An aerial photograph of a city grid, likely Copenhagen, Denmark. The image is darkened and serves as a background for the title. Labels in a light grey font are scattered across the grid: 'The yellow City' at the top, 'Avedøre North' in the middle, and 'The Big House' at the bottom right. The main title is centered in large, white, bold, sans-serif capital letters.

# TOWARDS ZERO ENERGY COMMUNITIES

EXPERIENCES IN MUNICIPAL, DISTRICT AND  
SMALLER ZERO CARBON PROJECTS / INITIATIVES

STEPHAN C. KRABSEN  
EUROPEAN GREEN CITIES



**European Green Cities**  
Contribute to the development of  
**green cities** and **buildings**  
in a sustainable Europe  
Non-profit

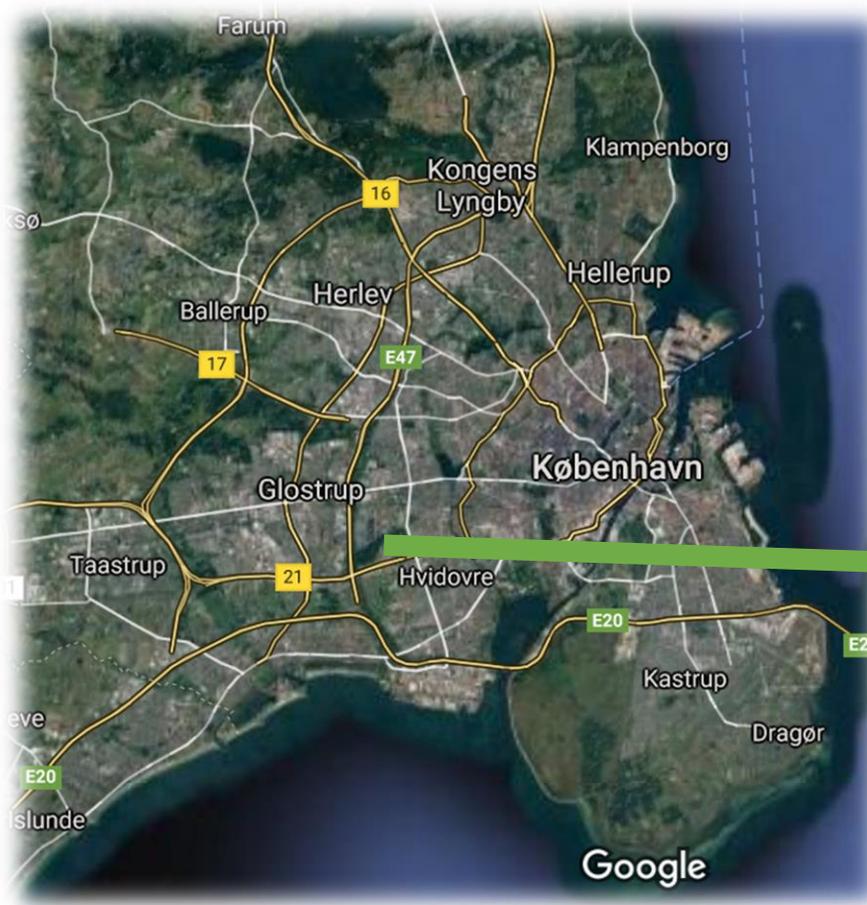
## European Green Cities

Support citizens that want their city  
or district to become a **green city**

Use surplus from previous projects  
in the development phase

# AVEDØRE GREEN CITY

SOUTH OF COPENHAGEN  
DENMARK





# AVEDØRE GREEN CITY

In the district:

- **Avedøre North**
- **Avedøre South**
- **Big House**
- **The Film City**
- **The Avedøre Camp**
- **Avedøre Village**
- **The Yellow City**
- **Hvidovre High School**



# STEERING COMMITTEE



Stake holders from area:

Avedøre Social Housing Association (ASHA),  
Avedøre Camp, Avedøre Village, Film City,  
Hvidovre High School, Hvidovre Municipality,  
Avedøre District Heating (cooperative)

# SHARED VISION OBJECTIVES AND BASELINES

A photograph of a meeting room. Several people are seated around a white table, engaged in discussion. In the background, a woman is standing and looking at a wall covered with numerous colorful sticky notes. The room has a blue door and a window on the right. The overall atmosphere is collaborative and focused.

Based on UN Goals (3-13, 15 and 17)  
Manual with actions and initiatives  
Developed by the steering committee  
Communicated to the local area



# AGC PROJECT EXAMPLE

RETROFITTING

Floor area: 210.000 m<sup>2</sup>

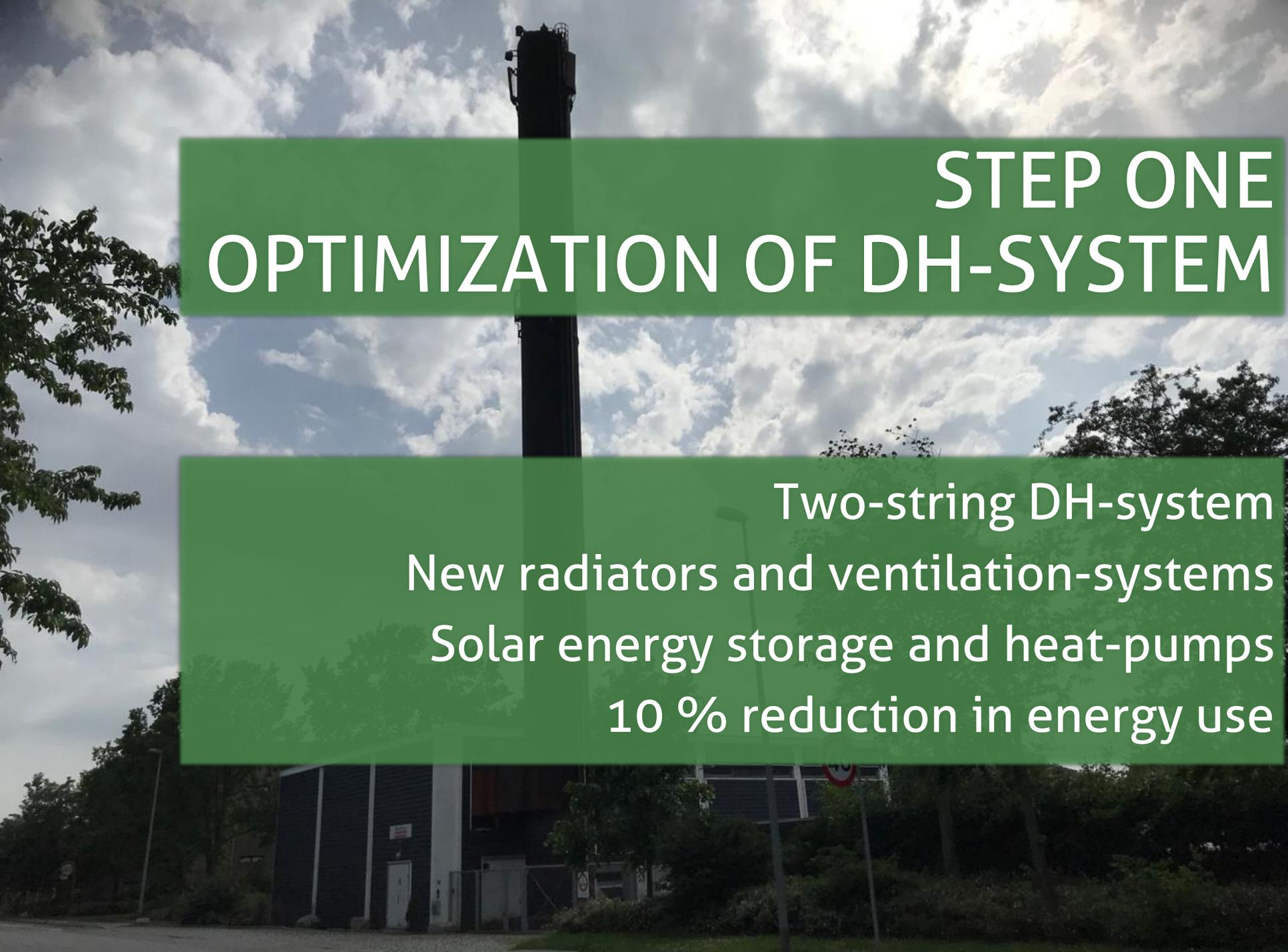
DISTRICT HEATING TRANSFORMATION PROJECT

850 m of pipes

Hub renovation (heat pump, boilers, heat exchangers etc)

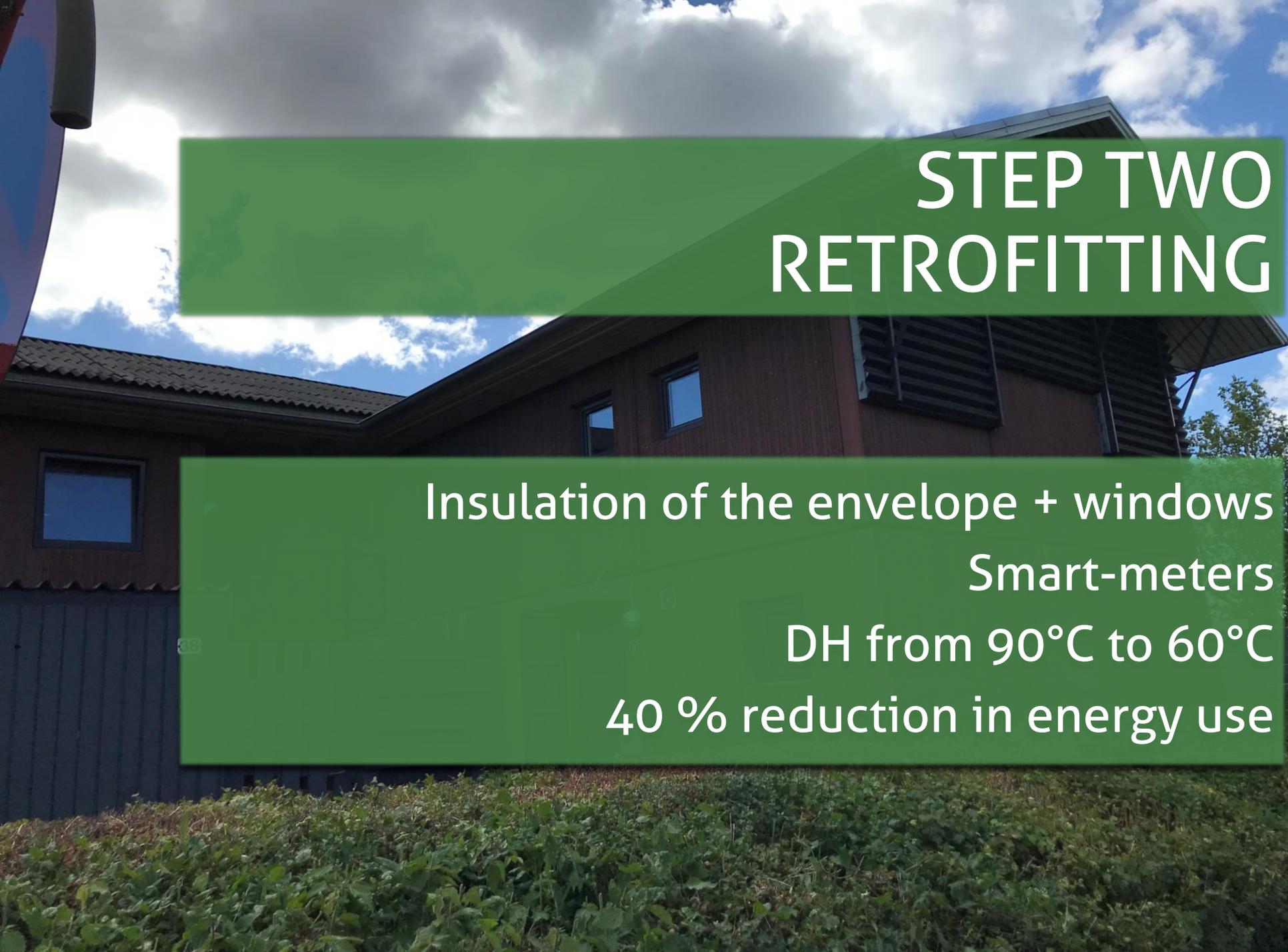
COMBINE THE TWO

Zero Energy Community



# STEP ONE OPTIMIZATION OF DH-SYSTEM

Two-string DH-system  
New radiators and ventilation-systems  
Solar energy storage and heat-pumps  
10 % reduction in energy use



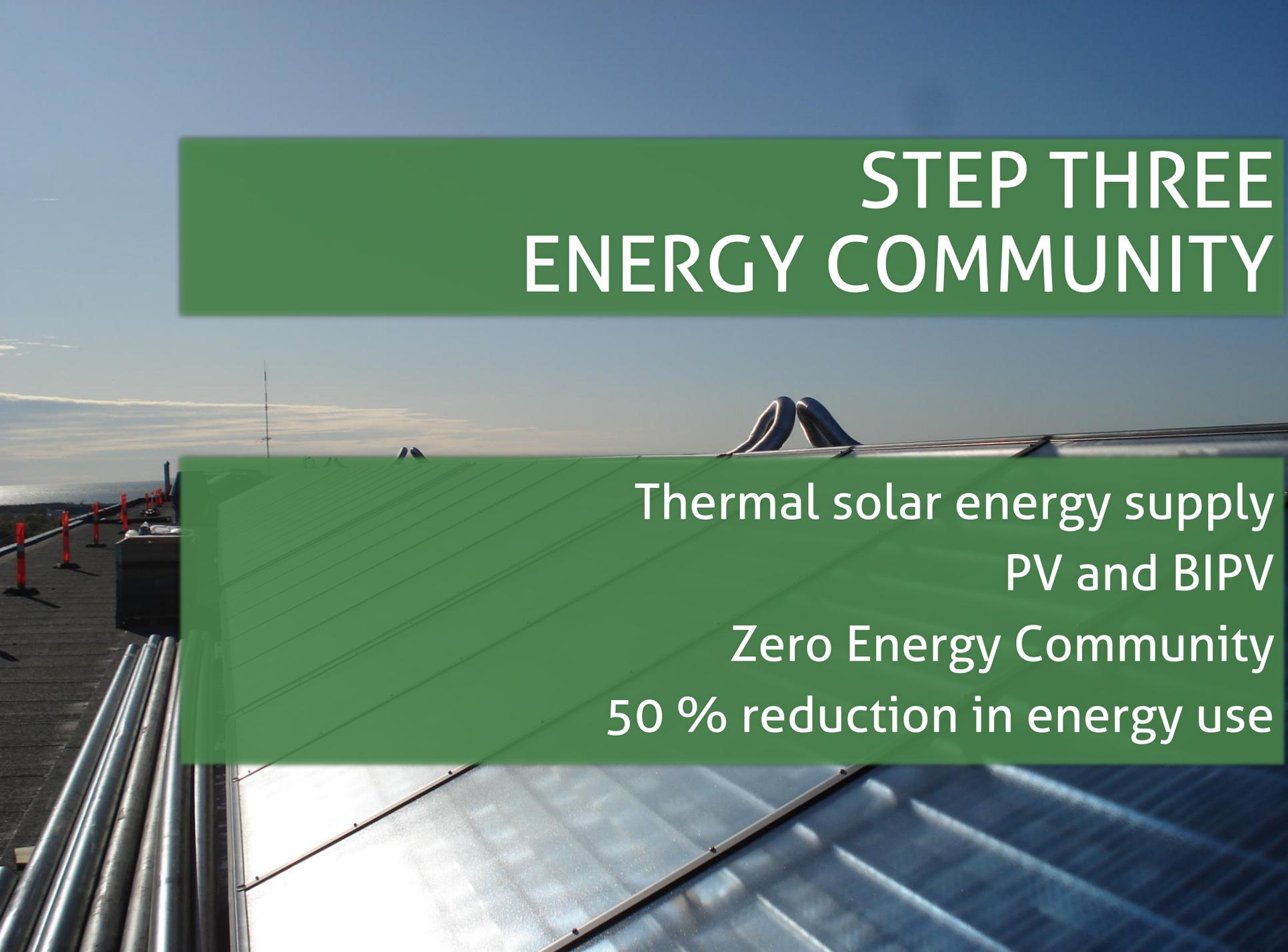
# STEP TWO RETROFITTING

Insulation of the envelope + windows

Smart-meters

DH from 90°C to 60°C

40 % reduction in energy use



# STEP THREE ENERGY COMMUNITY

Thermal solar energy supply  
PV and BIPV  
Zero Energy Community  
50 % reduction in energy use

# EMPOWERING CITIZENS



Mapping and engaging citizens, organisations, institutions, the municipality and other relevant stake holders in the development of the district towards a shared vision of sustainability



Facilitating the cooperation between different types of organisations and processes



Giving enthusiastic people the right tools and information to help them keep being enthusiastic



Listening to needs, ideas, challenges and stories from the local context

# GREEN CITIES TOWARDS ZERO EMISSION COMMUNITIES

POCITYF – A SMART CITY PROJECT

A POSitive Energy CITY  
Transformation Framework

# GREEN CITIES TOWARDS ZERO EMISSION COMMUNITIES

LIGHT-HOUSE CITIES: EVORA (P) & ALKMAAR (NL)

FELLOW CITIES:

Granada (ES), Bari (IT), Celje (SI), Ujpest (HU),  
Ioannina (GR), Hvidovre (DK)

# GREEN CITIES TOWARDS ZERO EMISSION COMMUNITIES

## FOUR ENERGY TRANSFORMATION TRACKS

TT#1: Positive energy buildings and districts

TT#2: P2P energy management and storage

TT#3: e-Mobility

TT#4: Citizen-driven innovation

PART OF AVEDØRE GREEN CITY



THANK YOU!

STEPHAN C. KRABSEN  
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