

COULD WE BE

100% FOSSIL-FREE

TOMORROW?



CITIES paves the way for a fossil-free future

Okay, we admit it: We won't be 100% fossil-free tomorrow. But it is both thought-provoking and motivating that it might be possible in theory. Just as the potential for utilising renewable energy sources such as solar, wind and biomass is enormous, there is an impressive amount of knowledge, advanced solutions, investments and best practice within each of the individual fields of energy.

**What is missing is integration –
and that is what we focus on in CITIES.**

With Denmark as a fantastic live lab, support from Innovation Fund Denmark and extensive cooperation with leading Danish and global companies, researchers, engineers, computer scientists and project managers are working hard to pave the way for a fossil-free future.

By establishing and running an integrated research centre, covering all aspects of the energy system, CITIES will make a significant contribution to the Danish target of being 100% fossil-free by 2050.



Objectives of the project

The **societal objective** is to establish a realistic and concrete pathway to ultimately achieving independence from fossil fuels.

The **scientific objective** is to develop methodologies and ICT solutions for the analysis, operation and development of fully integrated urban energy systems.

The **educational objective** is to educate a generation of academics, engineers and entrepreneurs. They should consider the energy system as a whole in a collaborative, integrated context.

The **commercial perspective** is to identify and establish solutions which can form the basis for commercial opportunities.

Why CITIES?

CITIES is short for

Center for It-Intelligent Energy Systems in cities.

Cities are the natural starting point for our focus, as they have the complexity and infrastructure that are a crucial part of the integrated energy solutions of the future.

Key outcomes

- Operational methods and scenarios for energy system integration and management.
- Component-level, modular and aggregate models for energy supply, consumption and transmission, suitable for simulation, control and optimisation frameworks.
- Market structures that support energy systems integration.
- Modular forecasting and control models for a variety of energy system components.
- Integration of short-term operational models in models for long-term planning.
- Models for energy consumption and production accounting for their stochastic and dynamic features.
- Methods for controlling energy consumption and demand-side management.
- Synergies with existing and new smart city development projects.
- Demonstration by leading smart cities in Denmark.
- Incubator for the creation of new business concepts.





1. Linking energy sources

By linking traditionally separate energy systems it is possible to optimise renewable energy use, which will reduce the dependency on fossil fuels and cut CO2 emissions. The total amount of energy from renewable energy sources fully covers the world's existing and future energy needs.....



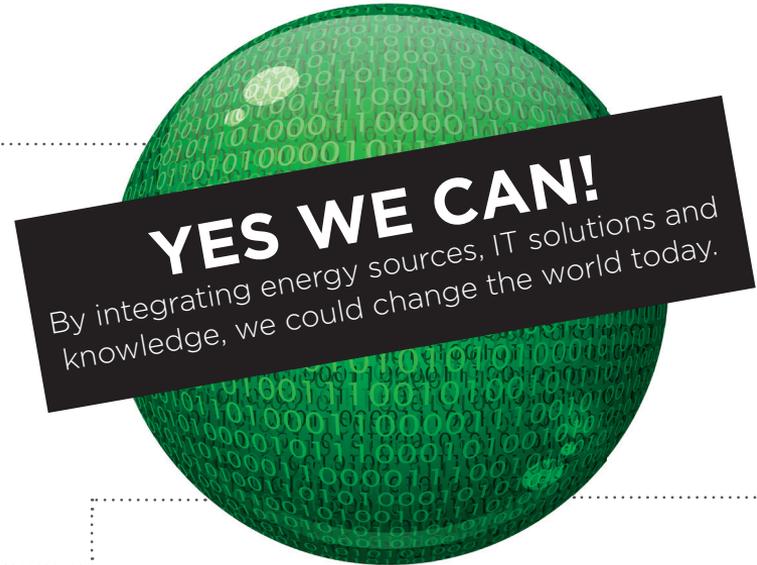
2. Intelligent IT solutions

Linking is to take place via intelligent IT solutions which can handle and process large volumes of data. The total volume of knowledge is a prerequisite for being able to analyse, predict and utilise both energy production and energy needs. This makes it possible to switch between energy sources, depending on what is available and appropriate at any given time.....



3. Knowledge sharing

The total volume of knowledge and data across sectors, public and private stakeholders and research institutions is enormous, but also highly compartmentalised. A crucial component in creating a fossil-free future is therefore integration and the willingness to work towards a common goal – for the benefit of consumers, society and the environment.....





“The Danish target of being completely reliant on renewable energy by 2050 requires a new way of thinking. Fully integrated energy systems and smart energy production and use will be the cornerstones for the future. **CITIES** contributes substantially to paving the way for the intelligent energy society”

Rasmus Helveg Petersen,

Minister for Climate, Energy and Building

Welcome at www.smart-cities-centre.org



The
Danish Council for
Strategic Research



CITIES