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22 May 2013

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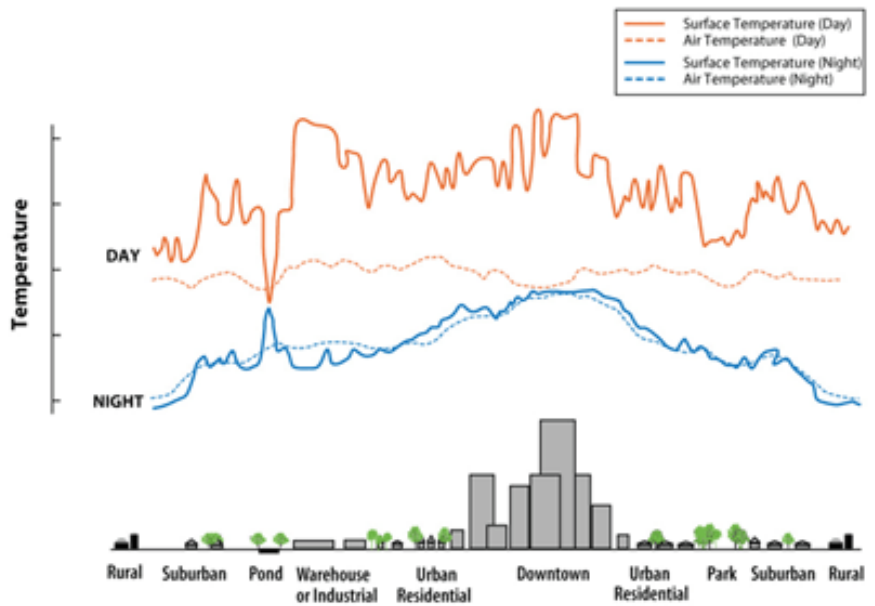
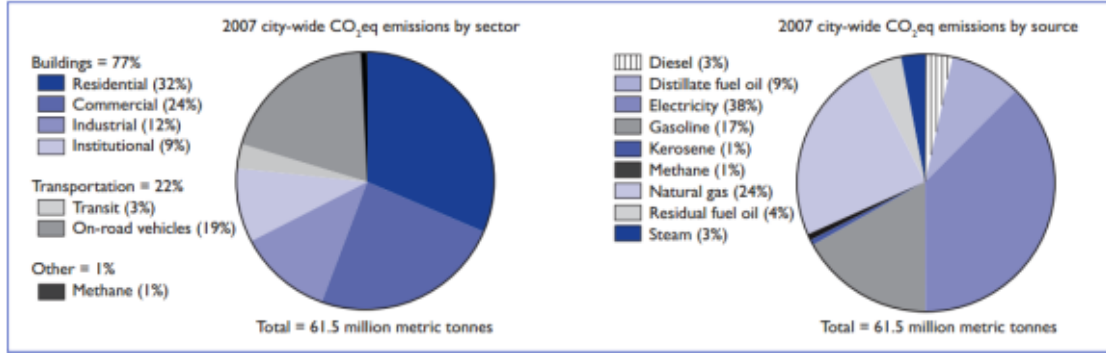
CEIT ALANOVA
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Introduction

- High energy consumption in urban areas
- Important reason for rising global greenhouse gas emissions
- Cities account for approximately two-thirds of global primary energy consumption



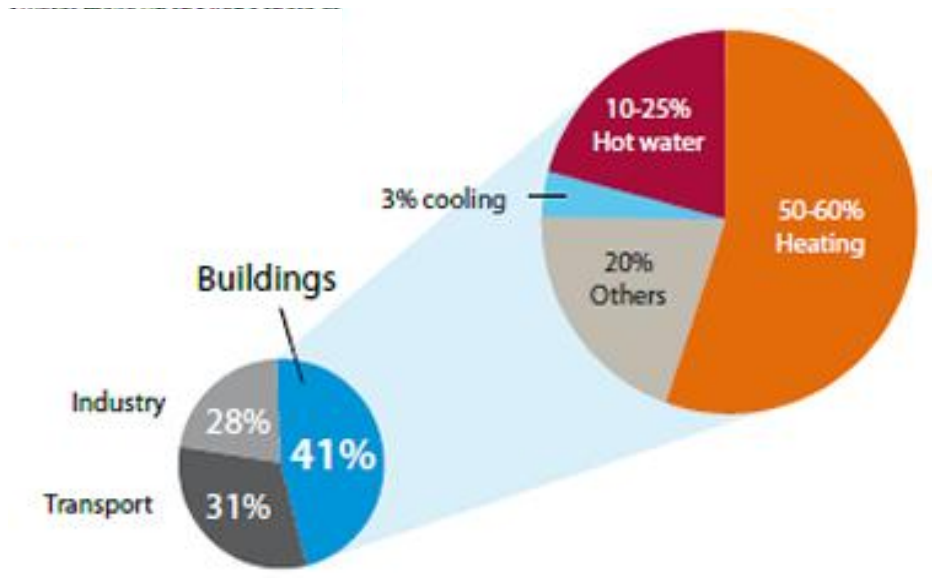
"This project is partially funded under the ICT Policy Support Programme (ICT PSP) as part of the Competitiveness and Innovation Framework Programme by the European Community" (http://ec.europa.eu/ict_psp)

Introduction

– Energy use in residential, commercial and public buildings accounts for 41% of total global final energy consumption



European Union energy consumption



Source: EUROSTAT 2009

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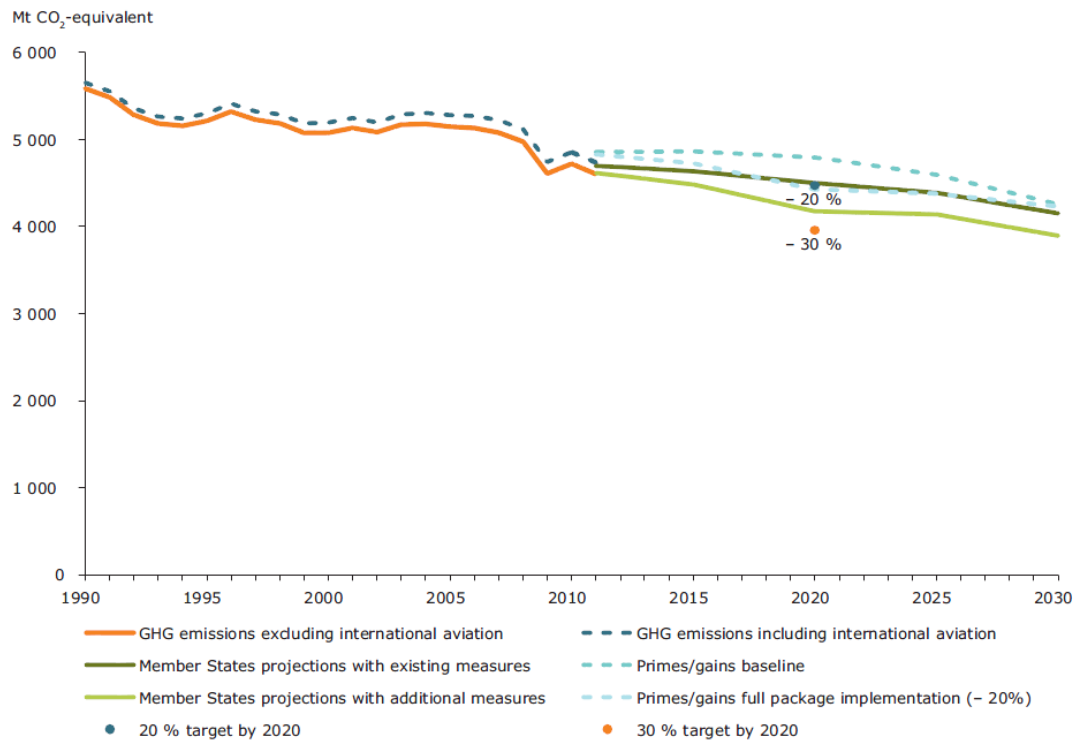
Introduction

– European Union energy performance of buildings directive is a key policy instrument for reducing the energy consumption

SUNSHINE – “Smart Urban Services for Higher eEnergy Efficiency”

➔ a step towards this policy

Trends and projections of EU total GHG emissions, 1990–2030



Source: EEA, 2012a

SUNSHINE

Smart Urban Services for Higher eEnergy Efficiency

SUNSHINE is a European project aiming

– to enlarge the network of smart, energy efficient, low-carbon cities across Europe

–to work actively together to contribute to meet Europe's climate and energy targets for 2020



SUNSHINE

Smart Urban Services for Higher eEnergy Efficiency

SUNSHINE delivers:

1. Three smart services

- a. energy assessment of buildings
- b. optimisation of energy consumption of heating/cooling systems
- c. optimisation of power consumption through remote control of public illumination levels

2. Integration of existing technologies

- a. Advanced Metering Infrastructure
- b. Automatic notification of alerts



SUNSHINE

Smart Urban Services for Higher eEnergy Efficiency

SUNSHINE delivers:

3. Client applications

- a. A desktop-based user-friendly 3D geobrowser
- b. A SUNSHINE App for smart devices (smartphones, tablets)

4. And...

- a. To integrate the technology delivered within **8 pilots**
- b. To collect **energy data** to compare
 - i. Energy savings.
 - ii. Cost benefits.
 - iii. User acceptance.

SUNSHINE

Smart Urban Services for Higher eEnergy Efficiency

A young interdisciplinary European project with project partners from 8 countries.



Starting Date: 1st February 2013

Duration: 36 months

Project Partners: 16

Project Coordination: Fondazione Graphitech



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Buildings Energy Assessment

Scenario 1: Assessment of energy performances and electronic energy pre-certification

- Automatic large-scale assessment of building energy behaviour based on data available from public services
- Urban-scale "ecomaps"

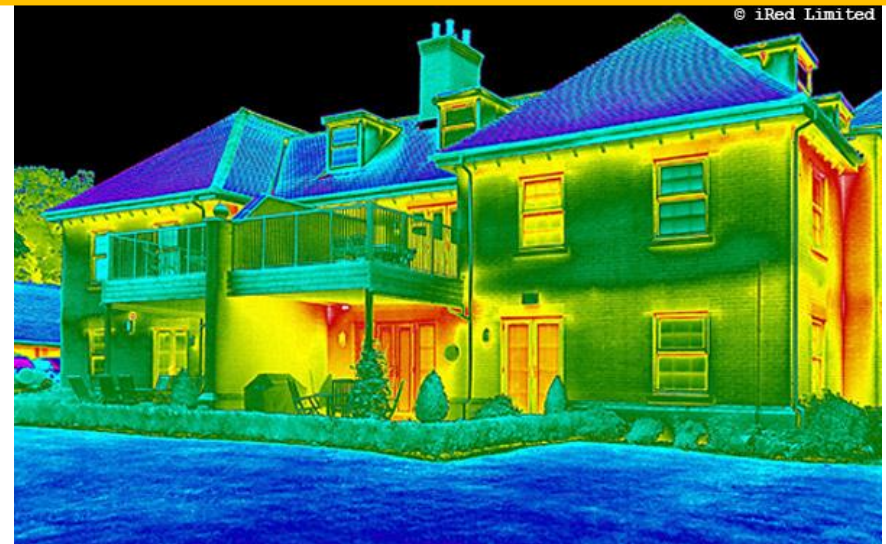


image: iRed Limited

Buildings Energy Assessment

Scenario 1: Assessment of energy performances and electronic energy pre-certification

User case:

– A building manager from the local public housing agency of Ferrara, Italy, starts a web-client to assess energy behavior of a set of 150 public buildings located city-wide.



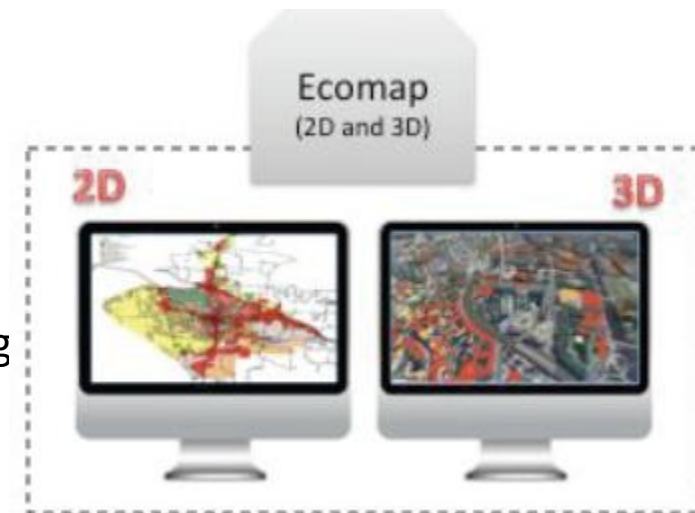
image: GCN

– The web-client connects to a SUNSHINE smart service that in turn connects to existing web services run by several departments of the municipality

Buildings Energy Assessment

Scenario 1: Assessment of energy performances and electronic energy pre-certification

- Generate the 3D model of the relevant portion the city encoded as CityGML standard format
- Estimation on performances for each building according to the SUNSHINE CityGML on building energy efficiency
- As result the system returns both a 2D and 3D “ecomaps”



Energy Consumption Optimisation

Scenario 2: Heating and cooling forecast and alerts

- ensures optimisation of energy consumption of heating/cooling systems

- **localised weather forecasts** available through interoperable web-services

- automatic alerts sent to the SUNSHINE App



© Sarah Elizabeth Simpson

image: Sarah Elizabeth Simpson

Energy Consumption Optimisation

Scenario 2: Heating and cooling forecast and alerts

User case: January 2013, Schwechat in Lower Austria

- high-energy consumption was reported in the previous few weeks due to cold weather
- weather forecasts: significant increase in daily temperatures
- receive detailed information on the dynamic rate scheme



Energy Consumption Optimisation

Scenario 2: Heating and cooling forecast and alerts

- weather forecasts predicting the sharp increase in temperature.
- list of buildings according to their energy performances
- sending notifications warning to turn off the heating system
- rely on **pre-existing technology that integrates weather information into an** advanced GIS environment



image: Colin Dye

Public Illumination Systems

Scenario 3: Optimization of power consumption of public lighting systems

- interoperable control of public illumination systems based on Automatic Meter Reading (AMR) facilities.
- optimisation of power consumption through remote control of public illumination levels.



© TimeLapseBlog.com

image: Time-Lapse Blog

Public Illumination Systems

Scenario 3: Optimization of power consumption of public lighting systems

User case: An operator of the Municipality of Bassano del Grappa (Italy) wants to optimize illumination of building of public interest (e.g. stadium).

- 3D web client that shows the map of the city and the public illumination network
- real time status of public illumination system.
- various parameters of the entire lighting system through an interactive mapping environment



image: LED professional

Public Illumination Systems

Scenario 3: Optimization of power consumption of public lighting systems

–control lighting conditions to avoid unnecessary illumination of common areas whenever not required

–real time information on illumination network is accessed from both a desktop and a mobile client



Target users

- Planners
- Public Administration (PA) officers.
- Building managers
- Citizens



Pilot Locations

The **SUNSHINE** technology will be piloted in the context of 9 sites across 5 countries:

Italy: Around 90 buildings

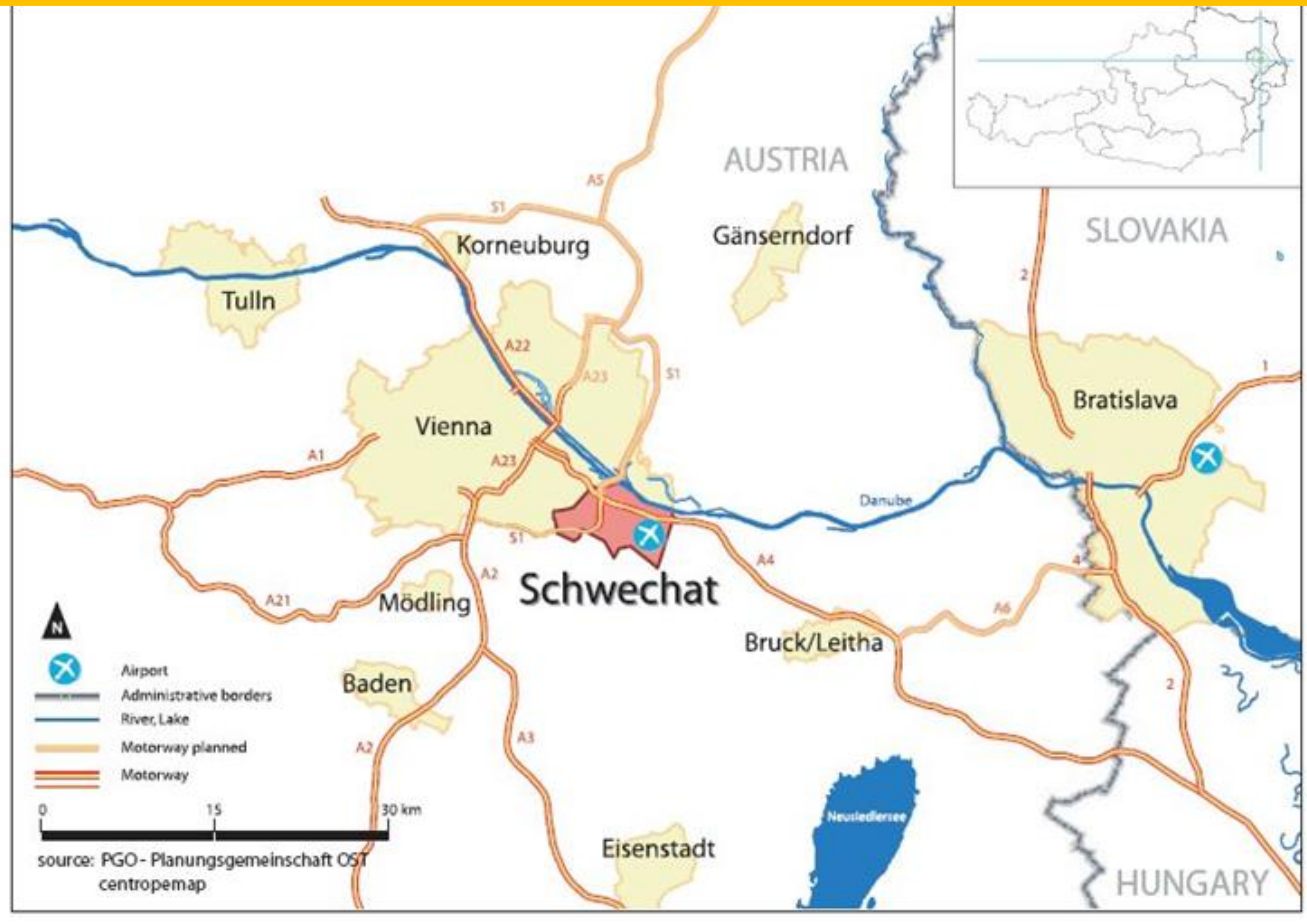
Austria: 1 public multipurpose building in Schwechat

Croatia: 10 buildings

Greece: five buildings in Lamia

Malta: 2 buildings

Pilot Project - Austria



The pilot project will take place in the city of Schwechat in the province of Lower Austria at the border of Austria's capital Vienna.

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The multipurpose hall Multiversum, Schwechat

- a unique multi-functional event complex.
- opened in 2011
- sport and cultural events, but also for exhibitions, fairs, congresses, conventions and business events

The multipurpose hall Multiversum, Schwechat



All 3 scenarios will be piloted in Schwechat/Austria, at the multipurpose hall Multiversum.

Scenario 1: Assessment of energy performances and electronic energy pre-certification

Scenario 2: Heating and cooling forecast and alerts

Scenario 3: Optimization of power consumption of public lighting systems

THANK YOU!

22 May 2013

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