



# Climate-Municipality.Digital

The real-life laboratory to demonstrate the benefits of digitalisation for municipal climate protection and the energy transition.

The digital collection of data for determining CO<sub>2</sub> emissions in municipalities is the central object of consideration in the *climate-municipality.digital* project. The *climate-municipality.digital* project is funded by the Federal Ministry of Economics and Climate Protection (BMWK) and is coordinated by the German Energy Agency (dena).

Using the city of Hagen as an example, solutions using suitable digital technologies are being tested, which should result in a significant improvement in the collection and provision of municipal CO<sub>2</sub> data. These data will be made available and visualised in an Urban Data Platform. Based on gathered information, measures will be derived that contribute to the political and social goals of climate protection.

In order to broaden the effects of the project, a participatory approach to involve the citizens of Hagen will be pursued.

With regard to the successful and economic transferability of the solutions, the project will create a building kit that will provide as many other municipalities as possible with information and tools to achieve the same goals. The kit will not only contain the tried and tested solutions for the data sensors and the data infrastructure, but also take up organisational aspects of the project implementation and provide a comprehensive best practice approach that reflects the project developments in the city of Hagen and rounds them off with lessons learned.

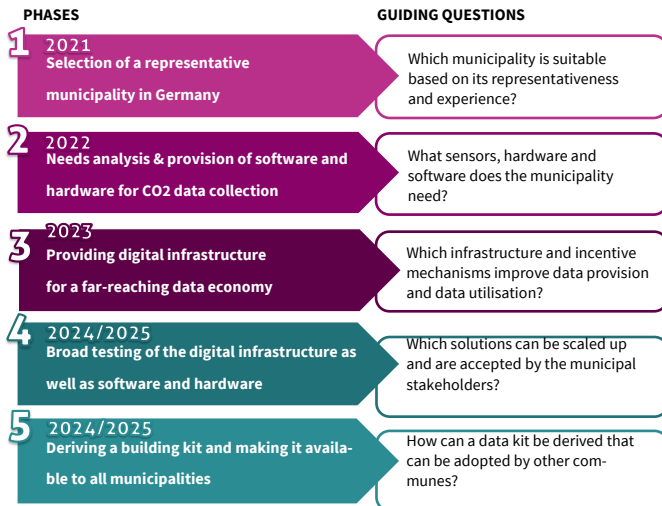
## Main goals and sub-goals

The *climate-municipality.digital* project pursues two main goals and several sub-goals in order to generate the desired added value for the city of Hagen and many other municipalities in the future.

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|---|---|
| 1 | Using <b>digitalisation</b> to strengthen the <b>climate protection</b> and the <b>energy transition</b> in Hagen |
| 2 | Derivation of a " <b>building kit</b> " with data and findings for <b>transfer to other municipalities</b>        |
| 1 | Equipping relevant sectors in Hagen with soft- and hardware   |
| 2 | Optimising the collection of energy and environmental data (with a focus on CO <sub>2</sub> emissions)            |
| 3 | Demonstration of digital technologies   |

## Project phases

In order to achieve these objectives, the project is divided into five successive phases over the entire project's duration. The phases give answers to guiding questions in order to achieve the set goals.



## Project stakeholders

The Future Energy Lab team is responsible for the overall coordination of the project. The city of Hagen and the energy supplier Enervie form the core team of the project together with dena. In addition, several municipal companies are part of the project consortium: Hagen Environmental Service and Investment Compa, Hagen Waste Disposal Company, Hagen tramway and Hagen Economic Enterprise. Six industrial companies from Hagen, including C. D. Waelzholz and RUD Schöttler, are also involved in the project. In addition, the consulting firm Deloitte, the Fraunhofer IOSB-INA and the Centre for Digital Development are supporting the project.



## Summary

The implementation of the *climate-municipality.digital* project in Hagen is in full swing. The city of Hagen is actively committed to climate protection with the implementation of the *climate-municipality.digital* project together with dena. This ambitious project requires close cooperation within the consortium, but also with the population and other relevant actors and project partners. Together, all participants are working with great commitment to make Hagen a ground-breaking city in terms of digitalisation and climate protection.

With innovative, digital and networked technologies and the continuous involvement of the population, the *climate-municipality.digital* project is being developed into a pioneering model for other municipalities.

## Current status of the sectors

### Buildings sector

#### TARGETS

Recording of all municipal energy consumption using remotely transmittable smart meters for electricity, gas, heat and water in public buildings and those of the selected building management.

Recording the electricity consumption of the city areas at transformer stations. An extension to the gas and heating network of the city of Hagen is conceivable.

Use of an energy management system for monitoring and evaluating savings potentials and reducing CO<sub>2</sub> emissions.

#### CURRENT STATUS

Implementation of the installation of smart meters for electricity, gas, heat and water in all municipal buildings.

Commissioning for sensor technology and installation of measuring equipment at transformer stations in the city of Hagen.

Commissioning of an energy management system for the city.

Process started to include digitalisation of data collection in gas and heating networks.

### Transport sector

#### TARGETS

Development of a sensor-based measurement system for traffic flow as well as CO<sub>2</sub> and NO<sub>x</sub> sensors for the direct measurement of greenhouse gases.

Creation of a traffic simulation with emission modelling to record CO<sub>2</sub> emissions.

Evaluation of measures for CO<sub>2</sub> reduction in the transport sector.

Further measures such as parking sensors, level sensors, info screens

#### CURRENT STATUS

Sensor technology for traffic flow measurement at 17 locations and for direct measurement of CO<sub>2</sub> and NO<sub>x</sub> at 20 locations.

Call for tender for waste management and route optimization of waste collection.

Call for tender for traffic and emission modelling in preparation.

Tendering of further measures is being examined.

### Industry sector

#### TARGETS

Installation of smart meters in selected industrial companies.

Use of an energy management system for monitoring and evaluation of savings potentials and reduction of CO<sub>2</sub> emissions.

Reduction of CO<sub>2</sub> and NO<sub>x</sub> emissions in the industrial sector.

#### CURRENT STATUS

Inclusion of 6 industrial companies based in Hagen.

Commissioning to set up and support the energy management system.

Preparation of the tender for the installation of smart meters in the selected industrial companies.

### Urban data platform

#### TARGETS

Aggregation of the collected data and their combination with inventory data of the city of Hagen or other municipal stakeholders.

Visualisation and provision of the collected data to give citizens an overview of environmental issues in the city of Hagen.

Continuous controlling of CO<sub>2</sub> emissions in Hagen.

#### CURRENT STATUS

Coordination and definition of the requirements for an urban data platform.

Involvement of as many city departments and businesses as possible.

Preparation of the tender for the Urban Data Platform almost completed.