

# SHARINGCITIES

Deliverable 7.4

## Measures Business Model Workshops



Partner: UrbanDNA

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## Summary

*The potential from New Business Models to support the adoption of smart city solutions at scale and in collaboration between cities is significant. This requires considerable dialogue between cities; with Industry; and most importantly with the investor community. This process is underway within Sharing Cities. Progress is somewhat slower than planned, determined by progress in developing the 10 measures. However, progress has been made, and this report captures the current state-of-play of programme activities in relation to engagement with the market. This will be further elaborated as the programme develops.*

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# 1 INTRODUCTION

*This section provides an overview of Sharing Cities; WP7 BM&F; and this specific deliverable.*

## 1.1 INTENDED READERSHIP & PURPOSE

This is a status deliverable for INEA.

## 1.2 THE SHARING CITIES PROGRAMME

*This Section 1.2 contains standard text that appears consistently throughout ShC deliverables.*

Our vision is of a more agile and more collaborative smart cities market that dramatically increases the speed and scale at which we implement smart solutions across European cities, engaging society in new ways to cause them to play an active role in the transformation of their communities – delivering more vibrant, liveable, economically active, and resource efficient cities.

Underpinning this are shared solutions that apply a 'digital first' approach; are more common, integrated, open; and provide the 'building blocks' incorporating European and worldwide leading practices that can be deployed at scale, yet tailored to cities of different size and stage of development.

A vision where Sharing Cities – in collaboration with other like-minded parties – is instrumental in 'creating the movement' that makes a profound and sustained difference.

The Sharing Cities vision is captured in figure 1. It drives what we do. Specific terms in the supporting text provide a clear direction regarding what we do to convert this to practical action, specifically:

*“Underpinning this are **shared solutions** that apply a **'digital first'** approach; are more **common, integrated, open**; and provide the **'building blocks'** incorporating European and worldwide leading practices that can be **deployed at scale**, yet **tailored to cities** of different size and stage of development”.*

**Figure 1 Sharing Cities Vision**

Sharing Cities is an EU Horizon 2020 Smart Cities and Communities Programme. The programme brings together 70 people, from 35 partner organisations and 6 countries to work across 8 highly connected work packages; which broadly focus on the themes of People, Place and Platform. Its vision is for a more agile and more collaborative smart cities market that dramatically increases the speed and scale at which we implement smart solutions across European cities, engaging society in new ways to cause them to play an active role in the transformation of their communities – delivering more vibrant, livable, economically active, and resource efficient cities.

Underpinning this are shared solutions that apply a 'digital first' approach; are more common, integrated, open; and provide the 'building blocks' incorporating European and worldwide leading practices that can be deployed at scale, yet tailored to cities of different size and stage of development.

There is one demonstrator in each of the three lead cities of London, Lisbon, and Milan. The demonstrator areas will test the replicability of these physical, digital and human systems to deliver sustainable place and resource management opportunities.

## 1.3 BUSINESS MODELS & FINANCING WORK PACKAGE 7

*This Section 1.3 contains standard text on WP7 that appears consistently throughout ShC deliverables.*

### 1.3.1 WP7 Objectives

The objectives the 'Business Models & Financing' WP7 are to:

1. **Develop a series of fundable business models** to ensure that the measures delivered across the demonstrators can become sustainable, financially viable and scalable propositions across the full range of European cities.
2. **Trigger €500M European Smart Cities Investment** to accelerate exploitation of common integrated smart city solutions.
3. **Establish Smart City Investment Funds** in 3 of the principal cities
4. **Boost scale-up businesses** to support the 'jobs and growth' agenda (locally)

**WP7 addresses two principal themes:**

### Theme 1: Matching Measures to Cities

This seeks to understand cities and measures in order to maximise the speed and scale of adoption, and the value generated. To do so we:

- Profile cities to better understand their context & needs
- Characterise Measures and assess measure-specific needs
- Develop business models that enable adoption
- Perform matching (3+3+many)

### Theme 2: Establish Funds

This seeks to: A). unblock investments of all forms, understand investor motives, de-risk investment, and deliver investable (bundles of) measures, and B). support SMEs and scale-up businesses in the principal cities by packaging and disseminating the Funding London model

- A: Design & tailor implementations in other SHAR cities
- Design & implement an EU-level fund
- B: Package “Funding London” (SME enablement) model
- City-level SME focused support

### **1.3.2 Relationship of WP7 to the Sharing Cities Vision and Goals**

The Sharing Cities vision (figure 1) highlights a number of underpinning features (text shown in red in figure 2). WP7 seeks to support the vision by resolving a key market scale-up barrier – release of **money!**

Five of the ‘10 Audacious Goals’ are relevant to WP7:

1. Aggregate Demand and achieve wide Scale Deployment of smart city solutions
  - *e.g. Engage 100 cities (2016), & 50% exploit our products*
2. Deliver Highly Relevant Common and Replicable Innovative Solutions
  - *e.g. deliver >10 repeatable solutions, & ~10 tools/frameworks*
3. Attract Quantum External Investment
  - *e.g. Trigger € 500 million external exploitation investment*
4. Make Acceleration in Uptake of Smart City Solutions Real
  - *e.g. Speed uptake and reduce implementation cycle times*
10. Strengthen Local Scale-Up Businesses in (at least) the 3 cities
  - *e.g. Create >100 new jobs in 3 districts in related sectors*

**Sharing Cities: ‘10 Audacious Goals’**

- 1. Aggregate Demand and achieve wide Scale Deployment of smart city solutions**
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- 4. Make Acceleration in Uptake of Smart City Solutions Real**
  - *e.g. Speed uptake and reduce implementation cycle times*
- 5. Deliver 3 Role-Model Low Energy Efficient Districts**
  - *e.g. Reducing bills by €600,000 pa*
- 6. Shift the thinking irreversibly to Decarbonised / Local Renewables**
  - *e.g. Retrofit 10,000 homes, save 5.9kWh/yr of energy*
- 7. Shift the thinking irreversibly to new models of eMobility in the Districts**
  - *e.g. Demonstrate clear shift in citizen thinking as regards choice of mobility, with 10% moving to eVehicles*
- 8. Make Real the Notion of Citizen Participation**
  - *e.g. Prove the active participation of 50% of the 15,000 affected residents (citizens) of the buildings under renovation*
- 9. Exploit ‘City Data’ to Genuinely Prove its Value**
  - *e.g. Demonstrate real user value from city data stores in support of decision making, automated operations, SMEs*
- 10. Strengthen Local Scale-Up Businesses in (at least) the 3 cities**
  - *e.g. Create >100 new jobs in 3 districts in related sectors*

**Figure 2 Sharing Cities “10 Audacious Goals”**

## 1.4 THIS DELIVERABLE: D7.4 – BUSINESS MODEL WORKSHOP

Figure 3 shows the logic for WP7 Theme 1: **Matching Measures, Needs across cities, Business Models & Money**.

It shows the process for taking the outline measures from WP3 and 4; seeking to aggregate demand based on common needs amongst cities; engage with the investment community; and develop investable packaged measures. It highlights:

1. The dependencies between WP3 Place / WP4 Platform and WP7 in terms of their feed into WP7 through use cases and technical profiling of measures
2. Activities to match city needs to measures...
3. ...addressing all potential demand-side groups (lead, fellow, scale-up, EIP-SCC; SCC01 cities)
4. The engagement of the investor community to understand for each type of investor their propensity to invest in particular types of measure
5. The bringing together of actors (workshops) to agree the best packaging of measures.

Deliverable **D7.4 Measure – Business Model Workshop** involves bringing together the key actors – cities, investors, and industry – to deliver solutions at scale.

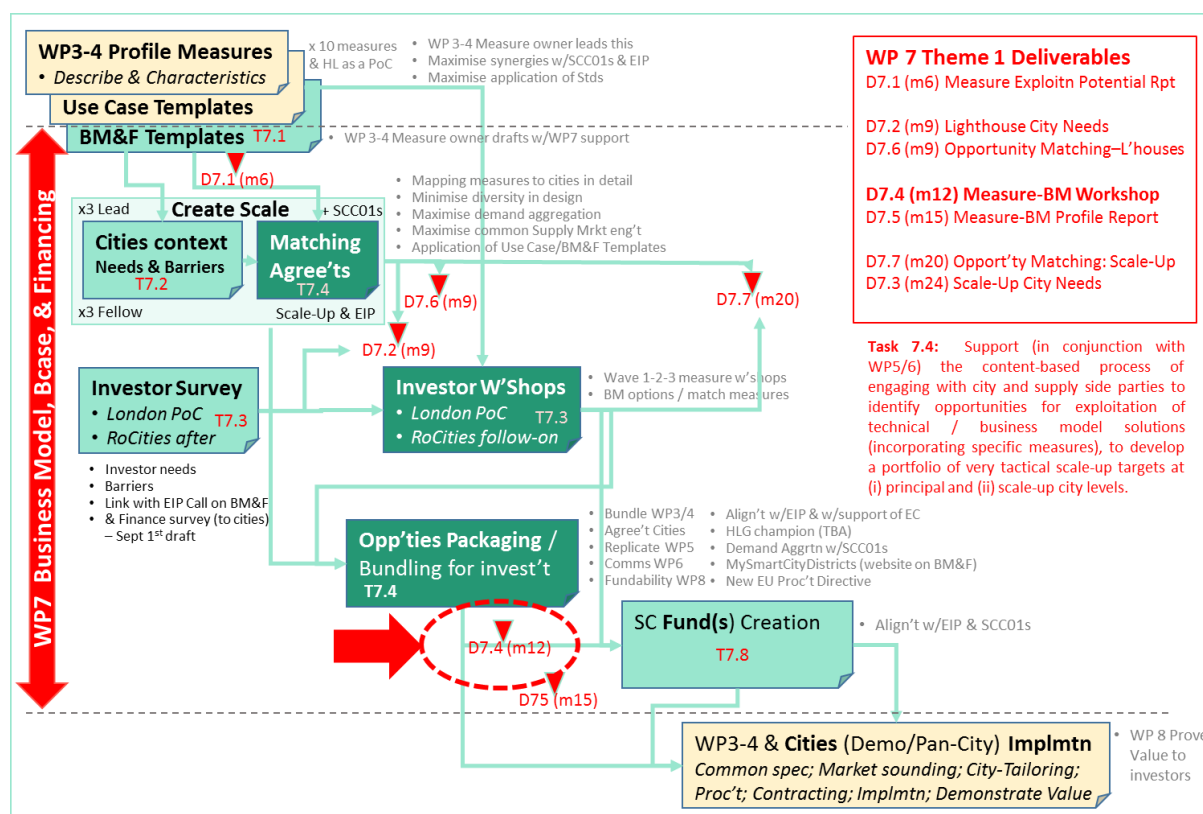


Figure 3 WP7 Logic Diagram

Progress on WP7, as can be seen from figure 3, is dependent on developments in WP3&4. The latter defines and shapes the measures, such that action with cities, industry and investors can progress. Progress has been slower than anticipated at the outset.

The engagement with the market will take various forms, and this deliverable captures both the engagement to date, and anticipated forward engagement / workshop activities.



## 2 UNDERSTANDING MARKET AND MEASURES

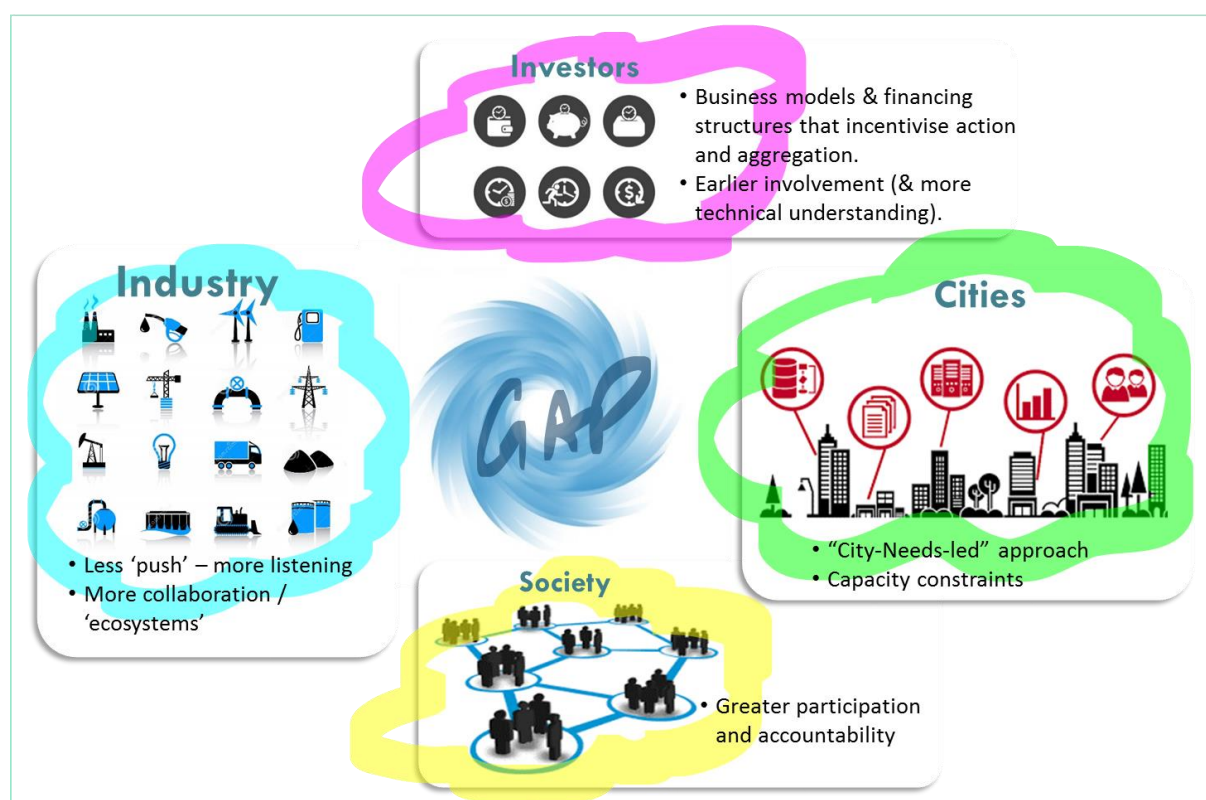
*This section offers an important market context within which measure implementation occurs; outlines sector engagement plans; and identifies the relative priority of the various Sharing Cities measures.*

### 2.1 MARKET CONTEXT – CLOSING THE GAP IN THE MARKET

There are some clear and important dynamics in the smart cities market that is inhibiting rapid scale up and adoption of smart city solutions. This context presents an important context within which Sharing Cities and WP7 operates.

In essence, the market is moving from what has been for a decade a **Technology-led Industry-driven** market, to what should be a **City-Needs-Led Demand-Driven** market. Some of the specific current features of the market are highlighted in figure 4, and include the need for:

- **Industry** to be more tuned into and respond to city-specific needs. And, given ‘smart’ solutions often span sectors, must also seek to work together in supply ecosystems – i.e. work more in collaboration with each other;
- **Cities** to recognize that individually they are small in comparison to large industry, so collaboration around common solutions will develop a greater collective muscle to influence the market; and more importantly will lead to better faster outcomes for society. Many cities must also address a capacity gap, which in a fast-changing digital world is of constant concern;
- **Investors** to engage earlier in the project development cycle, so that they can get familiar with the technical nature of new ‘smart’ solutions, and can deploy their skills to develop financing and funding models that work in the new market conditions;
- **Society** to no longer play a sleeping role. Particularly for the challenges of reducing energy consumption and changing travel habits, where society will play an integral role in success; requiring greater involvement and adoption of (personal) accountability.



**Figure 4 Market Context - Closing the Gap**

## 2.2 SECTOR ENGAGEMENT PLANS

### 2.2.1 Cities

The major 'product' work packages, WP3 Place and WP4 Platform are engaging each of the lead cities with use cases in order to make specific how the various measures will add value to city stakeholders.

In addition, WP5 is engaging the demand side more broadly – the 'scale-up' cities.

And Sharing Cities generally is actively engaging the EIP-SCC and other SCC01 consortia to explore collaboration and market synergies.

### 2.2.2 Investors

WP7 identified eight different investor communities and has started the engagement process. Initial response validates the hypotheses in section 2.1. Discussion amongst some investor types indicates that engagement may need to be done on an individual organisation basis to be most effective.

### 2.2.3 Industry

Initial discussions with Industry – both large international and SME – specific to the more developed measures, validates the need to work on industry ecosystems, particularly for the new smart solutions that will bring multiple industry types together than to date have not necessarily been actively in collaboration.

Discussion with large industry players as investors also demonstrates considerable interest in exploring potential projects. These discussions have also highlighted procurement constraints as a major (perceived) blocker, and the need for innovative business models to help stimulate industry investment in smart cities.

### 2.2.4 Society

Work package 2 has engaged society in each of the three lead cities.

Each measure requires somewhat different engagement as the propositions differ. Methods for societal engagement will be selected to suit the measures and use cases in question.

Furthermore, a digital bond is planned in the three demonstrator areas with which to engage the communities in a more active and financial manner.

## 2.3 WHAT MEASURES TO PROGRESS FIRST?

D7.1, "Exploitation Potential" report, segmented the 10 Sharing Cities measures by potential for scale advantage, and opportunity for common standard solutions (figure 5).

The result classifies three groups. The 'A' class measures are those where we anticipate early action & market influence. The initial candidates are:

- Humble Lamppost
- eBikes
- eVehicle Charge Points

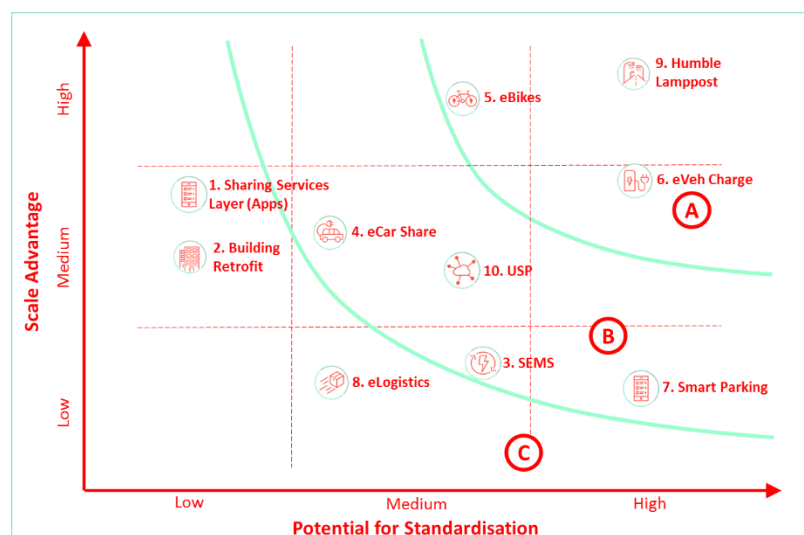


Figure 5 Economies of Scale for Sharing Cities Measures



The complete list of 10 measures with brief description is included in annex.

Also, a brief of one specific measure – the Humble Lamppost – is included in annex that touches on the various elements of the solution, and thus types of business model that may be appropriate.

Work is underway in the Work Package 3 tasks on these measures to:

- Seek political / decision maker sponsorship within the cities to collaborate beyond the cities
- Take early action to ensure sufficient time to explore innovative options
- Perform market research to assess optimal deal volumes
- Understand perspectives of: supply, demand, investor
- Identify where procurement approaches can be used that will ease cross-city activities
- Engage with cities and investors to establish business models to support demand aggregation
- Assess what standards apply and seek commonality

### 3 CURRENT & PLANNED MARKET MOBILISATION WORKSHOPS

*This section outlines current market engagement activities, and future plans*

#### 3.1 MILAN NOVEMBER 2016 DEMAND-SUPPLY WORKSHOP

Sharing Cities hosted a workshop in association with Smart Cities Council (SCC), adjacent to the Eurocities 30<sup>th</sup> anniversary conference in Milan on Friday 18<sup>th</sup> November 2016. The purpose of the workshop was to expose Sharing Cities development plans to potential Industry partners and share experiences and perspectives around what would be required to speed progress and maximize impact in the market.

In total some 35 participants joined the discussions.

The Sharing Cities cities explained their plans to collaborate and develop common solutions at scale through co-design within the consortium, and demand aggregation with other scale-up cities.



*Figure 6 The Milan Director of Place Welcomes Participants*

Three measures in Sharing Cities were taken as examples to highlight the programme intent

- **eBikes**, as part of the basket of **eMobility** solutions
- **Humble Lamppost** as a means to early demonstrable value on a relatively simple measure
- **Urban Sharing Platform** as a critical enabler for data sharing across the cities

Eurocities, as Replication work package lead, clarified ShC intent to collaborate across the SCC01 programmes via the emergent collaboration framework; and identified some examples of such action – for instance the Humble Lamppost and Urban Platform (both of which are also initiatives of the EIP-SCC). The intention is for the SCC01 programmes to form collaborative Task Groups to explore commonality of design, and potentially acquisition, across the programmes.

Milan explained their, and Sharing Cities, plans for eMobility, highlighting the various measures that are planned as part of the Sharing Cities programme. And indicating the longer-term objectives that these measures fulfilled for the city.

Deputy Mayors from the ShC cities showed their commitment to the programme, reinforcing their intent to collaborate around shared solutions. Notably, the need to act fast was highlighted; indeed

the risk that inaction would lead to erosion of real value – for instance, delay in implementing significant energy-saving smart lighting.

From the various Industry participants, three perspectives were presented from Ruckus (connectivity), IESve (energy and sustainability platform), and ZTE (network and telcomms equipment).

Topics such as standards, interoperability and business models were viewed as being key to achieve scale. Concerns about procurement constraints remain at the forefront.



*Figure 7 Industry Leaders share their views*

The key agreement from the discussion was to bring together demand (Sharing Cities and other invited cities), and Industry at the Sharing Cities Jan meeting in Milan to share the eMobility Roadmaps for the cities in a practical workshop.

### 3.2 MILAN JANUARY 2017 MOBILITY WORKSHOP

As noted above, on Fri 3<sup>rd</sup> February, Milan will co-host a follow-up workshop between Sharing Cities and Smart Cities Council on the “**Roadmap to eMobility**”. The objectives of this discussion will be to:

1. Align eMobility measures and longer term plans between the 3+3 Sharing Cities in order to assess scale up potential
2. Engage relevant Industry to:
  - a. Learn their views of leading practice experience
  - b. Explore their interest to invest in developments

It is hoped that the output of this discussion will be further joint demand-supply discussions on this theme in order to help align the market around RD&I activities. This will also be moved forward in alignment with the EIP-SCC

### 3.3 BRUSSELS “HUMBLE LAMPPOST” PAVILION EVENT

An EC co-sponsored Humble Lamppost ‘Pavilion’ event has been designed in some detail that will bring together in Brussels around 50-100 cities, industry, and investors to workshop this specific opportunity. This will include Sharing Cities as one of the already fully committed city-clusters.

The intent is to bring together what will be around €100mIn capital expenditure commitment from a networked group of city-clusters around Europe. These will agree to adopt/adapt a common specification. The specification has now been produced by DIN, and will be published in early/mid 2017. The desire is for the city-clusters where feasible to also explore cross-border procurement. On that topic, agreement has been received, from DG Grow, to support this process as part of a growing number of early cross-border procurement pilots proving the new procurement directive.

The initial plan to hold the event in Oct 2016, was deferred due to the decision of one particular city-cluster not to engage in the collaborative venture. Plans are presently being explored with three potential alternatives:

- a Dutch city-cluster comprising ~20 municipalities
- pan-London demand aggregation (a cluster amongst the 33 boroughs)
- collaboration across the SCC01 programmes

The deferment, though disappointing, does not alter the opportunity or the intent to continue to execute on this plan. Further technical summary of the Humble Lamppost can be found in annex.

### 3.1 INVESTOR MEASURE-BUNDLING WORKSHOPS

Presently the 10 measures are insufficiently developed to really engage the investment community. The experience in engaging investors around the Humble Lamppost indicated interest, however engagement too early – i.e. before demand has committed to scale – risks loss of momentum from investors.

The initial dialogue with investors, which commenced with a structured survey, has been slowed until greater information has been collected on the 10 measures, following which a ramp-up of investor engagement will be more purposeful and productive. Investor types targeted for engagement include:

- a) EU Public investors
- b) National Public
- c) Sovereign/Impact
- d) Global Private
- e) 'National' Mid-sized Banks
- f) Investment Funds
- g) Pension Funds
- h) Insurance (life/infra)
- i) Philanthropic
- j) Industry

Early survey findings from some of these indicate

- (i) Growing intrigue / interest in smart cities topics;
- (ii) Clear concerns about scale, complexity, and financial counterparty reliability
- (iii) Interest to engage in further dialogue, though with mixed opinions as regards willingness to do so in collaboration with other investors.

## 4 CONCLUSIONS

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Work Package 7 is central to Sharing Cities ambitions of *pace* and *scale*, through supporting the development of attractive 'packages of (aggregated) measures' that will appeal to the supply market (Industry), and business models that engage investors and deliver sustained societal value.

WP7 has developed a sound logic to engage the market; which involves specific fact-finding from the investment community (through e.g. structured surveys); and – together with the technical work packages (WP3, & 2/4) – to engage industry and investors to stimulate discussion that will lead where possible to demand aggregation and scale action (potentially scale procurements) in the market. The latter being in collaboration with WP5 (Replication) and the cities. Progress in executing to this logic is thus highly interdependent with progress and plans from other parts of the Sharing Cities programme.

Engaging a variety of different investor types will prove instrumental in developing innovative business models. The timing of engagement must match development plans for the various measures to be most effective. Initial engagement with investors (via structured survey) indicates clear intrigue in further discussions to develop and test innovative business models. It also points to some important factors that will make investment more attractive.

We have engaged Industry, in partnership with the Smart Cities Council, and intend further more specific topic-based workshops to help shape and steer thinking around business models and financing. This will continue throughout 2017. Meanwhile readying the demand side, both within Sharing Cities and with potential scale up cities, is a vital step to achieving scale and agreeing common solutions.

## 5 ANNEX

### 5.1 SUMMARY OF THE 10 SHARING CITIES MEASURES

Table 1 Sharing Cities Measures

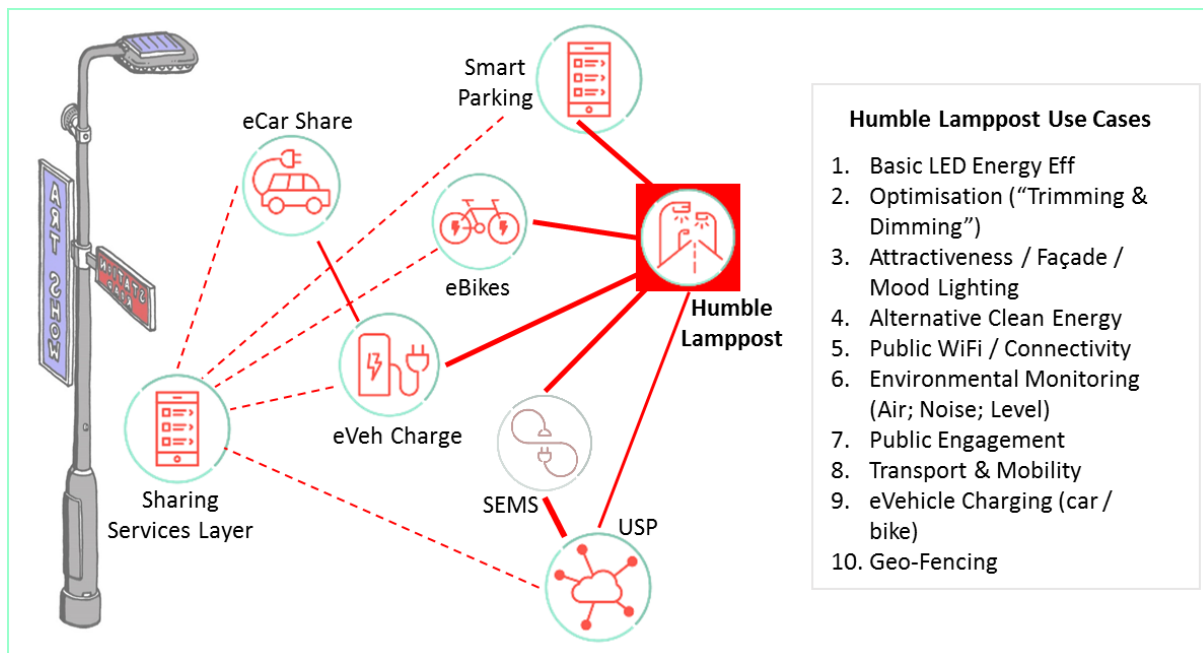
Measure		Description <small>(NB These descriptions are used consistently throughout Sharing Cities materials)</small>
1	Sharing Services	
2	Building Retrofit	Apply deep-retrofit measures to public and private residential properties affecting 15,000 citizens across the six cities and integrating the properties with low carbon energy sources (solar PV, water source heat pump) and electric vehicle charging, all wrapped together by a digital first digitally driven sustainable energy management systems wrapping it all together.
3	SEMS	Design and implement a 'Sustainable Energy Management System' (SEMS) to integrate and optimise energy from all sources in districts (and interface with city-wide system); including demand response measures.
eMobility Solutions		Provide the framework and technological conditions for the implementation of shared e-Mobility solutions, allowing the delivery of new and efficient services to citizens and to cities; including:
4	eCar Share	EV car sharing – building on and learning from Milan's 10yrs and London's 20yrs of car sharing experience applying different business models (public/private) and shift to EV car clubs in recent years;
5	eBikes	eBikes as part of the sustainable and integrate mobility-as-a-service offer in the cities, building on and integrating (Milan will be the first city in Italy to do this) with very substantial conventional bike share schemes (i.e. 11,500 public hire bikes in London);
6	eVeh Charge	EV charging stations maintained by an interoperable network (i.e., mobi.me already successfully implemented across Portugal, including significantly in Lisbon), with 100 new smart charge points as part of this project
7	Smart Parking	smart parking to incentivize use of eMobility and eMobility services, reduce search time, optimise limited parking space, reduce road km and emissions;
8	eLogistics	eLogistics to streamline the growing volume of light freight caused by increasing on-line-delivered customer/business purchasers;
9	3.4 Humble Lamppost	Smart lamppost presents a very visible "quick win" for smart cities; and the well-proven lighting and maintenance savings offer an attractive bankable initiative. The smart approach is to consider how to develop business models and funding mechanisms that incentivise implementation of 'smart' measures (WiFi; air quality, parking, eV charging, etc) alongside lighting exploiting what is typically a considerable network of existing assets – in other words to multi-purpose the 'humble' lamppost.
10	4 USP (Urban Sharing Platform)	An Urban Sharing Platform (USP) is a logical collection of technical components, capabilities and processes which provides functions and services that enable a Smart City. Its purpose is to aggregate data and control functions from a wide variety of devices and sensors, store, process, correlate the data and present information to the city and citizens which enables better use of the city resources and may provide support for innovative service verticals.

## 5.2 HUMBLE LAMPPOST BUSINESS MODEL EXAMPLE

The lamppost provides light, and can also serve as an infrastructure for multiple sensors and services. As such it is interdependent with several other measures, as shown in the figure below.

Business models will be dependent on a number of factors:

- The maturity and level of integration between the city departments, and the extent to which they collaborate
- Ownership of the lamppost, which tends to vary across geographies between city, utility, ESCO, investment SPV, or service provider
- The types of use cases that are intended. Energy-only (i.e. LED) has a strong business case and a relatively short ROI. At the other end of the technical spectrum, revenue earning use case like data sales to retailers, eSignage, and Wi-Fi also can have strong payback. Many of the other use cases have limited (or hard to evidence) financial business cases (e.g. safety, health) so are hard to address from a financial business model standpoint
- The extent to which there may be bundling with other smart measures where there are shared data opportunities and other synergies



**Figure 8 Humble Lamppost Interdependencies**

Reference is made to deliverable 3.11 "Smart Lamppost Multi-Sensor Demonstrators" (interim report, Dec 2016) which covers the topic at some depth.

Reference is made to the 7.1 Measure Profiling which captures financial and business model details for the 10 measures against a standard template.