



Smart Cities and Communities ICT Objectives in WP2013

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Project Brokerage Seminar - 11th July 2012

Outline



European policy on Energy-Efficiency through ICT



RTD on ICT for Smart Cities and Communities
in WP2013



Policy at EU level

1. March 2010 - Europe 2020: Smart, Sustainable and inclusive Growth

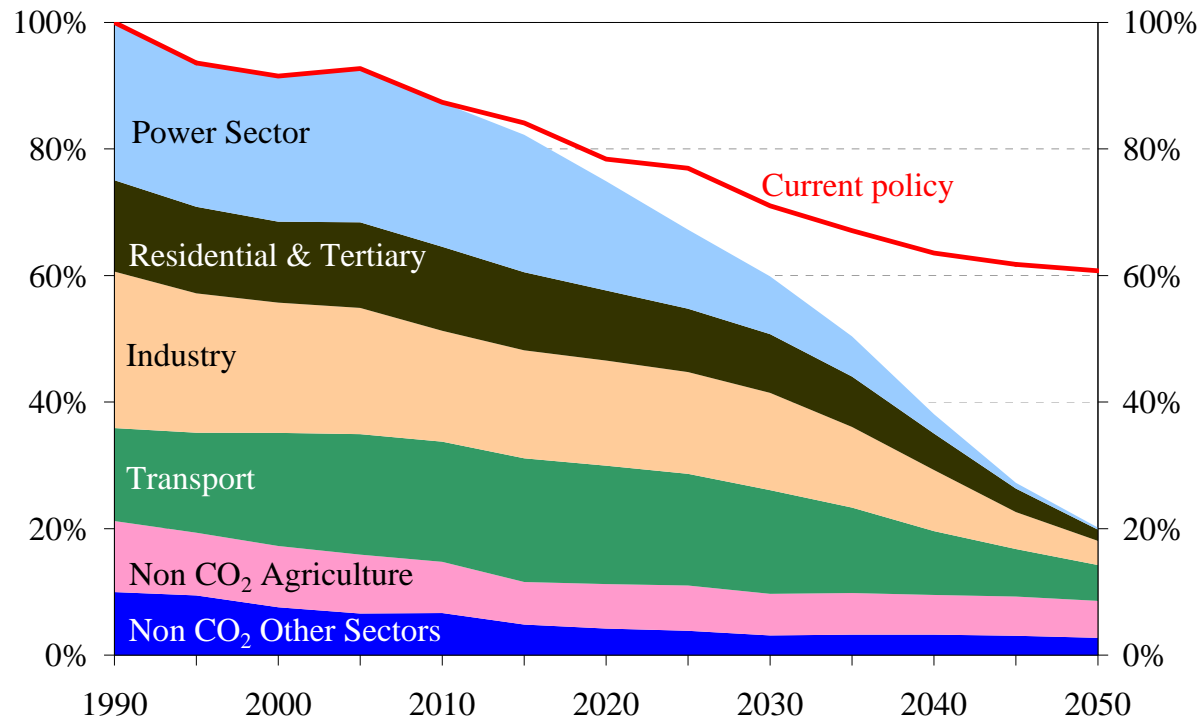
Confirmation of three 20% targets for 2020

2. March 2011 - A Roadmap for moving to a competitive low carbon economy in 2050 -

http://ec.europa.eu/clima/policies/roadmap/index_en.htm

Reducing GHG emissions by 80-95% by 2050 compared to 1990. A fully decarbonised Power Sector

EU GHG emissions towards an 80% reduction (100% = 1990) by 2050



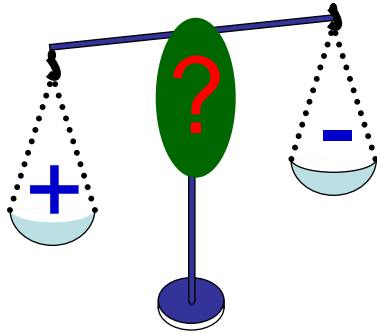


Policy: How can ICT *contribute*?

- *ICT can bring about direct efficiency gains*
 - *measuring, monitoring, intelligent management and control, etc*
- *ICT can help drive behavioural change*
 - *provide reliable data to governments, industries, citizens about energy consumption / carbon emissions*
 - *identify how much energy is used and where*
 - *enable comparative analyses: identification of common inefficiencies, best practices and opportunities*

Towards a Common Methodology: An agreed measurements framework to define environmental KPIs for ICT's impact is a precondition

The Issue



- + ICT as enabler to contribute to energy, resource efficiency targets
 - Negative impact of ICT on the environment
- How to measure the overall impact of ICT?

EC Approach

- Working with international standardisation bodies (ITU, ETSI, IEC, ...)
- Working with industry stakeholders

Completing and expanding efforts to a common framework to capture ICT's overall impact across environmental dimensions

Application to Cities

- Cities' infrastructures cover whole potential of smart green ICT use:
 - Buildings, Neighbourhoods
 - Energy grids
 - Water
 - Transport, Logistics
 - Cities provide sufficient demand to achieve critical mass
- To be able to compare and learn cities require own framework to measure ICT's impact



Smart Cities Call in WP2013

- Focus on sustainability - activities on energy, transport and ICT.
- Cooperation with DG ENER and DG RTD and DG CONNECT to bridge current activities with H2020 Smart Cities and Communities – A joint call of 209M€ in WP2013.
- Cooperation within the ICT Theme: Challenge 1 IoT (20 M€) and Challenge 6 – sustainability (60M€) and challenge 6 - mobility (15M€).

Smart cities: Joint Call between ENER, CONNECT and RTD

CONNECT

Internet of things 20M€

Optimising energy 40M€

Data Centres 20M€

Integrated personal
mobility 15M€

ENER

Demonstration of
optimised energy
systems 90M€

RTD - 24M€

Planning rules for linking EV
to the grid

Interoperability and
conformance testing
for EV-grid

Integration
of renewable
energy

From 10/7/12 to 4/12/12



Objective ICT-2013.6.2 Data Centres in an energy efficient and environmentally friendly Internet

Objective: *System-level technologies and services to improve energy and environmental performance.*

Complements: *Objective 1.2 on computing architectures, objective 3.4 on embedded systems for data centres and objective 12.1 on exa-scale supercomputing.*

Target Outcome:

- a) Software, Hardware and Services to optimise power, cooling, computing, storage, and data transmission operations in function of energy, environment and cost.*
- b) Integration of renewable energy sources in data-centres in urban agglomerations.*
- c) Use by urban installations of the produced heat*
- d) Efficient integration of data centres under smart grid/smart city schemes.*
- e) Contribution to standard on the measurement of the energy and environmental footprint.*
- f) Validation of the resulting systems based on defined indicators.*

Proposals will address (a), (e) and (f) and at least two of (b), (c) and (d).

Consortia must be compact and must include expertise on ICT and on energy.



Objective ICT-2013.6.2 Data Centres in an energy efficient and environmentally friendly Internet

Expected Impact:

- *Quantifiable and significant improvement of resource efficiency. Improvement of power usage effectiveness (PUE) with a parallel improvement of environmental effectiveness (indicative metrics can include carbon usage effectiveness (CUE) and water usage effectiveness (WUE)).*
- *Development at demonstration stage of (networks of) Data Centres powered at levels of 80% or above by renewable energy sources.*
- *Contribution to the creation of new market opportunities (e.g. in the area of renewable energy systems for data centres).*

Funding Scheme: STREPs

Indicative budget: 20 M€

Call FP7-SMARTCITIES-2013: 10th July 2012 to 4th December 2013



Objective ICT-2013.6.4 Optimising energy systems in Smart Cities

Objective: *To develop and validate decision-support and or management and control systems for energy-efficient neighbourhoods*

Complements: *Topic ENERGY.2013.8.8.1 The focus here is on software systems for new business models and user engagement whereas in ENERGY the focus is the physical integration (including power electronics devices).*

Target Outcome:

- a) *Systems considering renewable energy production, connection with the smart electricity grid and integration with smart district heating and cooling grids. Proposals should cover:*
 - (i) technical developments, mainly adaptation and integration of existing ICT,*
 - (ii) a substantial validation phase in real-life environments in at least two cities and*
 - (iii) a precise evaluation phase*
- b) *Coordination and Support Actions: bringing together process engineering, ICT, energy companies (including ESCOs), building and construction sector companies, as well as local and regional authorities, to:*
 - (i) Road-mapping (taking over from ICT4E2B Forum and IREEN)*
 - (ii) Analyse new business models and opportunities for SMEs.
Identify ICT/Energy vocabularies and ontologies to foster interoperability*
 - (iii) Assess possibilities for making publicly available data obtained from validation activities*

Considerable resources are expected to be committed, however consortia must be compact with partners each making substantial contributions.



Objective ICT-2013.6.4 Optimising energy systems in Smart Cities

Expected Impact:

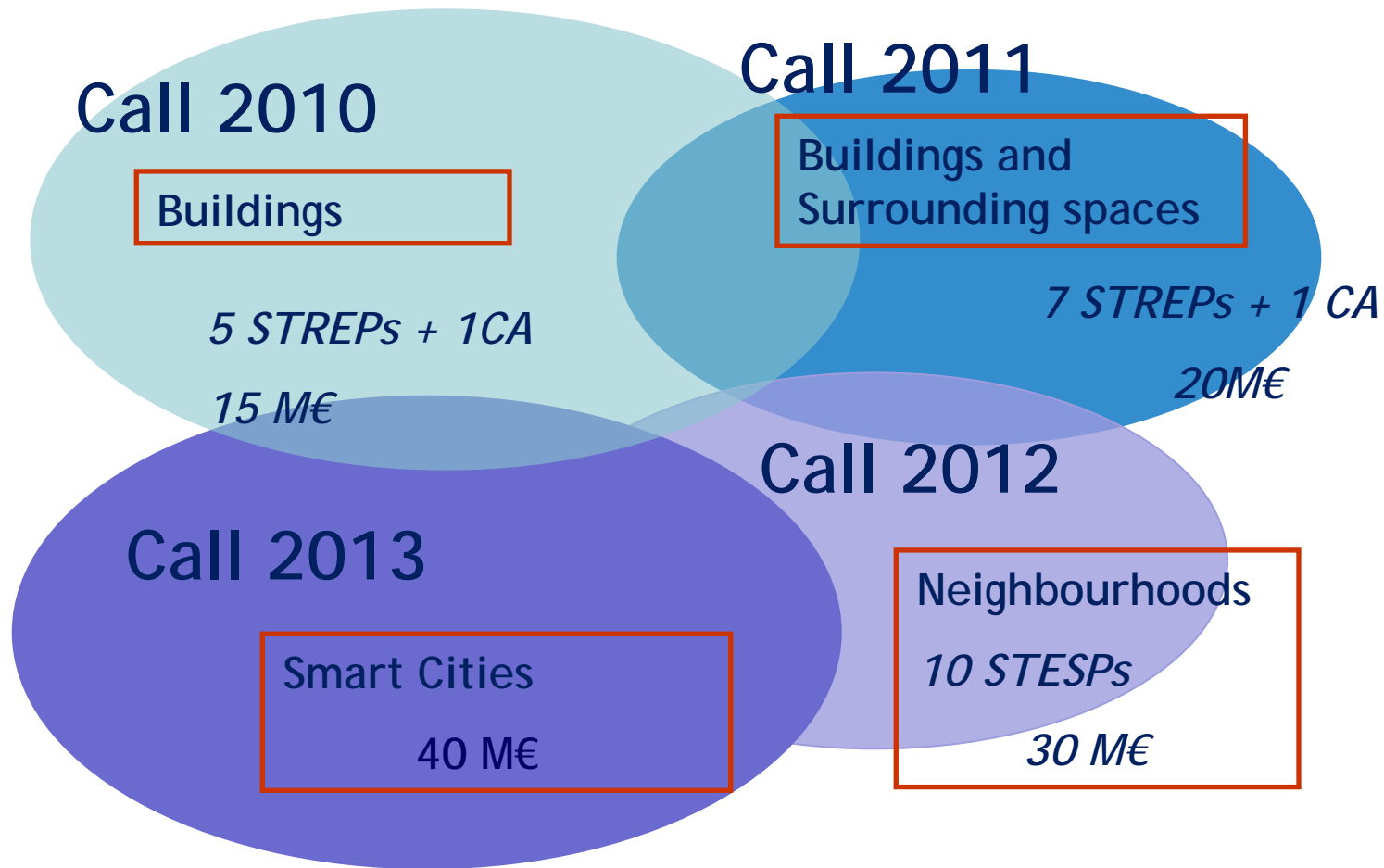
- *Quantifiable and significant reduction of energy consumption and CO2 emissions achieved through ICT.*
- *Adoption of ICT by city authorities;*
- *Number of publications jointly authored by researchers from ICT, energy, construction and civil engineering and city experts.*

Funding Scheme: a) STREPs b)CSA

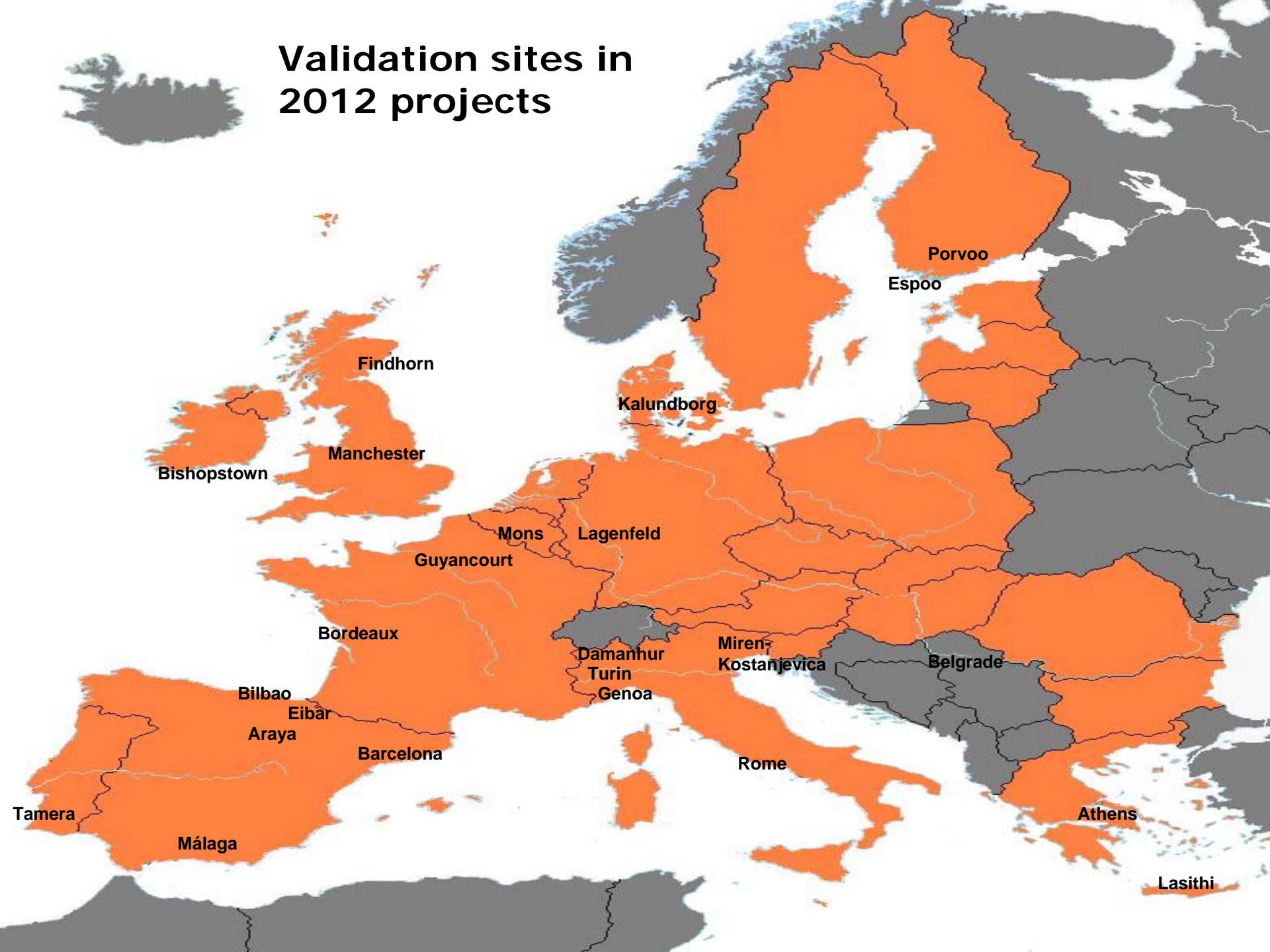
Indicative budget: a) 39M€ b) 1M€

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Objective ICT-2013.6.4 Optimising energy systems in Smart Cities Part of ICT for Energy-efficient Buildings PPP



Validation sites in 2012 projects





Objective ICT-2013.1.4 A reliable, smart and secure Internet of things for Smart Cities

Objective: to facilitate wider uptake of IoT-based systems by sustainable smart city applications

Target Outcome:

- a) A reliable and secure Internet of Things, based on security and privacy by design architectures and technologies for connected objects.
- b) A smart Internet of Things with scalable and adaptive middleware supporting data flows from sensing devices and a high quantity of object instances. Heterogeneous network made up of federated private/public area networks (virtualisation).
- c) One Coordination and support action covering: i) Cooperation with third countries, such as China and India on the future of the Internet of Things for its applicability to smart city scenarios; ii) International Road-mapping activities; iii) research coordination at EU level

For items a) and b), the technological work is expected to support intelligent information systems of smart cities. Smart city applications are thus expected to drive the requirements.



Objective ICT-2013.1.4 A reliable, smart and secure Internet of things for Smart Cities

Expected Impact:

- *Scientific and technological models of resilient and reliable IoT applications supporting confidentiality, authenticity, and integrity of the data sensed and exchanged by smart objects.*
- *Technological and standardised solutions for IoT virtualised platforms supporting "green" and sustainable smart city applications.*
- *Enabling European suppliers to reach by 2020 a share of the IoT market above 30%.*

Funding Scheme: a) b) STREPs c) CSA

Indicative budget: a, b): EUR 19.25M€ ; CSA: EUR 0.75 M€

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Objective ICT-2013.6.6 Integrated Personal mobility for Smart Cities

Target Outcome:

- *New services and business models for mobility seen it in a broad sense. It could include non-motorised transport modes, electromobility and public transport, combined use of multiple modes of transport, virtual mobility concepts, and innovative mobility sharing schemes*
- *Research should build on existing technologies for in-vehicle platforms and traffic management resources and integrate these with transformative technologies such as future internet and cloud computing to capture, store, process and communicate increasing quantities of information*
- *The information used may come from traffic management systems, connected vehicles, the surrounding infrastructure and from mobility users including floating car data and crowd sourcing information.*
- *Validation through pilots involving end-users, paying attention to aspects of data privacy and security of the digital citizen.*



Objective ICT-2013.6.6 Integrated Personal mobility for Smart Cities

Expected Impact:

- *Increased take-up of transformative European ICT in new mobility services.*
- *Energy efficiency gains in personal mobility demonstrated when using new mobility services.*

Funding Scheme: STREPs

Indicative budget: EUR 15M€

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Thank you for your attention!

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Disclaimer: The opinions in this presentation are those of the author and do not commit in any way the European Commission

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