

Catalytic energy saving in the local community by reaching out beyond

5. April 2016

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managing director



Transitioning Sønderborg (Denmark)

from farming, industry, knowledge to Bright Green Business

- fresh seawater
- great nature
- tourism
- **experience economy**



- farming
- industry
- knowledge
- **Bright Green Business**
- **Danfoss HQ**



- 75,000 citizens
- 440,000 pigs, 250,000 hens
- 500 km² area
- District heating networks
- Natural Gas pipeline



**722,000 ton
of emissions
(baseline 2007)**

ProjectZero is an enabler
for Sonderborg to become a
ZEROcarbon community by 2029,
based on sustainable growth
and creating new **Green jobs**

20 years ahead of a fossil free Denmark

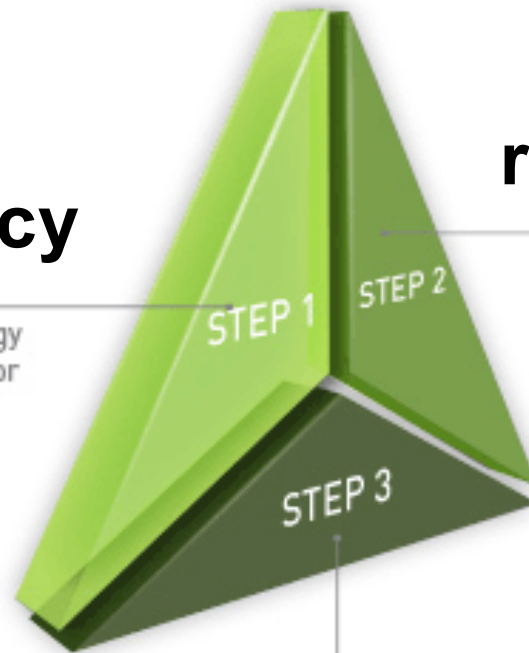
Our approach is holistic
and include Public Private Partnership,
technology, solutions, business, participation ...
and a new thinking!

Energy efficiency being our #1 priority

Transitioning the energy-system using only step 1 + 2

**#1:
Energy efficiency**

limit demand for energy
through rational use for
energy



**#2:
Energy from
renewable sources**

use renewable energy
to full remaining demand

use fossil fuels, if necessary,
as efficiently and cleanly as possible.

A holistic approach

Policy

Solutions

**Society
Participation**



Our ZEROcarbon masterplan outline directions and how to achieve 50% carbon reduction by 2020

Energy Efficiency Improvement (43%)

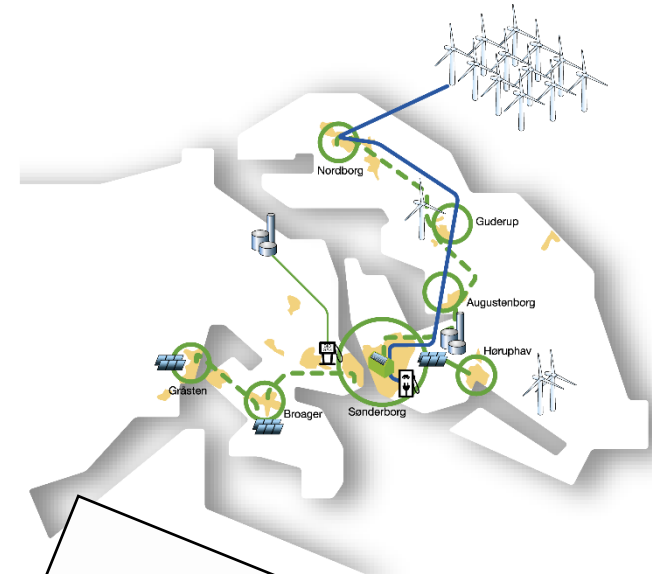
- **Energy retrofit of houses & buildings** including PV cell-production
- **Intelligent Heat pumps** in rural areas
- **Energy retrofit of companies, shops, offices**
- **Green transportation** including electrical cars

A New Green Energy Infrastructure (57%)

- **Green District heating** in the urban areas
- **Wind turbines** onshore & coastal near
- **Biogas plants** processing manure

A Dynamic Energy system

Changing the mindset and thinking



Business
ProjectZero

Lead by examples

Our intervention started with the ZERO+ house,
now ZERO is the new thinking and mindset

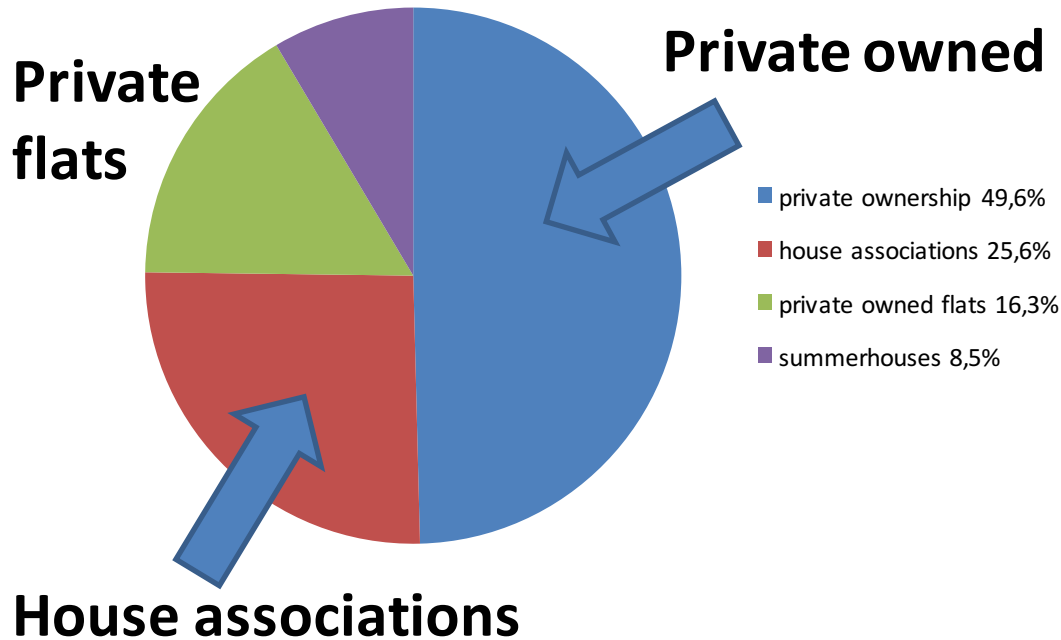


- new homes
- new municipal buildings
- new schools
- companies going ZERO+
- shops going ZERO+
- schools going ZERO+
- families going ZERO+
- sports going ZERO+
- urban development going ZERO+

Frank Gehry



ProjectZero challenges the energy consumption in Sonderborg`s homes



- 37.500 dwellings**
- average is 65 years old
 - with a poor EPC
 - but most with smart meters



The ZEROfamily

115 participating families (2009)

I'm a big
ZERO fan
ProjectZero.dk

I'm a big
ZERO fan
ProjectZero.dk

I'm a big
ZERO fan
ProjectZero.dk

Impact

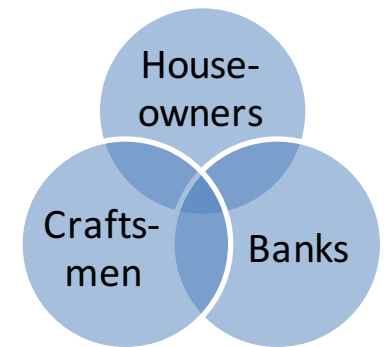
- 25% energy savings
- 45% water savings

The ZEROhome program (2010+)

engaging 18,600 owners of private homes



- House construction, thermostats, insulation, installations, green district heating, heat pumps, appliances, mindset, ..
- Average house in Sonderborg is 65 years old
- Concept
 - easy, safe and economic viable for owners
 - strengthen craftsmanship competencies
 - secure financial support
 - lean processing across sectors
- Impact
 - 1,350 homes visited by Charlie
 - 63% have initiated retrofit with average €21,000 generating €17 mio in craftsmen sales
 - Energy savings up to 45% per household



Changing society thinking and mindset

creating 16.000 young smart ambassadors

University College
& University

High Schools

Elementary &
Mid school

Kindergarten





The ZEROcompany program (2009+)

Transforming Linak a €350 mio company to a 100% green company

Based on:

- energy efficiency
- green district heating
- own wind turbine
- Denmark's largest intelligent PV-park
- partnership with bioplant
- ZEROmindset – at all levels



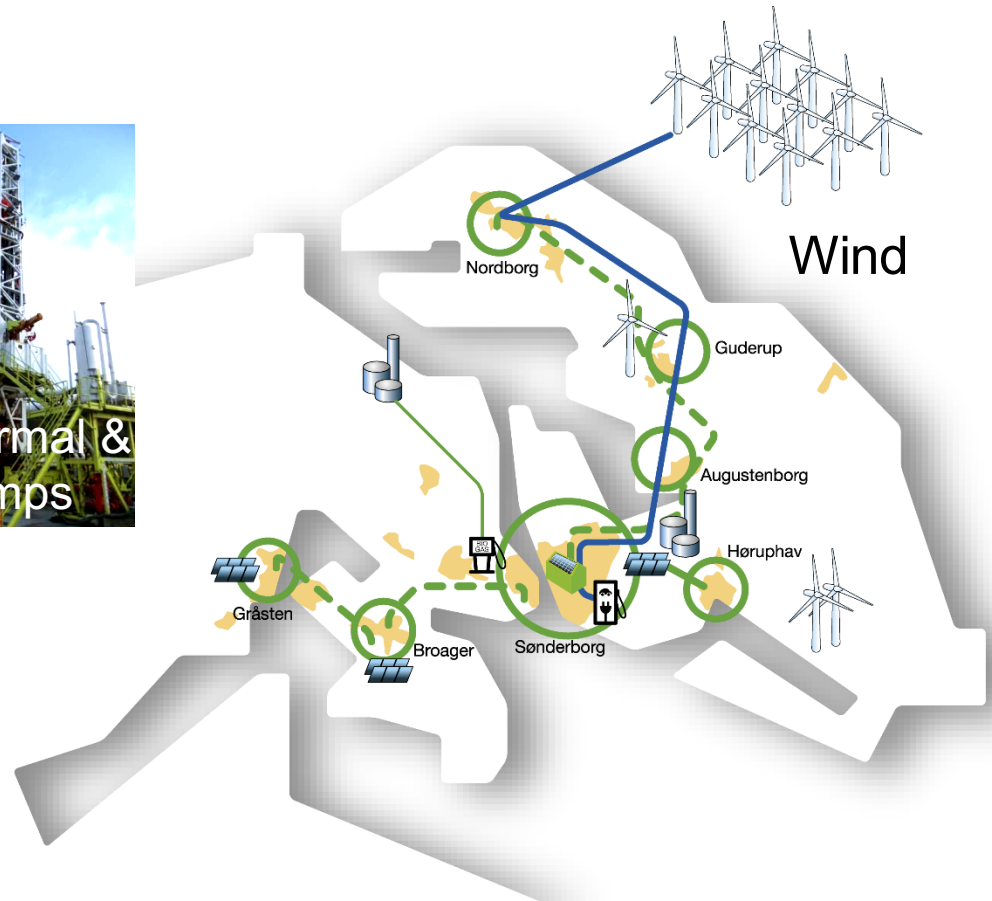
ZEROsport a WE-community platform (2014+) for Sonderborg`s 25.000 sports facility users

- **An energy efficient facility**
 - The building envelope
 - Technical installations
- **With Green energy supply**
 - PV, wind, heat pumps ...
 - Green district heating
- **Engaging the facility users**
 - Attitude & behavior
 - Meters and visualization
 - Transport
 - Biking
- **Closing the loop**
 - at home or at work



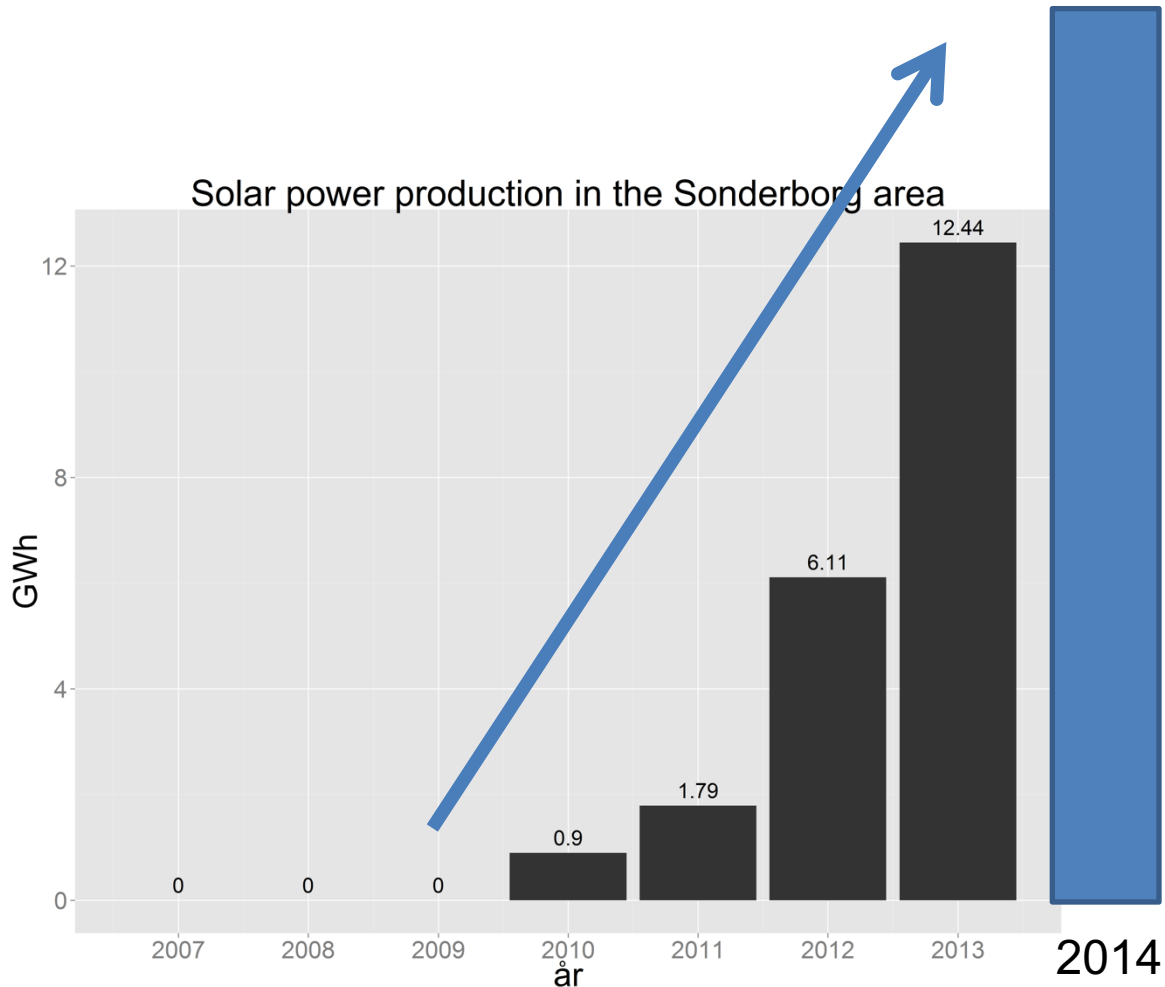
Green District Heating as the urban heating backbone

With multiple GREENfuel sources



Increasing power from PV

Achieving 50% of the 2029 goal by 2014





Engaging with China

- Friendship City with Baoding in 2011, on request by WWF
- ProjectZero as a role model for chinese Low Carbon Eco Cities
 - **Seeing is believing**
 - Eco Forum Global 2012, 2015 in Guiyang
 - Urban planners Conference 2008, Hongkong
 - EU-China Urbanization project
 - C40 Wuhan workshop 2015
- The EU China Urbanization project
 - Haiyan & Sonderborg partnership
 - A ZERO+ house is built in Haiyan
 - Craftsmen educations
 - A Danmark Low Carbon Street is in development
 - Futher discussions regarding technology



Sonderborg & Haiyan partnership
signing in VIP presence



2013年中欧城镇化伙伴关系论坛 2013 EU-China Urbanisation Partnership Forum

2013年11月21日

November 21, 2013

主办单位：中华人民共和国国家发展和改革委员会 欧盟能源总局
Hosts: National Development and Reform Commission, P.R.China
Directorate-General for Energy, European Commission

承办单位：

Organizers:

欧盟通信网络、内容和技术总局

Directorate-General for Communications Networks,
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欧盟交通总局

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European Commission

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承办单位：

Organizers:

中华人民共和国工业和信息化部

Ministry of Industry and Information Technology,
P.R.China

中华人民共和国环境保护部

Ministry of Environmental Protection, P.R.China

中华人民共和国住房和城乡建设部

Ministry of Housing and Urban-Rural Development,
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中华人民共和国交通运输部

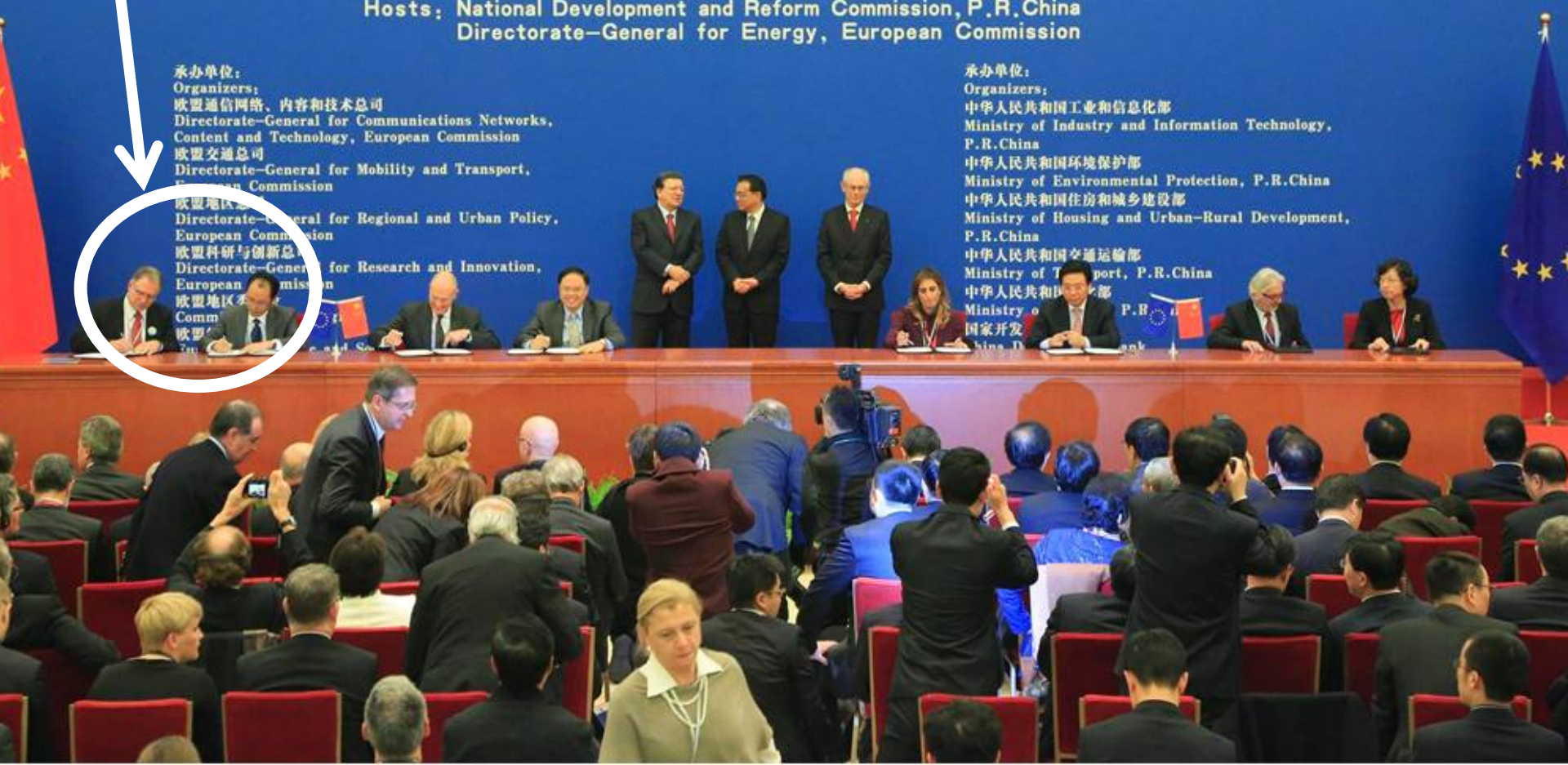
Ministry of Transport, P.R.China

中华人民共和国

国家开发

China D

Bank





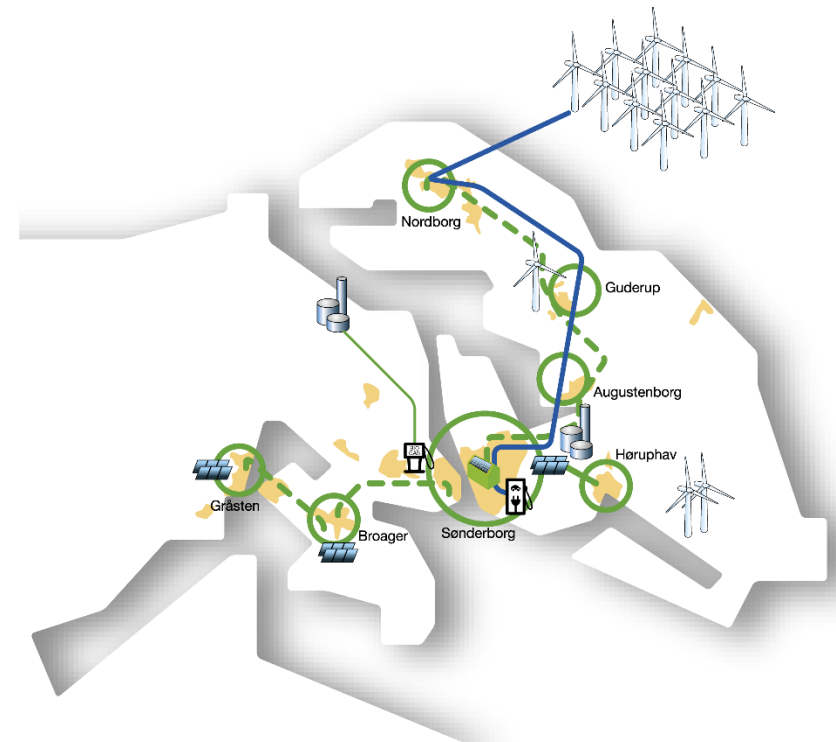
H2020 SmartEnCity project

Demonstrating SmartCity solutions

- Energy from wind
- Energy efficiency in house associations
- Electricity driven heat pump for district heating
- Smart charging of electrical cars
- Visibility of energy consumption
- **Smart people!**

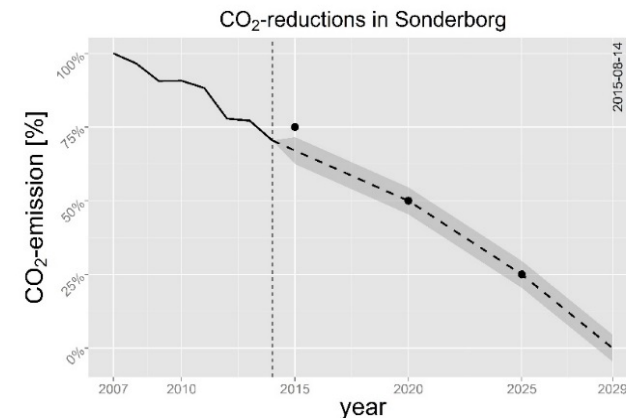
€ 32 mio. to collaborate

- Sønderborg, Denmark
- Vitoria-Gasteiz, Spain
- Tartu, Estonia



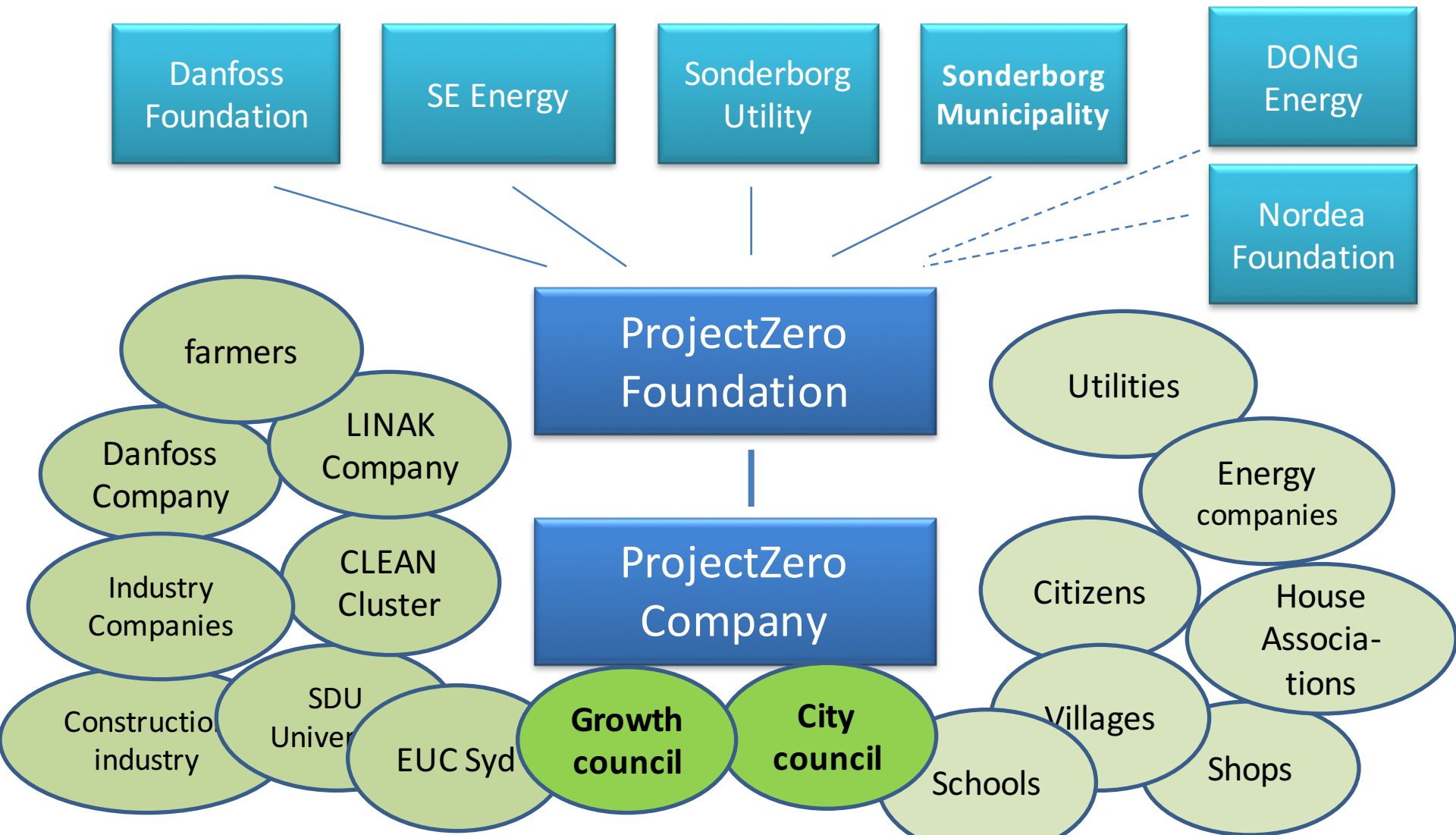
Major achievements first 7 years

- **30% CO₂-reduction during 2007 – 2014**
 - Overachieved our 2015 25% reduction 2014 milestone
 - Now targeting a 50% reduction by 2020
- **800+ Green Jobs Created**
 - In the construction industry
 - Green district heating
 - Energy consulting
- **A lighthouse beacon for Sonderborg**
 - Setting a new direction with future common goals
 - Strong community participation
 - Enterprises and educations alignment
 - Best practice national and international cooperation



ProjectZero

a Public Private Partnership



Mission possible



using the catalytic approach

- A Public Private catalytic approach (Principle #1)
- Utilizing the network economy (Principle #2)
- Visible society vision discussions and engagement (Rule #1)
- Act Local – Scale global (Rule #2)
- Triple Helix holistic thinking (Rule #3)
 - Public, Private, University



Further society programming

- A green learning city approach
 - Make it the new community DNA & thinking
- Business as driver
- Progress monitoring and visible reporting



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