

# Energy Planning Achievements and Lessons Learned



PEPESEC Project Consortium – Jan 2008

**Energy Planning for Smart Cities**

Eurocities, Brussels

June 2010

Intelligent Energy  Europe

# City of Malmö, Sweden

- 16 024 Ha
- 294 000 inhabitants
- Energy Use 6 827 GWh (year)
- 1,4 MtCO<sub>2</sub> emitted



# Political & Organisational Challenges & Opportunities

- Political support
- Action rather than plans
- Large City Administration



# Technical & Infrastructural Challenges & Opportunities

- Dense city area
- Change from industrial to mixed urban areas
- Dec 2010 new city train tunnel opens



# Headline Successes

- Synergy effects between different projects
- Rosengård – very engaged inhabitants
- Hyllie – a new development area, “do right from the beginning”



# Headline Successes

## Head target

- By 2020 the City of Malmö will be climate neutral and by 2030 the whole municipality will run on 100 % renewable energy



# Lesson's Learned

- Communication
- Information
- ...and a good mood to relevant stakeholders



# Greater Manchester, UK

- 1,276 km<sup>2</sup>
- 2.54m people
- Energy Use  
64,574 GWh/y  
(2005)
- 17,354 ktCO<sub>2</sub>  
emitted (2005)



# Political & Organisational Challenges & Opportunities

- New city-regional governance to manage energy & climate change
- Lack of dedicated delivery body (i.e. no energy agency)
- Privatised and deregulated energy markets



# Technical & Infrastructural Challenges & Opportunities

- Large and aging national/regional energy assets
- Limited integrated transport network
- Age and poor thermal efficiency of housing stock



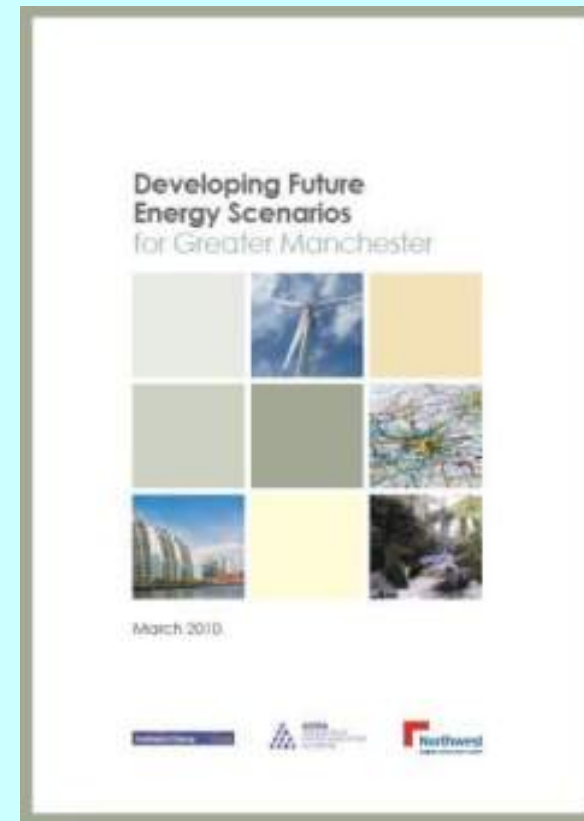
# Headline Successes

- Engagement of stakeholders using GRIP Scenario Tool
- Formation of city-region wide Energy Group
- Low-Carbon Economic Area status for GM



# Lesson's Learned

- Need for a dedicated delivery body
- Stakeholder engagement is critical to success
- Complexity of city-regional working (x10 municipalities)



# Municipality of Oldham , UK

- Area of municipality 11,166Ha
- 219,600 inhabitants
- Energy supplied 4.5 TWh (year)
- 1.2 mtCO<sub>2</sub> emitted





# Political & Organisational Challenges & Opportunities

- *Challenge* - how to monitor and establish a robust baseline
- How to target £per CO2 investment opportunities
- *Opportunity* – Gained top level commitment to develop and take forward specific actions within the emerging Energy Plan



# Technical & Infrastructural Challenges & Opportunities

- Cross cutting issue requiring a range of different actors to support the process
- Issues associated with public perception of infrastructure
- New UK based financial incentives supporting investment for low carbon and renewable technologies



# Headline Successes

- Heat maps generated for the town centre and emerging new development sites
- CO2 Scenarios developed for the Municipality
- Local low Carbon Community Established (area of 1700 homes and businesses)
- Initial target of 15% CO2 reduction by 2013 on 2005 baseline.
- Longer term targets being generated with wider stakeholder involvement (all key public and private actors )



# Lesson's Learned

- Size of the task- maintain momentum
- Technical skill base, keeping up with 'other actors' pressures and changing priorities
- Need to develop a common 'vision' that is owned by all actors early

# Municipality of Amaroussion, Greece



- Area (Ha):1.341,48 or 13,09 km<sup>2</sup>.
- Population Size: ~120,000.
- Energy Use: 1.129 MWh/y (2007).
- CO<sub>2</sub> emitted: ~575 ton.



# Political & Organisational Challenges & Opportunities



- Ensure strong will and commitment towards specific actions from top management.
- Ensure active engagement of relevant stakeholders both internally and externally.
  - *Meet their needs*
  - *Involvement in Local Action Plan*
- Overpass administrative difficulties (ex. red tape involved, time deviations) and broaden perspectives for continuous improvement.



# Technical & Infrastructural Challenges & Opportunities



- Ensure financial resources.
- Municipal council decision for authorization of an expert to be the person in charge for local energy issues.
- Integration of energy plan to Municipality's 4-year Business Plan and to other local development programmes.



# Headline Successes

- Involvement of top management/stakeholders/public consultation.
- Interventions in public sector focusing on 4 pillars:
  - ✓ *Municipal buildings*
  - ✓ *Urban public spaces*
  - ✓ *Local transportation*
  - ✓ *Dissemination and information networking*
- **Main target:** Enforce municipality's strategy towards sustainable development/Reduce energy use by 1.033,41 MWh/y and CO<sub>2</sub> emissions by 1.148,66 tn/y.



# Lesson's Learned



- Development of methodology for stakeholders engagement.
- Development of methodology for energy planning procedure.
- Enrolment of IST on energy planning.



# Municipality of Thessaloniki, GREECE



- Area : 1860 (Ha)
- Population : 365.000 inhabitants
- Energy Use 36,65 GWh (year)
- 22015 tons CO<sub>2</sub> emitted



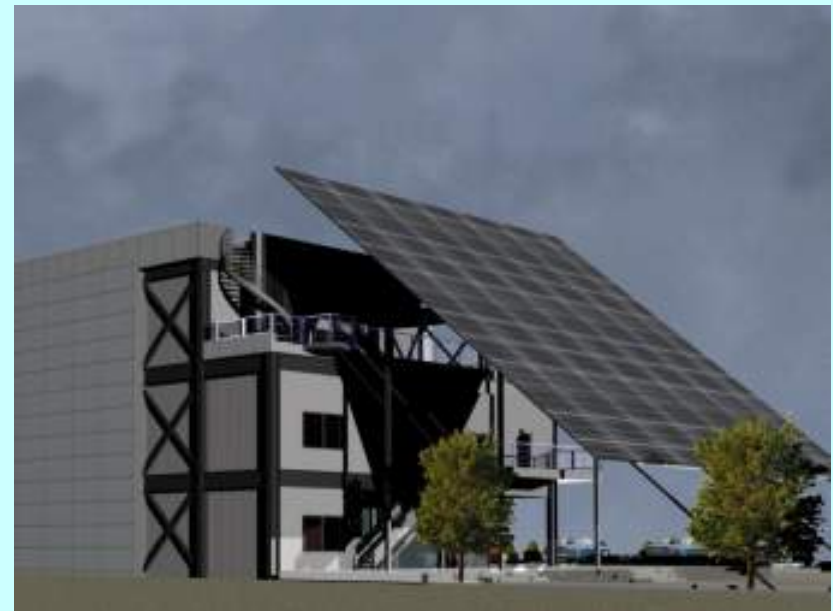
# Political & Organisational Challenges & Opportunities

- Incorporate environmental issues in the political agenda of the Municipality
- Implement a sustainable technical program through a close collaboration between departments
- Inspire individual engagement at all levels



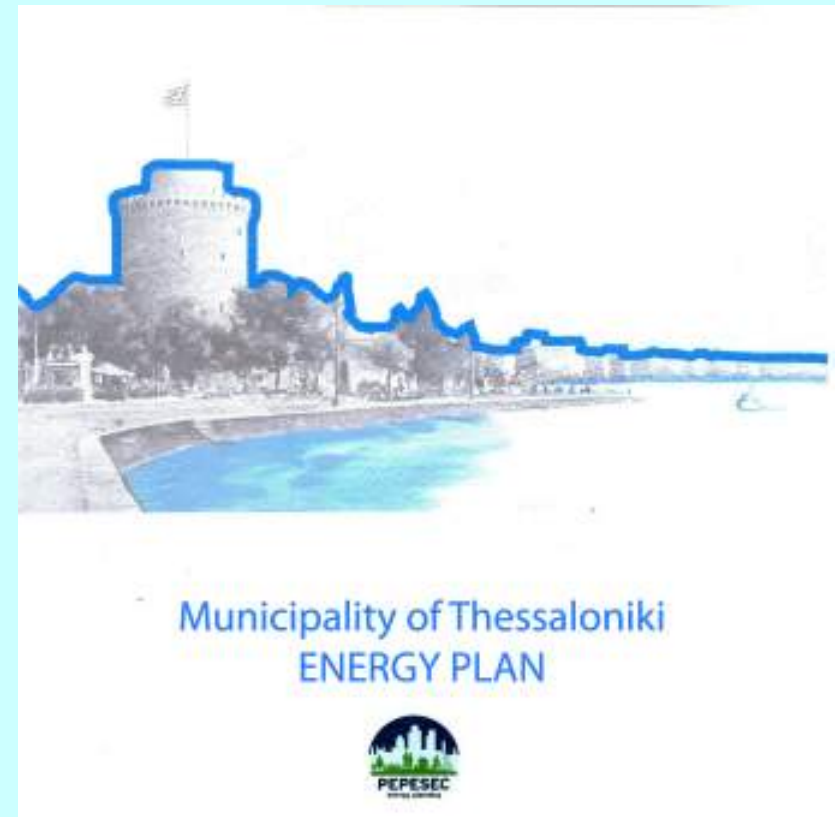
# Technical & Infrastructural Challenges & Opportunities

- Systematical recording of municipal energy data
- Environmental upgrading of municipal property
- Implementing green supplies policies



# Headline Successes

- Energy Plan for the Municipality
  - low CO<sub>2</sub> emissions 21 %
  - participation of RES in total energy consumption >20 %
  - saving energy 20,25 %
- Collaboration with other local authorities / stakeholders
- Dissemination of the PEPESEC results



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# Lessons Learned

- Municipalities **can** make a difference, despite their limited jurisdiction
- Stakeholders are willing to contribute, provided the necessary framework
- Data are difficult but not impossible to be collected and updated



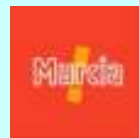
# Murcia, Spain



- 2 districts:
  - Puente Tocinos (5,335 Km<sup>2</sup>)
  - Sucina (65,361 Km<sup>2</sup>)
- Population Size:
  - Puente Tocinos (16.871 hab)
  - Sucina (1886)
- Energy Use GWh (year)
  - Puente Tocinos 145,6 GWh/year
  - Sucina 51,6 GWh/year
- mtCO<sub>2</sub> emitted:
  - Puente Tocinos: 43,6 mton
  - Sucina: 14,1 mton



Fernando Sánchez Lara  
City Council of Murcia



Intelligent Energy  Europe

# Political & Organisational Challenges & Opportunities

- Commission to follow up the plans
- Stakeholders involvement
- Raising awareness through the citizens



# Technical & Infrastructural Challenges & Opportunities

- Process and communication with energy utilities
- Message spread to technical & maintenance departments
- Experience gained in data analysis and strategic analysis



# Headline Successes

- Path initiated in process with utilities
- Stakeholders engagement



(2010-2020)	Puente Tocinos	Sucina
Eficiency	23,17%	42,84%
Renewable energy	20,63%	20,63%
CO <sub>2</sub> reduction	22,68%	23,17%

# Lesson's Learned



- Importance of involving stakeholders
- Know how of the process of energy planning
- Strengths and weaknesses in the organization. Also the importance of data collection





# Thanks

Fernando Sánchez Lara  
City Council of Murcia



# City of Genoa, Italy

- Area (Ha) 24,360
- Population: 661,887 resident
- Energy Use (year 2008):  
natural gas 388 G Scm  
electricity 802 T Wh
- 1,134 M tCO<sub>2</sub> emitted



# Political & Organisational Challenges & Opportunities

- Collaboration among the different levels of the administration;
- Politicians' involvement;
- Stakeholders' engagement in the energy planning process.



# Technical & Infrastructural Challenges & Opportunities

- Testing an Intelligent System;
- Analysis methodology for the energy context;
- Method of evaluation.



# Headline Successes

- Methodology of stakeholders' engagement;
- Analysis method for energy context;
- Establishment of good partnerships.



# Lesson's Learned

- Best practices in the energy planning;
- Methodology for stakeholders' engagement;
- Method for the energy planning process;
- Elements for the development of the city energy planning.



# Katowice, Poland

- Area 16 467 Ha
- Population – 308 724
- Energy Use for heating purposes: 3065,3 GWh (2003)
- 1 597 276 tCO<sub>2</sub> emitted (2003) – energy supply





# Political & Organisational Challenges & Opportunities

- institutional establishment of an energy manager office and environmental management in City Hall structure, based on the principle: its costs of operating are compensated by the economic and environmental effects
- updating of „*Plan of Power, Heat and Gaseous Fuels Supply for the City of Katowice*” (the existing assumptions to this Plan have been made in the years 1998 – 2000)
- establishment of Council for Sustainable Energy of Katowice as a coordinating and advisory institution involving policy makers/representatives of the City, the major energy utilities, energy consumers and non-governmental organizations

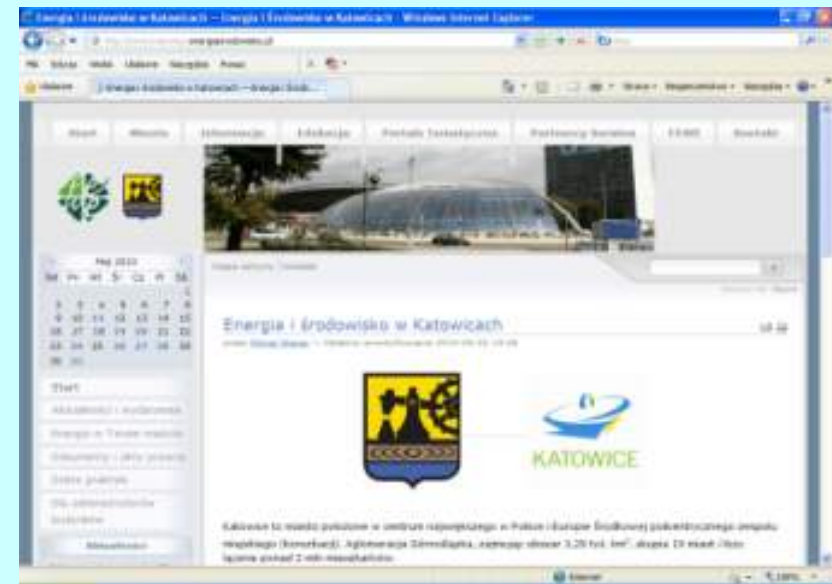


# Technical & Infrastructural Challenges & Opportunities

- evaluation of actions for planning, consumption monitoring, energy management
- initiating of the cost and energy consumption monitoring system in all municipal buildings
- modernization of public buildings (including education sector) owned by the City – energy reduction potential reaches 35,8 GWh/year, i.e. 38,4% of the total energy consumption

# Headline Successes

- employment of Supervisor for Energy and Environment
- organization of a study visit to Katowice 22-24.04.2009
- the structural matrix of the new assumptions for heat, electricity and gaseous fuels supply plan for Katowice City
- the tasks and ways of cooperation of stakeholders in developing and implementing the vision of "Katowice - City of sustainable energy"
- assumptions for the „Thermomodernization program of the Katowice city buildings„
- launching the portal:  
[www.katowice.energiaisrodowisko.pl](http://www.katowice.energiaisrodowisko.pl)





# Lessons Learned

- energy efficiency, RES and climate change should become high priority topics
- benefits of actions should be identified
- without energy management coordinator being in charge of energy planning it is difficult to run a comprehensive process of public service buildings modernization
- training sessions organised in order to increase the skills of participants in the process of energy planning are very popular - there is a need for information in this field
- it is necessary to change the current standard of assumptions... taking into account the energy requirements of the Polish Energy Law and the challenges of Climate Package
- energy efficiency, RES as components of the city image



# Institute for Sustainable Development, Poland

- Foundation
- Established in 1992
- Warsaw, Poland
- 10 employees



# Case Study – Alternative Energy Policy (APE) for Poland to 2030

- Why? - to show that Poland can have sustainable energy policy



# Challenges & Opportunities

- EU goals – 3x20
- Low efficiency of energy use in Poland
- High share of coal in the energy balance
- Significant RES potential is not used
- Bad technical state of energy sector elements



# Key paradigm of APE

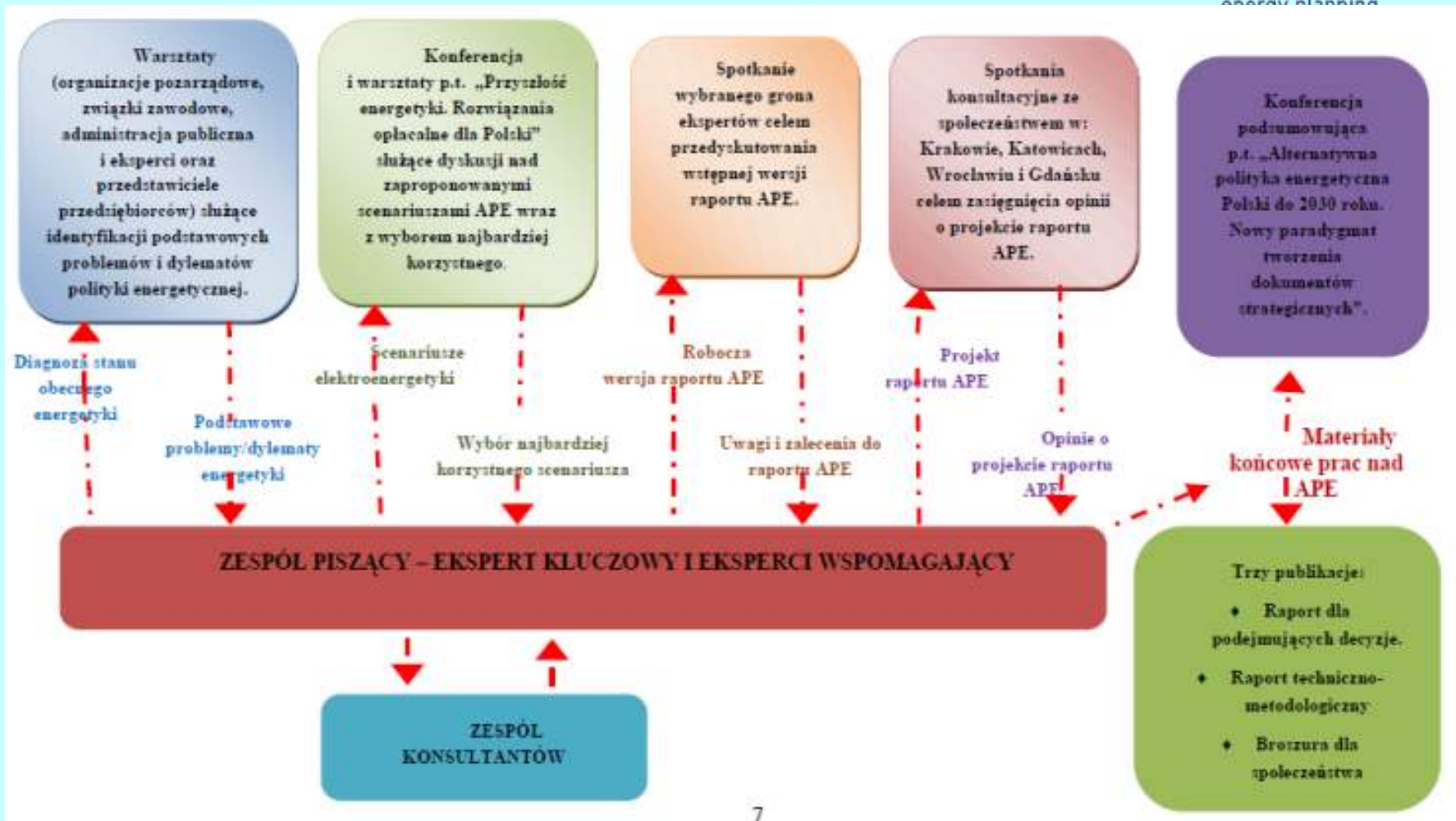
- The point of departure for long-term solutions must not be only the human needs or those of the economy. They should be the first:
- the limits of resources which may be available to each sector, country or region; and
- the caps of pollutant emissions corresponding to the capacity of the natural environment to absorb them



# Public involvement - important factor

- Preparation of APE involved:
  - NGOs,
  - Energy sector
  - Trade unions
  - Self-governments
- Numerous workshops and conferences let us prepare the final document

# APE preparation process





# Goals of the policy

- A substantial improvement of efficiency (immediate)
- Stimulation of the active RES development (2yrs)
- Capacity replacement (several yrs)
- No economic viability of the development of nuclear energy by 2024-2030
- A substantial change in transport policy



# Lesson's Learned

- We can reduce 40-45% GHG emissions by 2030
- We need to do something for climate not only discuss the climate change issue



# Thank you for attention!

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