"Lighting the way towards smarter and more sustainable cities"

SUSTAINABLE PLACES 2016

Fundación CARTIF
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REMOURBAN Project Coordinator

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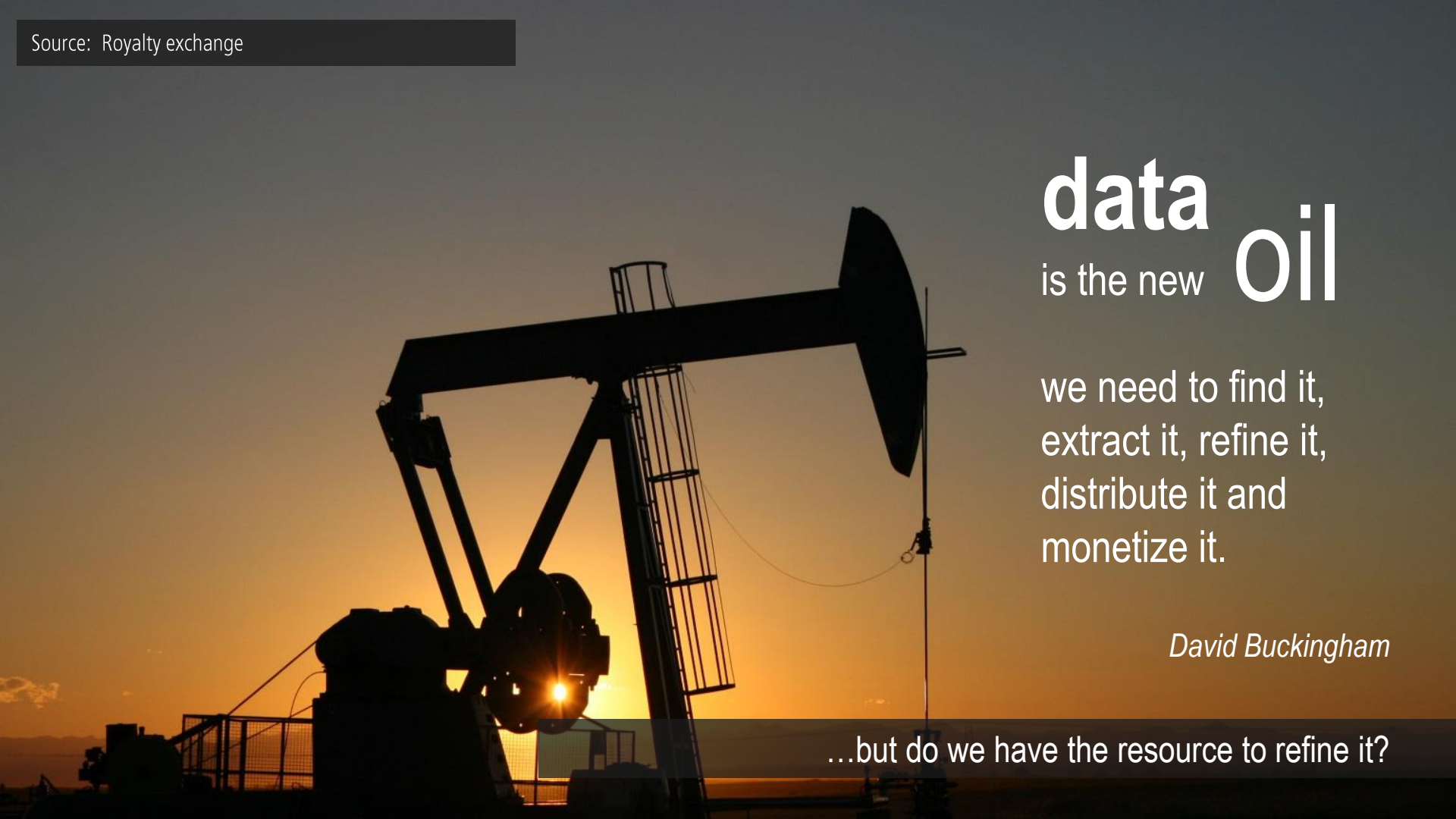
Source: Geotagged cities. Wired Magazine January 2012

[…] For me, my city is imposed as an indisputable evidence: the environment of everything or almost everything that happens to me, the greatest place among all I can modify, of all those where I can influence actually, physically, and not only through the fiction of the vote. […]

Pasquall Maragal. Mayor of Barcelona (1982-1997)
Preface to "Cities for a Small Planet" Richard Rogers, 2000


Source: Royalty exchange
data
is the new oil
we need to find it,
extract it, refine it,
distribute it and
monetize it.
David Buckingham
…but do we have the resource to refine it?


Source: Jason Hawkes. Valladolid: Cúpula del Milenio
the goal is providing a model to make cities
smarter
and more
sustainable


Source: naturetime.wordpress.com
[…] displaying or flashing a very bright light for the guidance of ships in avoiding dangerous areas, in following certain routes, etc.

[…] displaying or flashing a very bright light for the ***guidance*** *of ships in avoiding dangerous areas,* ***in following certain routes****, etc.*

EU roadmap of SCC Projects and Initiatives

EUROPEAN INNOVATION PARTNERSHIP ON SMART CITIES AND COMMUNITIES

CITYkeys (SCC2)
Smart City Indicators

ESPRESSO (SCC3)
Smart City Standards

SCC1-2014

REMO URBAN

GrowSmarter

SCC1

SCC1-2015

SmartEnCity
REPLICATE
SMARTER TOGETHER
SHARM-LLM

SCC1

SMART CITIES INFORMATION SYSTEM (SCIS)

EU Smart Cities Information System

REMOURBAN project and consortium

Total REMOURBAN budget: **32.5M€** (21,5M€ EU funded)
Total investment in REMOURBAN actions: **22.9M€** (80% public)
Energy savings: **6,858,735 MWh/yr**
CO_2 emissions avoided: **2,841 TnCO_2/yr**
Citizens directly involved in demos: **19,800**
Direct job creation: **187**
Consortium: **22** partners (5 municipalities, 3 RTD, 5 industries, 9 SMEs)
Nationalities: **7** (Spain, UK, Turkey, Belgium, Hungary, Germany, Italy)

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Nottingham City Council · nep nottingham energy partnership · Nottingham Trent University · overdi energy | investments UniCredit · ÖLÇSAN "kalitenin ölçüsü" · sasie · Steinbeis-Europa-Zentrum · Eskişehir Tepebaşı Municipality · VEOLIA · xeridia · yourls.com

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[TECHNOLOGY CENTRE] CARTIF · SUSTAINABLE PLACES 2016 June 29-July 1, 2016 Anglet, France · REMOURBAN

REMOURBAN key objective

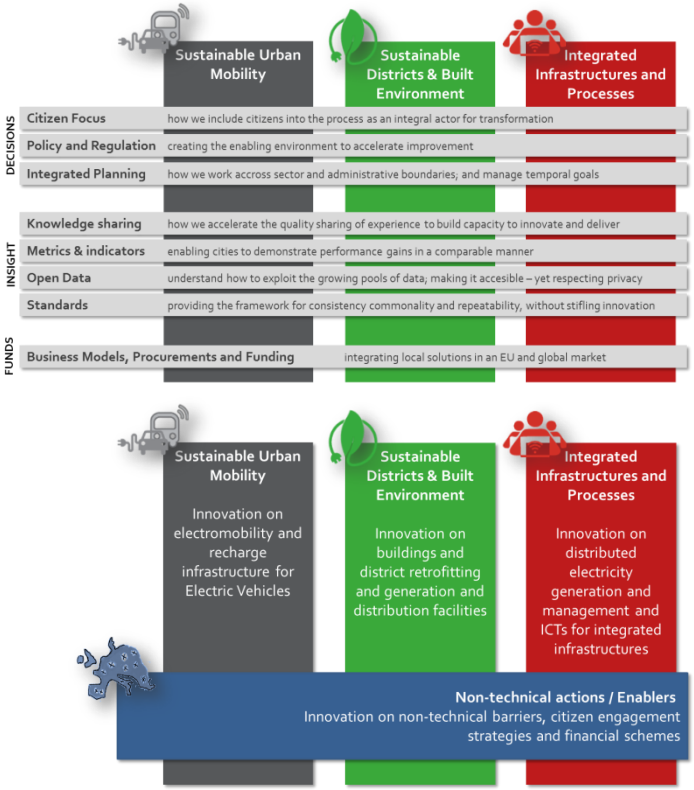
- Develop and validate an **Urban Regeneration Model** – highly replicable and based on the joint transformation of:
  - Buildings/districts towards **Low Energy Districts**
  - City transportation towards a **Sustainable Urban Mobility**
  - Integrate existing city infrastructures through **ICTs**

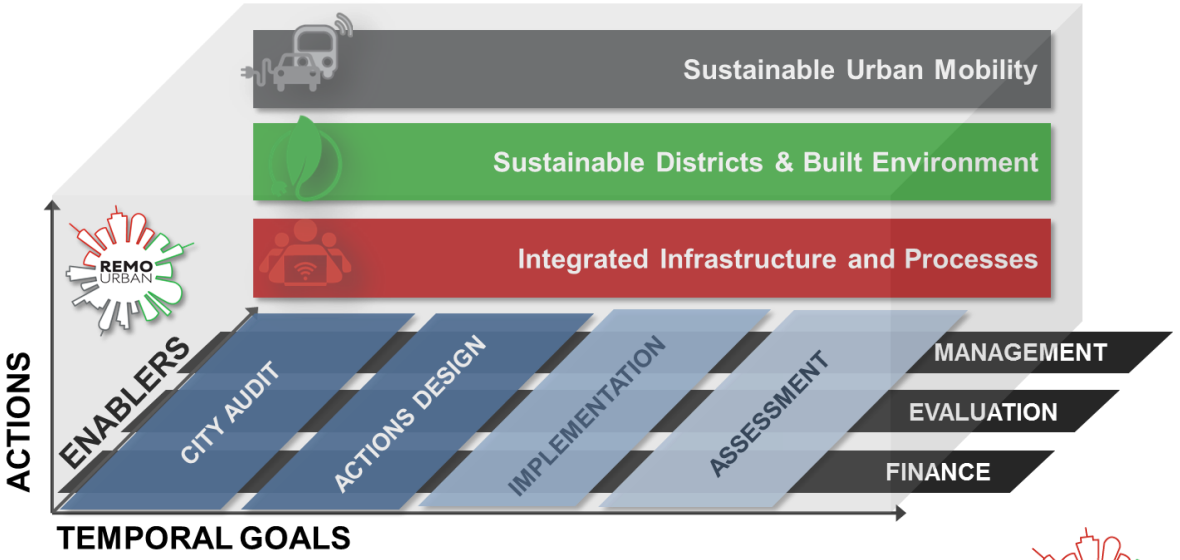

Source: PETER PARKS/AFP/Getty Images


Source: theskyisbig.blogspot.com


Source: Stephen Thomas-Patel

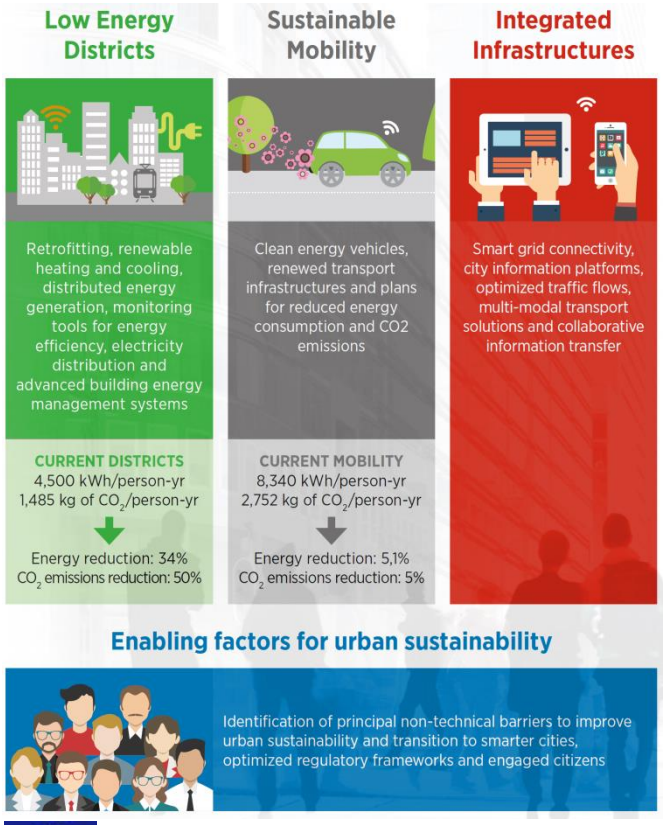
From SIP to an integrated Urban Regeneration Model

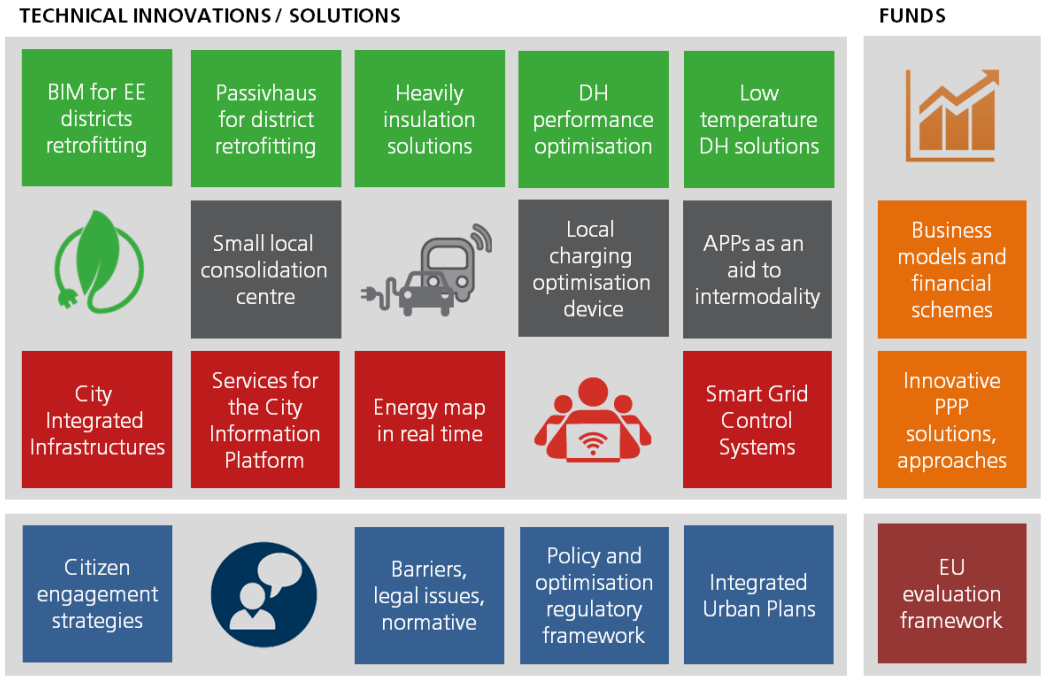




Miguel Á. GARCÍA-FUENTES | REMOURBAN Project Coordinator

Driving innovation for urban transformation





Low energy districts

Following current tendencies, by 2050 the building sector alone will be responsible for all the global emissions that the 2°C increase scenario allows.

It is impossible to reach desirable climate change scenarios with the current building sector.

"Building a common home. A Global Vision Report"
Global Vision Area within the WSB14

Challenges:
Improve energy efficiency
Changing energy resources

REMOURBAN Energy actions

MONITORING TOOLS FOR ENERGY

Develop and deploy monitoring tools to achieve performances related to energy efficiency and financial viability

DISTRICT SCALE RETROFITTING

Systemic implementation of passive and active technologies to improve comfort and reduce the energy consumption

RENEWABLE HEATING AND COOLING

Use of heating and cooling from RES and implementation of innovative DH technologies (Low Temperature District Heating)

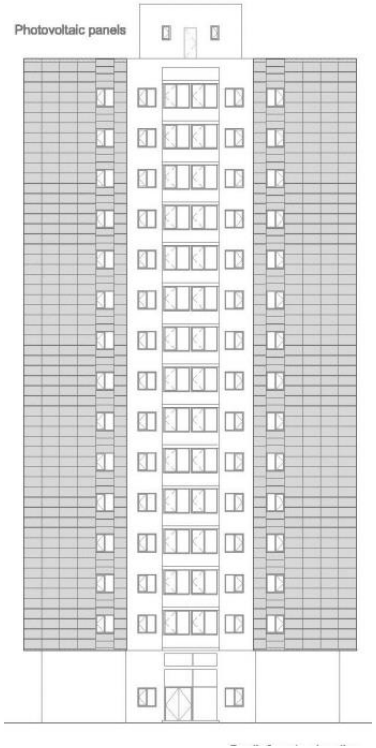
ELECTRICITY DISTRIBUTED GENERATION

Electricity generation from small scale energy sources located close to where the electric energy is being used

ADVANCED BUILDING ENERGY MANAGEMENT SYSTEMS

Integration of advanced monitoring and control strategies for thermal and electric energy uses

REMOURBAN energy actions



Sustainable mobility

Cities all over Europe face similar problems (congestion, road safety, security, pollution, climate change, etc.) increasing constantly.

Urban mobility accounts for 40% of all CO_2 emissions of road transport and up to 70% of other pollutants from road transport with a negative impact on citizens' health.

"Green paper on Urban Mobility"
Directorate General for Energy and Transport. European Commission

Challenge:
Create a new culture of urban transport

REMOURBAN Mobility actions

IMPROVE CLEAN POWER FOR TRANSPORT: e-Vehicles

Use of electric or hybrid technologies to ease a mass-shift to cleaner forms of transport

IMPROVE CLEAN POWER FOR TRANSPORT: INFRASTRUCTURE

Use the charging infrastructure related to electric and plug-in hybrid vehicles to make easier a mass-shift to cleaner transport

FOSTER SEAMLESS D2D MULTI-MODALITY IN URBAN TRANSPORT

Achieve better connecting transport modes, nodes and mobility services

FURTHER CLEAN LOGISTICS

Enhance the logistics supply chain inside the cities (last mile delivery)

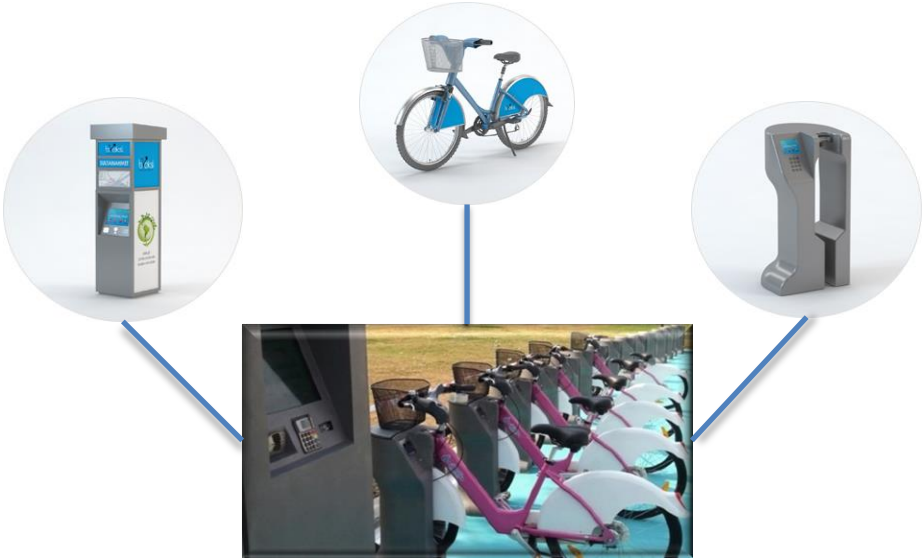
OPEN UP INTELLIGENCE IN URBAN TRANSPORT SYSTEMS

Supporting alliances that use open data – eases the development of demand-responsive and integrated mobility services

PROMOTE USE OF CLEANER VEHICLES

Incentive schemes provided by the cities to stimulate collective transport, clean logistics, sharing of goods and distribution

REMOURBAN mobility actions



Integrated infrastructures

An integrated and intelligent approach to urban development is needed to address the complexity of a smart sustainable city, aiming at improving the quality of life of all its citizens.

"Workshop: Smart Sustainable Cities and Regions"
Paul Bevan, Secretary General, EUROCITIES, Brussels

Challenge:
Integration across infrastructures and their related operational processes

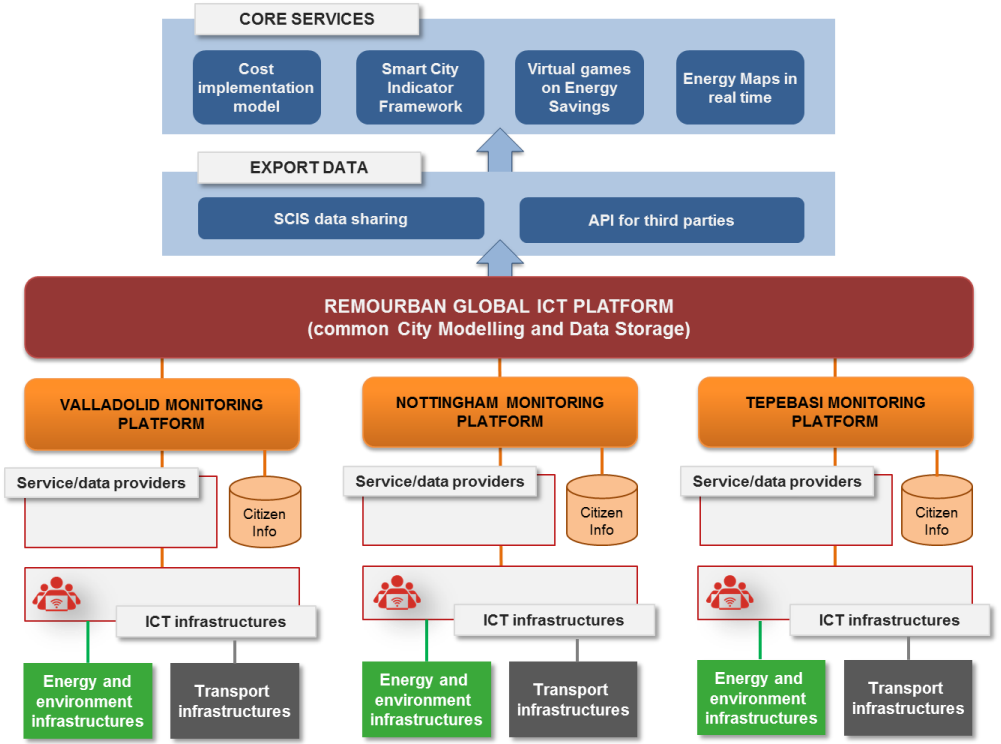
REMOURBAN ICT actions

City Information Platform:

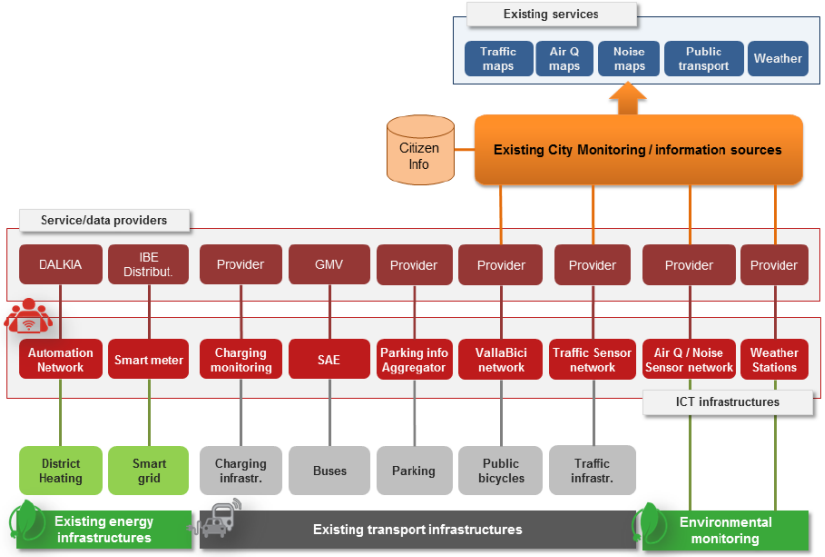
- Added-value services (big data adaption, taxonomies, export data services, etc.)

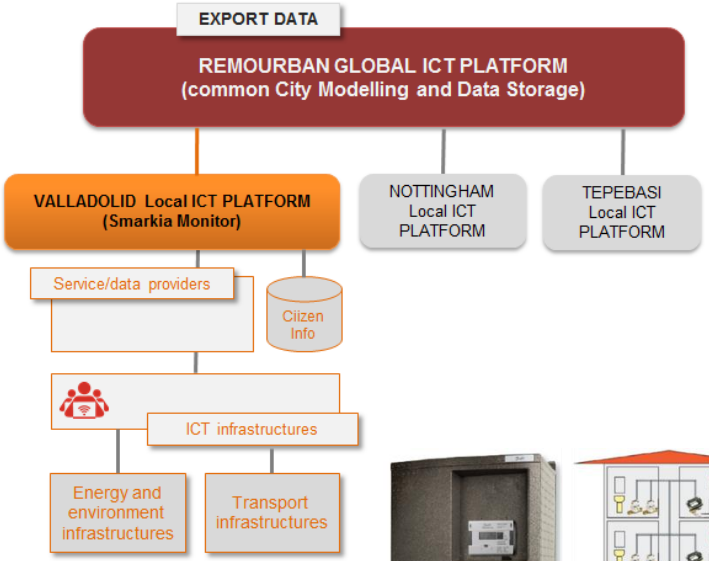
Core Services:

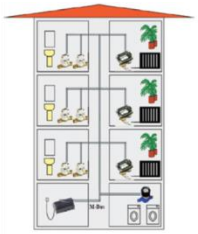
- Smart City Indicator Framework
- Cost implementation Model
- Virtual games on Energy Savings
- Energy maps in real time



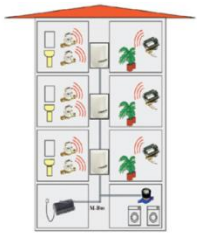
REMOURBAN ICT actions







Hard-wired Mbus metering system



Radio/Mbus hybrid metering system

Enabling factors for urban transformation

Developing integrated solutions throughout Europe will allow industry to deliver what cities and regions need, with better quality and at lower costs to the benefit of, and with the involvement of, society.

"Strategic Implementation Plan"
European Innovation Partnership on Smart Cities and Communities

Challenges:
Ensure citizens engagement, improve framework conditions to be able to become smart, and develop new market-oriented and strategies of Public-Private cooperation

REMOURBAN SC enablers: citizen centric model

Empower and co-create

Active and evolving dialogue
Equal power to decide outcomes at one or many parts of the process

Include and collaborate

2-way
In person, collective meeting

Inform and consult

1-way
'distance' – by mail, Internet

Good communication ≠ Citizen engagement
But citizen engagement NEEDS good communication

REMOURBAN non-technical actions

STRENGTHS

- Wide portfolio of channels operated by the Municipality
- Experience in implementing neighbourhood refurbishment projects
- Good co-operation with NGOs
- Visible projects
- Routine in reaching citizens

OPPORTUNITIES

- S&G engagement plan foreseen for the whole city
- Longer time for engagement before deploying new projects
- MIS to become a flagship project in Modern Cities Programme (national)

S O W T

WEAKNESSES

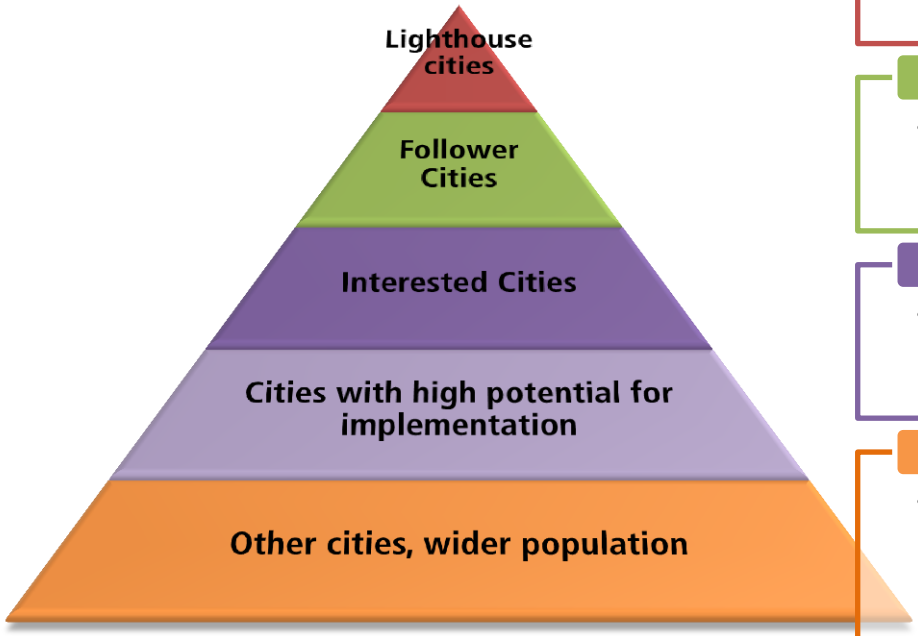
- Low number of citizen supported NGOs
- Low awareness on smart urban development
- Lack of interest and effective demand for e-vehicles
- Lack of approved municipal smart city strategy to align REMOURBAN

THREATS

- Delay in Modern Cities Programme
- Rejected domestic and EU proposals,
- Missing capital for comprehensive urban regenaration
- Political change, low committment of leadership
- Lack of purchasing power

22%

Scale-up approach for maximising the impact



Demonstration

- Directly involved in project as demo: training, technology transfer

Replication

- Directly involved in project as replication: workshops, replication activities, implementation plans

Exploitation

- Attracted during the project lifetime: exploitation activities, transfer activities, feasibility plans, study visits, webinars about solutions proposed

Dissemination and communication

- e.g. articles, LinkedIn communication, press releases, presentations, conference, social media (appropriate), website, leaflet or flyer, general awareness raising

INTENSITY OF ENGAGEMENT

Lighthouse cities:
Valladolid, Nottingham, Tepebasi

Follower cities:
Seraign, Miskolc

Valladolid (Spain)

Population of 310,000 (city urban area of 415,000).
Administrative capital of Castilla y León.

Smart City strategy for Valladolid and Palencia (2010).
Integral Plan for Urban Mobility, PIMUVA (2005).
General Plan for Urban Development, PGOUVA (2004 – under review).

Energy Management Systems
(ICT for thermal system monitoring and control)

City Information Platform
(ICT measures for mobility and city management)

Building envelope retrofitting
(24,700 m2 of cond. area)

District heating and DHW systems
(biomass for energy)

Electric vehicle
(50 new electric vehicles)

Transport infrastructure
(29 new charging points)

Intermodality
(buses, bicycles, and car sharing fleets)

Citizens' engagement and empowerment

Smart city strategies

EU smart city indicator framework

50% Energy savings
80% CO_2 emissions avoided
5,700 citizens directly involved

Nottingham (UK)

Population of 306,000 (city urban area of 730,000).
One of the major cities in East Midlands.

City 2020 Energy and Carbon strategy (2010).
Sustainable Energy Action Plan (SEAP) for the EU Covenant of Mayors (2010).

Integrated Infrastructure City ICT Model
(connecting and integrating infrastructures together)

ICT Monitoring tools for the users

Renovation of building envelope
(28,300 m2 of cond. area)

District heating and cooling and distributed generation
(connected to the city network)

Alternative fuel vehicles
(electric buses)

Transportation infrastructures
(electric drive-lines and fast charging technology)

City Car Club Nottingham

Citizens' engagement and empowerment

Smart city strategies

EU smart city indicator framework

50% Energy savings
26% CO_2 emissions avoided
8,100 citizens directly involved

Tepebasi/Eskisehir (TK)

Tepebaşı district (population of 315,00) is part of Tepebaşı (population of 800,000).
Modern urban region, second biggest in Middle-Anatolia after Ankara.

Metropolitan Municipality Strategic Plan (2015).
Sustainable Energy Action Plan, SEAP (on going).

City on Cloud
(city management system for energy and mobility)

Monitoring and control of e-bike and e-vehicles

Smart control of the district heating

Energy efficient building retrofitting
(9.110 m2 of cond. area)

Central district heating/cooling and DHW
(biomass for energy)

Expansion of the cycling lanes
(6.2 km + 50 e-bikes)

Alternative fuel vehicles
(4 e-buses + 7 hybrid cars)

Citizens' engagement and empowerment

Smart city strategies

EU smart city indicator framework

85% Energy savings
79% CO_2 emissions avoided
6,000 citizens directly involved

Seraign (Belgium) and Miskolc (Hungary)

Miskolc. The fourth biggest city in Hungary. Regional centre and capital of Borsod-Abaúj-Zemplén. 168,075 inhabitants (2011).

Very ambitious urban plan centered in:

- Growing economic potential
- Protection of natural environment, regeneration of ravaged environment
- Improving life quality, development of urban potential
- Development of built environment, harmony between artificial and natural environment
- Strenghend security, equality and social cohesion

Seraign. Lieja province. Industrial City of 61,237 inhabitants.

Signed the Covenant of Mayors in October, 2013. Vast program of urban reshaping promoting the development of new economic activities and improving quality of life, resulting in a Master Plan that will be the basis for all decisions to be taken, concering the urban requalification of the city, in the long term (30 years)

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