



Roadmap to carbon neutrality in towns and cities

A growing number of towns and cities are interested in becoming carbon neutral across all of the activities within their geographical borders. BuildDesk has worked with three towns in the Netherlands to help them define a road map to carbon neutrality. These road maps describe in detail how the direct energy use in these cities can be supplied in a 100% sustainable way by a step-by-step approach.



The three cities are Apeldoorn, Heerhugowaard and Tilburg and they range in size from 50,000 to 200,000 inhabitants. To help the study, BuildDesk developed a practical definition of carbon neutrality: 'the situation in which the average energy use by inhabitants over one year is as much as the energy supplied by sustainable energy sources.' The emission of CO₂ is a derivative of the energy consumption, so is neutral overall.

The actual energy use of each city has been calculated with accurate data provided by the municipalities involved. Three scenarios are developed to plot the possible energy use:

1. Business-as-usual

Assuming current trends in Dutch national energy policy continue

2. Faster

Assuming an increasing emphasis on sustainable energy supply and energy conservation compared to today

3. Fastest

All reasonable techniques are applied, including those available and those likely to become available for both energy supply and energy conservation.

For each major class of energy use, BuildDesk has explored and listed all the techniques which are already available and which are now being developed for use in the coming 20 to 30 years. Each technique in the list has been provided with an assumed energy conservation rate.

Due to the spatial restrictions of sustainable energy sources like wind turbines, geothermal wells, solar power and biomass, the potential energy yield from these sources is limited within each municipality. To get to 100% carbon neutrality, a lot of attention must therefore be paid to energy conservation in all areas of energy use, including:

- existing and new dwellings and offices
- public lighting
- small and large industrial sites
- schools
- health institutions
- agricultural greenhouses
- transport

Taking this into account, only the 'Fastest' energy scenario provides the three cities with road maps which make it possible to achieve carbon neutrality within the next 25 to 30 years.



Recommendations

The recommendations of the study also describe the conditions which are necessary to ensure the success of the cities in reducing the CO₂ emissions to such a significant extent. A very important issue is ensuring that policies and actions continue in the long term even if the local governing party changes. BuildDesk recommends two important institutional solutions for this problem:

- Establishing a local energy company which is mainly owned by its customers (the municipality itself, inhabitants and local companies)
- Establishing a local revolving energy fund to boost investment in energy conservation measures and sustainable energy sources. This would be funded from part of a general energy tax paid in each municipality.

The local energy company is to be owned by its customers to involve more people in the energy and carbon emission problem and its solutions. Participation in the energy company should help to increase ownership of the issues and assist realistic deployment of locally sited sustainable power plants (e.g. large wind turbines and biomass conversion plants). The energy company is expected to offer a complete and dedicated package of

energy conservation techniques (e.g. increased insulation, energy efficient lighting) together with sustainable supply techniques (solar power systems, wind turbines, heat pumps etc.).

The study was commissioned by the three mentioned cities and by SenterNovem, the national energy agency of the Dutch Ministry of Economic Affairs. The recommendations are starting to be enacted.



At BuildDesk we believe that everyone should live and work in comfortable buildings that use as little energy as possible. We give advice that helps make the built environment more energy efficient and sustainable because there are huge challenges for the future. Our offerings include strategic consultancy supported by software and services.

For more information, please visit our web site www.builddesk.co.uk or phone 0845 241 2586.



Towards a sustainable built environment

BuildDesk Ltd.
Pencoed
Bridgend
CF35 6NY

Phone: 01656 868230
Fax: 01656 868163
info@builddesk.co.uk
www.builddesk.co.uk

build¹desk[®]

save your energy