceptable high costs related to deployment and installation, and to be re-evaluated after a period of time with operations experience</li></ul>
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