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(Smart City Plan for each city)

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1. INTRODUCTION

The aim of this deliverable is to collect information about the three Smart City Plans developed in WP5, focussing on the innovative procedure undertaken: after the experimentation in the district areas, the STEEP partner cities have developed comprehensive plans with smart targets following the STEEP methodology.

This activity provided feedbacks for the previous deliverables (D4.2 guidelines and D4.3 KPIs) based on concrete experience. The plans illustrated in this document have been evaluated by the STEEP advisory board and adopted by the cities.

The document reports on the procedure as well as the content of the plans, highlighting the overall achievement of STEEP project.

2. THE METHODOLOGY AND THE PROCESS

The methodology, after being tested in the three pilot districts and analysed in WP4 to create guidelines for the scale up strategies, has been implemented by the cities towards the very ambitious goal of creating a master plan.

Even though the planning phase in the pilot districts was itself very useful to detect the strengths and weaknesses of the process, a wider implementation has been challenging for the project teams taking into account the contextual variables and border definitions and also because of the short time period available (less than 1 year).

The STEEP methodology views Systems Thinking as the means, or process, by which an agreed transformation can be achieved. The methodology relies heavily on modelling the transformation as a system by groups of stakeholders using Hierarchical Process Models (HPM); the optimal stakeholder selection and efficient management of their contributions are fundamental to the production of a good plan.

The STEEP Collaborative Stakeholder Engagement Platform, which has been recently finalised, has the potential to enable an "online" implementation of the STEEP methodology, increasing both the efficiency and the speed of the process. The lack of this tool during the planning activities has forced the cities to adopt alternative coproduction strategies in order to enhance the exchange and the participation, overcoming "silos" approaches.

The general procedure shown in the figure below has been followed step by step (optional phases included) obtaining three different results due to the different boundary conditions and needs of the three cities.
The key message from the STEEP project is that it is the planning process that worked and that has become important; plans and targets are transitory and specific artefacts of the process. Each city has used the methodology in a different way showing that can be adaptable to different needs.

Another outcome of STEEP project is that the methodology managed to simplify a very complex planning system that otherwise couldn’t have been so effective; the systems thinking approach has been very helpful in the management of working groups with the attendance of various and dishomogeneous stakeholders, allowing a clear visualization of complex problems.

2.1 Governance

Smart City planning is a process that needs to be continuously managed: it’s necessary to set up a proper structure (competent, appropriate and sufficient) to ensure collaboration and coordination of the activities.

The process should not be perceived by the different departments of the local administration as an external issue, but rather it should be integrated into their everyday life: multi-departmental and cross-sectorial involvement is required.

Despite the actual potential for city inter-departmental working, most of the cities still use a “silocado approach, with individual departments having little regard to sharing
costs, infrastructure and data. The result is that they face unnecessary expenses and difficulties by not coordinating their efforts.

Another important issue linked to the coordination of a Smart City’s activities is the **matter of dependences**. Since so many city systems, services and infrastructure are connected in one way or another, becoming smart in one area is often dependent on progress being made in another.

For an effective and successful city planning process, understanding dependencies is more and more important in order to optimise targets and efforts and to avoid bottlenecks or long delays: this was another reason to set up cross-departmental governance from the start of the STEEP Smart City planning processes.

### 2.1.1 San Sebastian

A “Smart Board” to manage the process was set up made of technical and political components. Representatives from different City Council departments have been involved in the board (Dpto. Participación Ciudadana, Dpto. Infraestructuras/Mantenimiento y Servicios Urbanos, Dpto. Movilidad, Dpto. Medio Ambiente, Sostenibilidad, Dpto. Urbanismo, Etxegintza, CIM, Fomento de San Sebastián etc.)

The governance main task was to ensure coherence (consistency with programmes and strategies in place) and coordination in public action.
The Smart Board interfaces were the City Council (owner of the strategy), the private sector (stakeholders) for co-production and collaboration and the citizens for participation and communication.

2.1.2 Bristol

Bristol decided that the council would take lead role but that responsibility for delivery would build upon existing partners/partnerships.

A working group including project partners was created to drive the process. The first activity regarded the definition of a first draft of the transformational statement, the current status of the art of the energy sectors (baseline and flows) and the stakeholder selection.

After the definition of the planning roadmap, partners were engaged in involving stakeholders at different levels; the representatives from BCC were in charge of internal engagement of the different services/departments, while CSE continued with engagement through the platform. The whole team managed the external stakeholder involvement through several workshops; new interactions and relationships have been forged among team components as well as local stakeholders who contributed to the plan.

2.1.3 Florence

For the development of the Smart City Plan (SCP), the City Council of Florence, with the collaboration of SPES, has implemented the STEEP methodology, and the first step taken was the set up of the governance structure for the smart planning process. The current configuration of the City of Florence's organizational structure (more than 5000 employees) is the result of a complex redefinition of the different roles and tasks of the directorates. In 2010 the Covenant of Mayors (CoM) working group was created
for the provision of specific competencies with a participatory, holistic outlook. The CoM group has been updated to cover also the SCP issues: 11 departments have been involved and a technical assistance foreseen playing the role of an external coach providing expertise; procedures and responsibilities have been clearly designed and the interactions optimized. The Working Group is dynamic and open to any suggestions regarding any internal and/or external components that demonstrate or develop a stake in the plan's implementation and the achievement of the proposed objectives.

The model chosen foresees the mentioned internal group playing the role of the owner of the planning procedure and interacting with several “habitat teams” formed by specific stakeholders and citizens. Every member of the internal steering group is in charge of a thematic: the internal referents coordinate the subgroups and refer to the steering team about the results. The coordination activities as well as the “sense checking” is carried out inside the internal group.

At the beginning, as suggested in the guidelines, a ‘model 0’ has been developed inside the Smart City working group to start the discussion with the stakeholders.

The steering group developed a preliminary model on the platform based upon the D4.1 suggested structure and the SEAP already adopted.
The transformational statement has been primarily chosen on the basis of the actual policies targets: “FOR A SMART, INCLUSIVE, INNOVATIVE AND SUSTAINABLE FLORENCE AT 2030”. It is a general purpose that has been modified/detailed by the stakeholders during the first planning sessions.

Since its formation, the Group held regular meetings to monitor and verify the plan’s central components, organized the analyses, followed up the operative phases involved in drafting the plan, participated actively and promoted the presentation meetings programmed in the communications and information plan.

The head of the group is the General Director who is directly linked to the Mayor and Deputy Mayors Board who were strongly committed with the Smart City Plan process and the Steep methodology embodiment into the administration.

2.2 Stakeholders involvement

The Smart City Plans have been produced using a co-production approach, where all the stakeholders in a city’s energy value chain worked together to create a plan that could work for them all and achieve their City’s ambitious targets and objectives.

The project has clearly learned that a key requirement for the successful application of the STEEP methodology is that setting transformational goals and engaging
stakeholders are entirely interdependent activities. It is not possible to define transformational goals independently from identifying who would be the Actors (A) responsible for achieving them, and the Owners (O) accountable for the actions.

In most cases the following big groups of stakeholders have been considered:

- Local Administration: departments and/or company related to the city council (mobility, housing, infrastructure, urbanism, maintenance, water services, energy or environmental agencies,...)

- Regional/Neighbouring Administrations.

- Companies related to energy fields (Electricity and Gas, power generation, fuels/energy distribution and/or commercialization including Energy Services Companies ESCOs, designers and builders, installers,...).

- ICT Operators

- Environmental Organizations

- Academic & Research Organizations

- Financial Organizations

- End-user Organizations and Citizens’ Organizations. Here, even individuals (citizens) could participate if interested.

The number of meetings depended on the Smart City Plan boundaries and the number of working groups that needed to be established.

At least three events (workshops) per working group have been developed with these core objectives:

- 1\textsuperscript{st} Workshop: Diagnostic of situation and identifying main goals.
  - SWOT Analysis to find out the state of the current system.
  - Defining Goals to understand which should be the targets.

- 2\textsuperscript{nd} Workshop: Elaboration of intermediate goals and defining key processes
  - Producing models for each goal and using HPM to find out the critical processes according to their performance (PeriMeta Software)

- 3\textsuperscript{rd} Workshop: Selection of projects to achieve City’s goals
  - Defining projects and finding solutions to solve problems.
  - Prioritizing feasible actions.
2.2.1 San Sebastian

The SCP development has been based in the STEEP methodology with the important participation of municipal technicians and stakeholders. In total, 186 people from 96 different companies, universities, R&D centers, other government bodies and citizens participated in the process.

The relational processes among the different actors are shown in the picture below.

San Sebastian has involved a large number of stakeholders across three working themes to build a Smart City Plan: Energy & Sustainability, Mobility, and "Solutions" (applied ITC to city needs).
The administration had gone through a diagnostic process to identify the goals that the planning group should be working with. This first session allowed the city to have a shared SWOT analysis in each field. With this information, and together with the different City Council departments, the Spanish partners chose the areas to work with for the City's Smart Plan. San Sebastian set up 3 main working groups (Energy & Sustainability, Solutions, Mobility) and over 20 sub-groups to develop interventions using the UNIBRISTOL methodology.

The City, supported by Fomento, had clear leadership in the process, which resulted in a comprehensive plan covering a wide range of aspects due to the complexity of the stakeholders selected for the sample.

2.2.2 Bristol

A series of four strategic meetings was held to determine the approach to the second phase of stakeholder engagement:

- a meeting with Project partners to define high-level transformational statement for modelling workshops.
- 2 meetings to discuss ‘energy flow’ for Bristol
- Final meeting to establish stakeholders and engagement approach

The transformational statement belongs to the district experience scaled up:

"A shared plan for how to use and source power and heat in the city to meet the needs of people and businesses while improving the city as a place to live and work and protecting the environment"

With the support of project partners (UoB, CSE, ARUP), stakeholders were ‘mapped’ against each stage in the flow. The stakeholder list therefore covered all ‘actors’ and ‘owners’ in the energy value chain.
The outline of the process is shown in the picture below, starting from a workshop with wide participation, the stakeholders’ involvement followed up through different channels (internal, external, open platform) and brought about the definition of the targets and the timescales.
2.2.3 Florence

The internal group played a lead role of the planning procedure and interacted with "habitat teams" formed by specific stakeholders and citizens. Their interaction, involvement and engagement with stakeholders as part of the governance model has been very important.

A stakeholder analysis was carried out with a list of the contacts to be involved. In addition to the inclusion of the main actors in energy–ICT–mobility sectors, the modular approach adopted allowed the working group to contact many other actors to check their interest and to get them involved in the process.

ASSOCIATIONS (commerce, industry, tourism–hotels, building owners, builders, designers, installers) were the first stakeholders contacted.

Also ENERGY PROVIDERS have been involved and PUBLIC COMPANIES providing services and data (water and waste management, transport, etc.). Due to the important transformation ongoing regarding the metropolitan area, the neighboring municipalities involvement has been promoted. Moreover, the administration has opened a dialog with different subjects in the worlds of business, scientific research and so on.

The 'model 0' developed on the platform by the Working Group has been provided to all the stakeholders prior to opening the debate without selecting the sectors of expertise. Feedback has been collected and further thematic meetings organised on the basis of the interest shown.

From the perspective of active participation, which describes how the current administration adopts all of its Plans, the communication plan was created on the basis of two primary tools (non–stop institutional communication and direct participation). Citizens have been reached through social media activities and by interacting with associations and representatives.

A final public debate, the Maratona dell’Ascolto, has been organised on 15th of July 2015 to close the development phase. The event was open to anyone interested in providing feedback or receiving information and more than 130 people attended.

After the maratona, comments and contributions have been collected and a final version of the plan has been developed and will be submitted for formal adoption in the late September.
Maratona dell’ascolto about Smart City Planning in Florence
2.3 The strategy and the actions

The vision of a SMART city, that has to be defined at local level, is articulated into several subprocesses, commonly recurring in the pilot plans, decomposed in possible actions with a high replicability level.

The Plan’s overall objectives are:

1. Achieve Smart growth: it’s not only savings and cuts that are of interest, but the target is also sustainable growth
2. Do more with less: save money, energy, resources and possibly time
3. Win support for change: a change needs a lot of effort and creates opposition; Stakeholders and citizens should become responsible for progress not representing an obstacle but the engine in the changing process through their consensus and support

The strategic vision offers a guiding principle for city policies. It also provides an overall scope that each plan – or single measure in the short, mid or long term – sets out to achieve. The partner cities have been active in sustainable planning over many years, each of them approaching the project with a defined vision for their future. Although all are linked to the Covenant of Mayors initiative, the goals are different in terms of targets, implementation and timescales.

Even with different targets and boundaries, all the three plans are based on the following common elements:

- A baseline assessing the current state of the system
- A driving vision
- A strategy for the main components
- Milestones and measures to become aware of the progresses

2.3.1 San Sebastian

The Smart City Plan of San Sebastian tried to answer to two main goals:
- A main strategic line with shared objectives for integrated planning.
- Coherence (consistency) and coordination in the Public Action

The City has been implementing many strategies in what can be defined as a Smart City Strategy. Different departments at the City Council have been implementing
interventions and projects in this field. The problem is how to make them cooperate and who should play a coordination role to find synergies and take advantage of different implementations. This is difficult in all Councils and the lack of specific governance structures that deal with this issue makes it even more difficult to manage.

In the case of San Sebastian there are several Plans ongoing in energy (SEAP), sustainability (Donostia Hiri Berdea 2030), mobility (Sustainable Mobility Plan 2008–2024), etc.

Instead of trying to produce a whole new strategy for the city, or trying to integrate all strategies in a single Plan, the SCP was understood as a tool that could help each ongoing strategy to achieve their goals with a coordinated action perspective and taking into account how these strategies could be interconnected.

The Plan does not aggregate quantitative goals (these were already set up by each department).

The Plan presents four main parts:
- Strategy for the Smart City concept in the city (provides a long term vision).
- Governance model, suggesting the creation of structures for better interdepartmental coordination.
- An action plan for the period 2016–2020
- And, an evaluation & monitoring system.

The areas of intervention are:
1. Sustainability of services
2. Energy (production and consumption)
3. Mobility
4. ICT
5. Government
6. Living

The main actions related to the mentioned six sectors are summarized in the picture below.

An important issue that has been included in the plan is 'social innovation' for Smart Cities based on: innovative solutions, new forms of organization, new interactions and how to tackle social issues in cities.
2.3.2 Bristol

The general vision of BCC is to become a global leader in sustainable urban living by local empowerment, sustainable leadership and international visibility. In this sense the city has already set up many goals related to climate change towards this vision: lowest CO2 emissions of core cities, reduction of 40% by 2020, Climate and Energy Security Framework 2015–2020, etc.

There are many challenges to face like the reduction of 40% in funds, need for 85,000 new homes by 2037, increasing demand for adult social care and so on, but, at the same time, Bristol is a city of opportunities being the only core city outside of London with a growing economy, a city with a hi–tech cluster comparable with Silicon Valley, electrotransportation, Bristol is Open or the European Green Capital 2015.

Regarding the STEEP project and taking into account the general vision, BCC has focused its action in the development of a Smart Energy Plan that will be linked with the general Climate and Energy Security Framework that, as Green Capital 2015, the city is developing. This will allow the presentation of the methodology at the COP21 in Paris in December 2015.

The dynamic process has been illustrated in the diagram below including all the main phases implemented to achieve the overall core target.
Both the scope of the energy system and the scope for intervention have been established to determine the energy–mix. Different type of fuels by typology of use (sectors) have been set up and data has been gathered. The Plan articulates a vision beyond the boundaries of the city, a metropolitan conception that resulted as a common need and therefore a common feature with the other two cities’ plans.

Demand and supply sides have been studied and technologies suitable for each use have been evaluated.

The Plan developed within Steep project is a fundamental part of the Bristol City Council climate and energy security framework; starting from a deep analysis of the state of the existing system, it designs a roadmap to achieve the reduction targets in terms of GHG savings including about 30 initiatives attributable to 4 main sectors regarding infrastructures, homes, transport and energy. ICT and innovation are transversal issues embedded in all the measures selected.
The energy system interventions as well as the payback has been studied using the "mini Stern" methodology connected with the climate strategy for COP21. The term came from the ‘Stern Review on the Economics of Climate Change” which was a 700 page report written for the UK Government in 2006. So the 'mini–Stern’ uses the same basic methodology but scaled down to city level.

The "Mini–Stern" analysis applies carbon abatement cost modelling to investigate the optimum ordering/prioritisation of a set of potential interventions.

In summary, the process comprises the following steps:

1. Create a baseline scenario which projects emissions under "business as usual" by sector, over the relevant time period

2. Compile a list of measures to consider in households, non–domestic buildings, industry and transport and their:
   - Costs (capital and running) and benefits (energy demand and carbon emissions reductions)
   - Realistic and maximum technical scopes for deployment in Bristol

3. Use carbon abatement cost modelling to identify pathways towards different levels of decarbonisation, taking into account synergies and mutual exclusions between measures:
   - The cost effective level – deploying all measures that would more than pay for themselves over their lifetime
   - The cost neutral level – deploying all measures that could be afforded if the benefits from the cost effective measures were captured and reinvested in further low carbon options
   - The realistic technical potential level – deploying all of the measures that could technically be adopted

4. Estimate the wider economic implications
   - Job creation
   - Economic growth

5. Evaluate how these economic impacts may feedback and influence Bristol's carbon footprint

The options have been analysed in detail, prioritized and reported in the final document.
2.3.3 Florence

The Plan had been aligned correctly with other plans in the city including and widening their scope: interactions with other sectors, different boundaries (metropolitan) and timelines (2030 and 2050) were making it complementary to the existing planning tools and the participatory process gave it (and to the other linked plans) a wider consensus and acceptance.

An important feature of the Florence SCP is the scope in terms of geographic area. Given the importance of the city in the region and the new regulations towards sharing services and becoming metropolitan areas, the SCP of Florence also involves nearby municipalities. There are fields, like mobility and ICT, which must have a metropolitan perspective: the new vision consists of federated models and infrastructures.

The starting vision of the Plan referred to a Smart, Inclusive, Innovative and Sustainable Florence in 2030. This vision summarised all the efforts and policies after adopting SEAP 2020 and preparing COP21-2030. During stakeholder meetings the transformational goal changed to “PLANNING FOR A BETTER LIFE” which implicates a wider scope and put the stress on planning activity as the enabler to achieve a higher quality of life in the city.

In the first part of the plan both the vision and goals are explained.

In the second part of the document, the sectors involved are detailed with actions, case studies and KPIs (baseline, 2030 and 2050 horizon).

The sectors are:

- Integrated planning,
- Public Administration Efficiency,
- Energy Efficiency,
- ICT,
- Mobility,
- Prosperity & Liveability
- and Communication.

For each sector a detailed set of actions has been developed: the measures included in the plan are very heterogeneous with different impacts and timeframes. The plan presents the right mix of material and immaterial actions, with a wide and complex set of measures that have been weighted to set up the overall targets at mid and long term.
• PT optimisation
  – Tramlines completion
  – Intermodality (with the support of infomobility and exchange parkings)
  – Tariffs
• Soft mobility promotion
  – Bike lines and pedestrian paths: connection and extension
• Traffic manager development
  – Collect traffic data to analyse flows
  – Provide infomobility services
  – Manage congestions/emergencies (resilience)
  – Control LTZ and pedestrian areas (eco road pricing)
  – Plan operative optimisation of mobility sector
• Electric mobility promotion
  – Electric sharing service
  – Electric logistics (Dorothy)
  – Electric scooters (Electra)
  – Electric busses (ATAF)
  – New tramlines to connect the neighbouring municipalities

• Access to the city
  • - airport master plan
  • - rail network

CASE STUDIES: tramlines, sharing (including electric mobility), traffic supervisor

SCP Mobility sector summary in Florence

This last part of the document gathered the calculation of the baseline for year 2014 and the forecast for 2030 and 2050. The KPI work supported the definition of the actions giving the opportunity to set proper goals according to actual forecasts.
To make people feel comfortable with the feasibility of the plan and to inspire stakeholders, a brief description of lighthouse case studies has been provided for each sector.

Specific importance was given to the communication plan as a way to maintain the engagement of stakeholders and to consolidate long–life planning for the Smart City Working Group.
2.4 The adoption

AB & official adoption

A draft of the Plan (in each city language –extended version–) and the Executive Summaries of the Plans of the other two cities (in English) were sent in advance to the AB members so that they could review them.

Experts selected by each city reviewed the SCP of their city and the Executive Summaries of the other two cities in order to give their recommendations, suggestions and feedback.

In Bristol an early draft, published on the STEEP stakeholder engagement platform, has been approved by the Senior Leadership team of the Council. After the last dissemination event (11 September 2015) the plan is out for public consultation for adoption by Cabinet later this year. The plan will be presented at COP21 as part of the BCC strategy in ICLEI Local Government Pavilion in December 2015.

San Sebastian, even if it finalised the plan earlier than the other two cities, incurred in elections in the spring 2015: the new administration is just catching up with different ongoing plans in the city and it has requested some time to evaluate them before any approval. Therefore, the adoption of the plan may be delayed pending on its final evaluation. However, the SCP for San Sebastián was presented to the stakeholders in a public event taking place in the city on September 23, 2015 with the participation of more than 125 European experts and local agents.

In Florence the plan was presented at local level on 15th–16th September 2015 during a conference with the attendance of the DG Energy together with San Sebastian and officially adopted by the Giunta on the 29th of September 2015. In November 2015 the SCP will also be presented at the Smart City Expo in Barcelona and in December at the COP21 in Paris.
3. MONITORING

The monitoring phase should have two levels of implementation: a monitoring procedure for each measure will be set up with time scales and key performance indicators (basis defined in WP4), while the overall vision objectives should be controlled by the steering committee.

The master planning methodology should be able to adapt itself to the changing boundary conditions ensuring a continuous improvement.

For this purpose, a set of KPIs has been developed in WP5 (D5.2) and the reference baselines have been calculated for all the three cities.

The monitoring process is also necessary to ensure that the Smart City Plans of the cities are "living documents" and open for improvement. In the case of a "dynamic document" the indicators list cannot be static and has to be flexible to adapt the components to new technologies and new actions.

A strategic plan with medium–long term targets needs a dashboard of proper KPIs to monitor the impact of its policies. The list, which is now complete, could be improved in the next future depending on new needs and technologies. For this reason is very important for the three STEEP pilot cities to update the calculations and the set itself, trying in the meantime to involve other cities at national level or European networks of municipalities.
4. SIMILARITIES, DIFFERENCES AND LESSONS LEARNT

Even if the resulting documents are slightly different, the common methodology adopted by the three cities has driven to several similar features which recurred in the different local processes.

A first consideration regards the governance of the process. The need of a defined governance structure with interdepartmental connections was raised in each city and it emerged to be the key element for an effective planning activity. As reported in the dedicated paragraph, a proper internal flow chart is the right tool for “breaking the silos” and making Smart concepts more real and affordable in terms of time, effort and resources needed. The methodology adopted for STEEP in most of the situations is now embedded in the three cities’ procedures and can be implemented for different issues.

The same concept of coordinating the activities for the exploitation of possible synergies is underlying the need for alignment of goals with the different plans.

Every city today has got several different strategies and regulations in place, which could be more and more fruitful if they had previously been integrated and coordinated. This issue is not limited to cities and it can be easily extended to higher levels of territorial government.

Linked to that issue, another common aspect of the three plans is the metropolitan conception that has been adopted by all the three STEEP partner municipalities. The plans developed are not limited to Smart Cities but are designed for Smart Territories, thus widening the vision to the metropolitan areas or the neighbourhoods.

It is due to the search for synergies and to the fact that many problematic issues (mobility, services etc.) are managed at bigger scale: if the other municipalities interested are not sharing the same vision they could affect its concretisation while a wider consensus could be able to enhance the achievement of the targets. This is why it’s worth engaging a wider surrounding territory in the decision making process: a smart city can’t be an isolated bubble, and should aim to spread best practices and innovation as far as possible.

The large ICT presence in the planning is not a surprise: the concept of smart city is always linked to the use of innovative communication technologies; however it’s interesting to notice that the ICT role is different than expected: it is not the final purpose but it is considered as a powerful enabler for other objectives. For example the development of an ICT platform is a common issue for Smart Cities but the STEEP Smart City Plans haven’t got the platform itself as a target, but all the possible services related to the availability of such a platform. ICT is regarded as an enabling infrastructure for delivering further measures in other fields and not a mere goal itself.
The three plans developed with the systems thinking methodology, even if involving different themes and landscapes, include a **wide set of actions** in different fields and they are not only limited to few big interventions; moreover they all present a **good mix of material and immaterial measures** balanced and integrated together.

Another common denominator is the “**accessibility**” as a recurrent factor: the concept is related to open data, but also to services, transport and mobility, to the affordability of energy, etc.

A Smart City should make things available to those who need it, because this efficiency is not an end in itself, rather it’s aimed at improving the **quality of life**, from this point of view the attention paid to **customer (citizen or city user) satisfaction** is becoming fundamental in Steep Smart City strategies.

**Similarities**

1. Governance of the process
2. the need for alignment of goals with the different Plans (INTEGRATION OF PLANS AND TARGETS)
3. Metropolitan conception (SMART GHIES TERRITORIES)
4. ICT as enabling infrastructure for further measures in other fields not a mere goal itself
5. A wide set of actions in the different fields not only few “big interventions”
6. right mix of material and immaterial actions
7. Accessibility is a recurrent factor (of data, of services, of transport, of energy,…)
8. Attention payed to customer satisfaction and quality of life

**A summary of the similarities among the STEEP SCPs**

In conclusion, a Smart City Plan should be:

- coordinated (integrating all different targets) and holistic, exploiting synergies and interdependencies
- big and ambitious in targets but with small and measurable milestones
- open to any good practices and ideas.

However, as previously reported, the three Smart City Plans have been developed following a common methodology but, due to the different conditions and needs of the three municipalities, the result is slightly different in terms of actions and timeline.
It should be highlighted that the structure of the plans is somewhat similar at high level (technical, regulatory, social aspects of the efficiency, mobility and ICT sectors), however going into detail in the model lower levels the actions implemented become more and more tailored to the local situation:

- Bristol focussed on energy and emission issues due to its commitment to COP21
- San Sebastian focussed on a very detailed and operative plan for the first 4 year widening and detailing its current tools but they also produced a longer term strategy with wide and complex thematics (social)
- Florence, starting from a very detailed SEAP, developed a more strategic plan, wide in terms of the sectors involved and the area. The metropolitan city is one of the main issues actually and the plan represented the opportunity for making a good start for common planning activities. With this scope, all the possible sectors and actions have been investigated and included to build up a master plan which could affect every following regulation tool on the territory.

Each city has used the methodology in a different way showing that it can be flexible and adaptable to different needs. The replicability of the process has been proven by the different environments where it has been implemented.

Evaluating the overall results, the key message from the STEEP project is that *it is the planning process that worked and that has become important* while plans and targets are transitory and specific artefacts of the process.

In any case the methodology managed to simplify a very complex planning system enabling more and more people to be involved in decision-making processes, which has resulted in the production of more effective tools.

Based on a coproduced approach, the implementation of the process took more time than usual but it resulted in a wide consensus, maybe the experience together with other available tools such as the engagement platform will allow faster implementation next time, whilst still maintaining the same positive features.

The approach used by the three cities is based on a common methodology which has been proved valid and effective to address and solve complex problems. In the coming years, thanks to the positive experience of STEEP, the methodology will be used in the implementation phase of the SCP and in the revising and updating processes that will be required in order to adapt the dynamic SCP to the new needs of the city and to ensure the continuous improvement in the quality of life in cities.

STEEP has made available a background of knowledge that can be extended to wider areas (metropolitan) and to other cities that are approaching smart city thematics.
5. ANNEXES

5.1 Links to the Smart City Plans & Presentations

http://www.smartsteep.eu/smart-city-plans/

http://tools.smartsteep.eu/wiki/STEEP_Platform

Florence:
http://www.comune.firenze.it/export/sites/retecivica/comune_firenze/piani_progetti/patto_sindaci.htm

San Sebastian?

Bristol:
http://tools.smartsteep.eu/wiki/STEEP_Platform
5.2 Executive summaries

5.2.1 San Sebastian
Executive Summary of Smart City Strategy in Donostia/San Sebastián

Resumen Ejecutivo del Plan Smart City de Donostia/San Sebastian

May, 2015
Executive Summary

This document presents the Smart City Donostia 2016-2020 Strategy and Action Plan, which meets two main objectives: The First one to establish a strategic line with shared objectives, and the Second one to give coherence and coordination to public actuation, capitalizing all actions carried out by the different municipal departments and public agencies.

The starting point for the strategy and action plan is the work developed in the last few years around the concept of Smart City in San Sebastian. The document will show the city’s wide experience in specific areas developed by different Departments and Municipal agencies, which have warranted several national and international recognitions to the city, i.e., San Sebastian has been for many years among the top five smartest Spanish cities in the IDC index, it obtained the sustainable transport Civitas award in 2012, the "Innovative city of the future" in 2014, the City of Science and Innovation award in 2010, and it will be European Capital of Culture 2016. Therefore, the process is not starting from scratch as there is a significant prior experience.

The document will also draw on European policies that set the main lines of work through grant funding, which represents an opportunity for the city itself. Both in terms of Smart Cities and smart specialization, Europe is increasingly encouraging cities to lead the transformation process in order to achieve a more sustainable society and with a better quality of life.

Within this framework, we have defined the priority areas of work based on the main European aims of work for a Smart City:

1.- Use of other resources
   - Improvement of the water distribution network
   - Water Management. Sustainable drainage and reduction of wastewater generation
   - Reduction of water consumption
   - Optimization of waste management
   - Adaptation to Climate change
2.- **Energy**
- Polygeneration and distributed generation
- Participation in the generation, distribution and commercialization of energy
- Development of close to zero energy consumption districts
- Modeling and efficiency in municipal facilities

3.- **Sustainable Urban Mobility**
- Transport electrification
- Smart mobility
- Intelligent transportation infrastructure

4.- **Integrating Technologies (Applied ICTs)**
- Interoperability platforms
- ICT Infrastructure
- Development of Smart and connected cities and supply of services and content
- Open Data platform

5.- **Smart and Open Government**
- Open Government (citizens’ empowerment)
- Creativity and Social Innovation
- Smart Government
- Smart Specialization Strategies

6.- **Smart Living**
- Healthy environment & Active ageing
- Tourism
- Trade
- Culture

These are the principal areas of work in a 2016-2030 time horizon, which are complementary with other working projects and aims of the city. It is expected that this complementarity will enhance the interdepartmental coordination and exploitation of synergies that may result from this process.

Therefore, this document proposes a specific model of interdepartmental coordination that allows, in the first place, all the different Departments and Municipal Corporations
to share their knowledge, avoiding conflict of interests, and making it easier to obtain EU, statewide or regional grants, and secondly, to consolidate the leadership of the City Council in the interaction of social partners with the private sector and to establish a recognizable “Smart City Donostia” brand in Europe.

New structures that may complicate the current operating procedures of the City Council have not been considered. This proposal is based on previous work, with suggested improvements where they could lead to a greater effort of coordination. It also takes advantage of the current effort developed together with the citizenship, as, in the end, it is to them whom the model must ensure an effective response. This is, therefore, a model that is fed by the citizens' proposals, and which is developed based on the advisory councils where the municipal, institutional, business, social and political presence of the city is combined. The model foresees a specific unit for evaluating the provided proposals and also to propose new challenges with the aim of forming working groups to develop new projects and strategies.

The document has been drafted by Fomento de San Sebastián with the collaboration of Presidencia as coordinator of the municipal departments. In November 2013 questionnaires were sent to the City Departments and municipal agencies in order to capture both the projects executed or under development in the Smart Project area. They were also asked to put forward the goals and vision of the city from their own perspective. The information gathered has provided a basis to define the main lines outlined in this document.

Moreover, we have established three working groups that have defined, in different sessions, the major projects included in this document. Altogether, 185 people from different public and private entities have participated as set out in Annex III.

We seize this opportunity to acknowledge the contribution and support of Tecnalia in preparing and drafting this document as the backbone of the Smart Plan to be developed under the STEEP project.
Resumen ejecutivo

El presente documento recoge la estrategia Smart y un Plan de Acción Donostia Smart City 2016-2020 que cumple con dos objetivos principales: Por un lado establecer una línea estratégica con objetivos compartidos; Y por otro dar coherencia y coordinación a la actuación pública, capitalizando todas las acciones llevadas a cabo desde diferentes departamentos municipales y sociedades públicas del Ayuntamiento.

Para lograr dar respuesta a estos dos objetivos el documento plantea tomar como referencia el trabajo que se viene realizando desde hace tiempo en el ámbito Smart en la ciudad. El documento presentará una extensa experiencia en ámbitos concretos llevados a cabo desde diferentes Departamentos y Empresas Municipales, motivo por el cual la ciudad ha sido reconocida a nivel estatal e internacional en varias ocasiones (top 5 de las ciudades españolas más inteligentes en el índice del IDC durante varios años, premio Civitas al transporte sostenible en 2012, premio “Innovative city of the future” 2014, el reconocimiento de Ciudad de la Ciencia y la Innovación en 2010 o el galardón de Capital Europea de la Cultura 2016 entre otras). Por tanto no se parte de cero sino que existe una experiencia previa importante.

El segundo ámbito de referencia serán las políticas europeas que marcan las principales líneas de trabajo a través de la financiación que van a conceder y que representan una oportunidad para la propia ciudad. Tanto en el ámbito de las ciudades inteligentes como en el de la especialización inteligente, Europa busca, cada vez más, que las ciudades lideren el proceso de transformación para lograr una sociedad más sostenible y con una mejor calidad de vida.

A partir de este marco se han definido los ámbitos de trabajo prioritarios a partir de los grandes ejes de trabajo a nivel europeo para una Smart City:

1.- **Eje de Aprovechamiento de otros recursos**
   - Mejora de la red de distribución de agua
   - Gestión de Aguas pluviales. Drenaje sostenible y reducción de la generación de aguas residuales.
   - Reducción del consumo de agua
   - Optimizar la gestión de residuos
- Adaptación al Cambio Climático

2.- **Eje de Energía**
- Poligeneración y generación distribuida
- Participación en la generación, distribución y comercialización de la energía
- El desarrollo de distritos de consumo energético casi nulo
- Ejemplaridad y eficiencia en instalaciones municipales.

3.- **Eje de Movilidad Urbana Sostenible**
- Electrificación del transporte
- Movilidad inteligente
- Infraestructuras en transporte inteligente

4.- **Eje de Tecnologías integradoras (TICs aplicadas)**
- Plataformas de interoperabilidad
- Infraestructura de TICs
- Smartización y conectividad de la ciudad, y provisión de servicios y contenidos
- Plataforma de Open Data

5.- **Eje de Smart y Open Government**
- Open Government (Gobierno abierto para el empoderamiento de los ciudadanos)
- Creatividad e Innovación Social
- Gobierno inteligente (Smart Government)
- Estrategias de especialización inteligentes (Smart Specialization Strategies)

6.- **Eje de Smart Living**
- Entorno saludable y Envejecimiento Activo
- Turismo
- Comercio
- Cultura

Estos son los ejes y acciones que se han considerado prioritarios y con los que en un horizonte temporal 2016-2030 se puede empezar a trabajar. No obstante no son excluyentes y sí complementarios a otros proyectos y ejes de trabajo de la ciudad. Pero ello requerirá de un mayor esfuerzo de coordinación interdepartamental y del aprovechamiento de las sinergias que se puedan derivar de este proceso.
Por ello el documento además, y de forma específica, plantea un modelo para la coordinación interdepartamental de forma que las acciones acometidas desde los diferentes Departamentos y Sociedades Municipales tengan un nexo de operación que ayude a compartir el conocimiento que se genere, que integre acciones evitando la colisión de intereses, que facilite la obtención de subvenciones (de Europa, de nivel estatal o de nivel Autonómico), que consolide el liderazgo del Ayuntamiento en la interacción con los agentes sociales y el sector privado y que consolide una marca Donostia Smart City reconocible a nivel europeo.

En cualquier caso no se plantea la creación de nuevas estructuras que puedan complicar los actuales esquemas de funcionamiento en el ayuntamiento. El modelo propuesto está directamente basado en el trabajo que ya se viene realizando proponiendo las correcciones necesarias de forma que pueda operar integrado. Además aprovecha el trabajo que se está ejecutando con la ciudadanía porque en definitiva es para quienes se trabaja y para quienes el modelo debe de garantizar respuesta. Es, por tanto, un modelo que se alimenta de las propuestas ciudadanas, que se desarrolla a partir de los consejos asesores en donde se combina la presencia municipal, institucional, empresarial, social y política de la ciudad, y que tendrá una unidad específica para evaluar las propuestas y proponer nuevos retos con el objetivo de conformar grupos de trabajo que puedan elaborar proyectos y estrategia.

El documento ha sido elaborado por Fomento de San Sebastián con la colaboración de Presidencia como coordinador de los departamentos municipales. En noviembre 2013 se remitieron cuestionarios a los Departamentos Municipales y Empresas Municipales al objeto de que pudieran plasmar tanto los proyectos ejecutados o en ejecución del ámbito Smart, y también se les solicitó plantear los objetivos y visión de la ciudad desde la perspectiva de cada departamento. La información recogida y aportada por cada departamento ha servido de base para definir las principales líneas de trabajo que aquí se recogen.

Además, se han establecido tres grupos de trabajo que mediante diferentes sesiones han llegado a definir las acciones/proyectos principales que se recogen en este documento. En total han participado 185 personas de diferentes entidades públicas y privadas tal y como se recoge en el Anexo III.

También reseñar y agradecer la participación y apoyo de Tecnalia en la preparación y elaboración del presente documento como eje vertebrador del Plan Smart a desarrollar en el marco del proyecto STEEP.
5.2.2 Bristol
Bristol Energy Plan - Executive Summary

From SteepWiki

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   1.1 Purpose
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      1.3.1 Existing commitments
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   2 Scope
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      2.2 Energy system interventions
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      2.4 Stakeholders
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      4 Identification of goals
         4.1 Overarching aim
         4.2 Strategic goals
         4.3 Objectives
         4.4 Monitoring of goals and objectives
   5 Action planning

1 Introduction

1.1 Purpose

This document has two purposes:

1. to describe the approach now being taken by Bristol City Council towards energy planning for the city, which has been significantly influenced by participation in the STEEP project, and uses many of the tools and concepts it developed. This includes illustrating the relationship between detailed plans for specific parts of Bristol (such as the Temple Quarter Enterprise Zone), and the plan for the whole city.

2. to specify the scope and content of the new energy plan for Bristol, which is currently being developed using the STEEP approach. This will take the form of a specific set of goals and actions, and will be known publicly as the Bristol Climate Change and Energy Security Framework.

1.2 Structure

The Bristol Energy Plan contains the following sections.

1. Introduction
2. Scope
3. Gathering and analysis of evidence
4. Identification of goals and synthesis of options
5. Action planning, monitoring and evaluation

1.3 Context

1.3.1 Existing commitments

A number of commitments have already been made by Bristol City Council with respect to energy and climate change.

The Climate Change Act commits the UK to reducing emissions by at least 80% on 1990 levels by 2050. This target represents an appropriate UK contribution to global emission reductions consistent with limiting global temperature rise to as little as possible above 2°C. The UK has set a roadmap to achieving this goal, and is the first country to set legally binding carbon budgets requiring a reduction in greenhouse gas emissions of 35% by 2020 and 50% by 2025.

Cities are the source of a significant proportion of overall emissions, and action by local authorities will be critical to the achievement of the UK Government’s climate change targets. We are uniquely placed to provide vision and leadership and through our powers and services to support action by businesses, individuals and communities.

In response to this challenge, Bristol City Council has committed to meeting a number of targets for reducing city and council wide energy use and Carbon Dioxide (CO₂) emissions. In 2009 full council unanimously adopted targets to reduce energy use across the Bristol City area by 30% and CO₂ emissions by 40% by 2020 from a 2005 baseline. This translates to approximately a 3% year on year reduction. A commitment to achieving a longer term target of an 80% reduction in CO₂ emissions by 2050 was agreed through the adoption of the Bristol City Climate Change and Energy Security Framework (CCESF) in 2010.

Bristol City Council has signed a number of international and European commitments to reporting and taking action on climate change in support of these targets, including:

- The Covenant of Mayors
- The Compact of Mayors
- The Carbon Climate Registry
- The Nantes Declaration of Mayors and sub-national Leaders on Climate Change

These commitments require BCC to prepare a baseline emissions inventory, set targets to reduce emissions, prepare an action plan, allocate sufficient resources and develop the necessary administrative structures to meet these targets, and to report regularly and publically on progress made against the targets. BCC’s response to these requirements is achieved the Council’s Climate Change and Energy security Framework (CCESF).

In February 2010, Cabinet adopted the CCESF which incorporated actions aimed at meeting the adopted targets for reducing emissions. Subsequently In March 2012 Cabinet updated that Framework for the period 2012-15. This set out a range of actions to be undertaken by Bristol City Council alongside delivery partners. The actions were spread across eight areas: buildings, sustainable energy supply, planning, green digital economy, transport & travel adaptation & resilience, communities & culture and waste & recycling. For these eight areas the framework set out 19 broad strategic activities under which there are then 65 more specific actions.

The current framework covers a period ending in 2015, many of the actions identified within have been fully or partially implemented, and further action is now necessary to work towards the commitment of reducing emissions by 40% by 2020.

1.3.2 The STEEP project and Smart Energy City Planning

Bristol City Council’s involvement in the STEEP project during 2013-2015 has emphasised the need for the city to look in more detail at the energy planning process, who should be involved and what might constitute a ‘smart’ energy city. STEEP (Systems Thinking for Efficient Energy Planning) is a European project which aims to produce a common city-scale energy masterplanning methodology and subsequent Smart Energy City Plans for the partner cities of Bristol, San Sebastian and Florence. The STEEP methodology adopts a ‘systems thinking’ approach in combination with open-data sourcing to achieve carbon reduction targets and help overcome the barriers to an efficient on-going energy planning process.

[Insert a brief note on the scope of STEEP: energy, ICT and mobility, what is 'smart'?, and how Bristol is interpreting this in the context of the CCESF as the 'Bristol Energy Plan']
The methodology that has developed through STEEP is shaping the energy planning processes that will deliver the Bristol Energy Plan, and the higher level processes within this are illustrated in the process model diagram shown below. The importance of adequate stakeholder engagement is evident in the model and is a crucial factor in maximising the benefits of the systems thinking approach.

2 Scope

The terms "Bristol" and "Energy" need precise definitions. For the purposes of the Bristol Energy Plan, we are considering the contiguous urban area depicted in the map below. For comparison, the administrative boundary of Bristol City Council is also shown. Parts of other administrative areas are being included because optimal interventions in the energy system will not necessarily respect administrative boundaries. However, we recognise that close collaboration with neighbouring authorities will be needed to develop trans-boundary solutions.

2.1 Bristol's Energy System

2.1.1 Geography

Map of the Bristol urban area
2.1.2 Energy flows and scope of emissions

The diagram below shows the energy system as a set of flows from primary energy inputs on the left, to final energy use on the right.

Diagram of the energy system

![Energy System Diagram](image)

Figure XX: The energy system in Bristol

The table below sets out the energy use and emissions scope of the Bristol Energy Plan.
<table>
<thead>
<tr>
<th>Fuel</th>
<th>Sector</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity</td>
<td>Buildings</td>
<td>In scope</td>
</tr>
<tr>
<td>Electricity</td>
<td>Rail</td>
<td>Internal journeys in scope</td>
</tr>
<tr>
<td>Gas</td>
<td>Commercial</td>
<td>In scope</td>
</tr>
<tr>
<td>Gas</td>
<td>Industrial</td>
<td>In scope</td>
</tr>
<tr>
<td>Gas</td>
<td>Residential</td>
<td>In scope</td>
</tr>
<tr>
<td>Gas</td>
<td>Electricity generation</td>
<td>Out of scope (covered by electricity end use)</td>
</tr>
<tr>
<td>Oil</td>
<td>Commercial</td>
<td>In scope</td>
</tr>
<tr>
<td>Oil</td>
<td>Industrial</td>
<td>In scope</td>
</tr>
<tr>
<td>Oil</td>
<td>Residential</td>
<td>In scope</td>
</tr>
<tr>
<td>Oil</td>
<td>Electricity generation</td>
<td>Out of scope (covered by electricity end use)</td>
</tr>
<tr>
<td>Petrol and Diesel</td>
<td>Road transport</td>
<td>In scope</td>
</tr>
<tr>
<td>DERV</td>
<td>Shipping</td>
<td>Out of scope</td>
</tr>
<tr>
<td>Aviation fuel</td>
<td>Aviation</td>
<td>Out of scope</td>
</tr>
<tr>
<td>Solid fuels</td>
<td>Buildings</td>
<td>In scope</td>
</tr>
<tr>
<td>Solid fuels</td>
<td>Industrial processes</td>
<td>In scope</td>
</tr>
</tbody>
</table>

The Bristol Energy Plan is concerned with reducing emissions from the above energy uses taking place within the urban area shown in the map above.

### 2.1.3 Current status of Bristol's Energy System

TODO: expand on the categories below, summarising the detail of the full report

- Demand
- Heat
- Transport
- Supply

### 2.2 Energy system interventions

Consistent with the energy system and geographic scopes defined above, there is a finite set of possible approaches to reducing emissions in the city. These consist of a mixture of potential technical and behavioural changes in the different sectors, some of which will be compatible, and other of which will be mutually exclusive. The differing costs and benefits of various combinations over time will be analysed to identify a number of scenarios for consideration by stakeholders; within this, a core set of "least-regret" options will be identified and prioritised in the action planning stage. The approach being taken to this is set out in Analysis of Evidence, below.

TODO: expand on the categories below, summarising the detail of the full report

- Low carbon and renewable energy
- Low carbon mobility
- Energy Storage
- Smart Grids and Micro-grids
- Data in Smart Cities
- Low carbon buildings
- Governance and decision making
- Showcasing Bristol
- Behaviour change

### 2.3 Scope of measures for Mini-Stern analysis

<table>
<thead>
<tr>
<th>Sector</th>
<th>Number of measures</th>
</tr>
</thead>
</table>

https://bristol.smartsteep.eu/wiki/Bristol_Energy_Plan_-_Executive_Summary
Domestic 42  
Commercial 40  
Industrial 21  
Transport 14  

TODO: summarise list of interventions and link to relevant pages (STEEP Wiki and Mini Stern details).

2.4 Stakeholders

Using this intersection of geography and the energy system, we have identified a set of stakeholders who are likely to be have an interest in different possible interventions on the energy system. This list (https://bristol.smartsteep.eu/wiki/Preliminary_list_of_Bristol_stakeholders) will be refined over time, including for example when detailed plans are developed for local interventions - such as those currently planned for the Temple Quarter Enterprise Zone.

The table below shows how the 125 stakeholders so far identified are split across sectors.

<table>
<thead>
<tr>
<th>Sector</th>
<th>Number of stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity, gas, steam or air conditioning supply</td>
<td>25</td>
</tr>
<tr>
<td>Public administration</td>
<td>23</td>
</tr>
<tr>
<td>Transportation and storage</td>
<td>18</td>
</tr>
<tr>
<td>Third sector</td>
<td>10</td>
</tr>
<tr>
<td>Financial and insurance activities</td>
<td>8</td>
</tr>
<tr>
<td>Professional, scientific and technical activities</td>
<td>6</td>
</tr>
<tr>
<td>Water supply, sewerage and waste management</td>
<td>6</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>5</td>
</tr>
<tr>
<td>Real estate</td>
<td>5</td>
</tr>
<tr>
<td>Construction</td>
<td>4</td>
</tr>
<tr>
<td>Other service providers</td>
<td>4</td>
</tr>
<tr>
<td>Citizens</td>
<td>3</td>
</tr>
<tr>
<td>Agriculture, forestry and fishing</td>
<td>2</td>
</tr>
<tr>
<td>Education</td>
<td>2</td>
</tr>
<tr>
<td>Human health and social work activities</td>
<td>2</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>1</td>
</tr>
<tr>
<td>Not specified</td>
<td>1</td>
</tr>
</tbody>
</table>

Stakeholder analysis

Enagement plan

Role of Bristol City Council

Bristol City Council is a key stakeholder and the owner of the Bristol Energy Plan. This diagram (https://bristol.smartsteep.eu/wiki/BCC_decision-making_architecture) illustrates the internal processes by which decisions are taken within the council - these processes will be referred to later in the section on Action Planning.

3 Gathering and Analysis of evidence

3.1 Gathering and synthesis of evidence

3.1.1 Evidence as a process
The appropriate use of evidence is an essential element of the STEEP methodology. Evidence, in whatever form it takes, must be available to all stakeholders so that it can be debated as part of the decision making process. The STEEP methodology specifically uses the idea of Argumentation built on the technology of Issue Based Information Systems (IBIS). The modelling approach used in the STEEP project made use of an implementation of Argumentation in the Hierarchical Process Models (HPM) themselves. Here, arguments are presented as a structured model of Issues, Options, and Arguments; and where Issues are attached to specific process in the model. Further details about how this is achieved in the STEEP methodology are described in the Issues, Options and Arguments section of the STEEP training material.

Evidence can take any form that is referencable. In practice, for the purposes of making use of a stakeholder engagement platform, such as the STEEP wiki, this means any source that is linkable or is storable and can be rendered by the wiki e.g. a model using the R language, or a GIS model. The provenance, validity and relevance of any item of evidence are subject to the argumentation process. In this way it is possible to construct an argument over issues and options supported by relevant evidence. This process also explicitly deals with the situation where evidence can be contested, i.e. where there may be models of different provenance and/or validity that lead stakeholders into forming different conclusions for taking action. The process of argumentation, especially one facilitated by a collaborative stakeholder engagement platform, is intended to support engagement with, and debate of, models produced by expert modellers.

3.1.2 Gathering and analysing evidence in the Bristol Energy Plan

The Bristol Energy Plan will draw on the best available evidence describing the distributions of energy use, emissions, and the opportunities to reduce these. The various datasets used to represent these factors will be synthesised using a "Mini Stern" analysis, which applies carbon abatement cost modelling to investigate the optimum ordering/prioritisation of a set of potential interventions.

In summary, the process comprises the following steps:

1. Create a baseline scenario which projects emissions under "business as usual" by sector, over the relevant time period
2. Compile a list of measures to consider in households, non-domestic buildings, industry and transport and their:
   - Costs (capital and running) and Benefits (energy demand and carbon emissions reductions)
   - Realistic and maximum-technical scopes for deployment in Bristol
3. Use carbon abatement cost modelling to identify pathways towards different levels of decarbonisation, taking into account synergies and mutual exclusions between measures:
   - The cost effective level – deploying all measures that would more than pay for themselves over their lifetime
   - The cost neutral level – deploying all measures that could be afforded if the benefits from the cost effective measures were captured and reinvested in further low carbon options
   - The realistic technical potential level – deploying all of the measures that could technically be adopted
4. Estimate the wider economic implications
   - Job creation
   - Economic growth
5. Evaluate how these economic impacts may feedback and influence Bristol’s carbon-footprint

3.1.2.1 Projecting business as usual emissions

3.1.2.2 Estimating the scale of potential interventions

TODO: summarise the evidence for each of the categories below by sector including some detail on how this is done - bottom up inputs, resource potential mapping (heat map, TQEZ work, solar mapping, 2010 study, address-level data summaries, smart energy city roadmapping etc.

- Wind
- Biomass
- Solar
- Energy from Waste
- Demand reduction
- Demand shifting
- District heating
- Demand side management
- Identifying decarbonisation pathways

Once Net Present Values (NPV), carbon savings, and deployment potentials for each measure have been calculated, these can be combined to produce marginal abatement cost curves (MAC curves) for each sector. These indicate the cost effectiveness of each measure alongside its carbon effectiveness if fully deployed. The measures to be included in the three mitigation pathways under
consideration can then be determined and, accordingly, the mitigation potential of each pathway (taking care not to double count savings from each measure):

1) The cost effective level – all measures with a positive NPV

2) The cost neutral level – all measures in (1) plus those cost-ineffective measures that can be invested in with capital generated by the cost-effective measures

3) The realistic technical potential level – all measures irrespective of cost

Subtracting these three mitigation estimates from the Bristol baseline emissions scenario leads to three alternative emissions trajectories.

3.1.2.3 Co-benefits and feedbacks

3.1.2.4 Intervention scenarios and their costs and benefits

3.1.2.5 Analysis of stakeholder mapping with respect to intervention scenarios

4 Identification of goals

This section describes the end-point of the period to which the Energy Plan refers and sets out expectations in terms of an overarching aim, strategic goals and specific objectives. These need to be linked to the section on Bristol's energy system above in order to align the scope of the systems we are concerned with, and to the relevant interventions that result from the scenario analysis section of the Bristol Energy Plan. They also need to refer to a list of Key Performance Indicators (KPIs) that can be evaluated and monitored to determine progress towards the goals and objectives over the Energy Plan period. The development of these sections will require an iterative process to ensure alignment.

In developing the goals, a number of questions need to be considered:

- What process of stakeholder consultation should be adopted?
- Which elements of Bristol's energy system should be addressed in the strategic goals?
- What level of detail should be included in the specific objectives for each goal?

4.1 Overarching aim

The proposed overarching aim is currently that based on the 'transformational statement' developed by the Bristol STEEP team for the purpose of constructing process models which describe the Bristol energy system:

*To ensure that Bristol's power and heat is sourced and used in a way that meets the needs of people and businesses while protecting the environment and improving the city as a place to live and work.*

This top-level aim and supporting sub-processes are shown the following process model diagram:
4.2 Strategic goals

These will cover the most important aspects of Bristol's energy system and can potentially be drawn from the following list, which also states the area they specifically target:

- **Using low carbon energy sources** - maximising locally generated low or zero carbon energy
- **Achieving connectivity** - ensuring low carbon mobility and enabling robust infrastructure planning
- **Low carbon buildings** - new development e.g. developers encouraged and supported to maximise on-site emission reductions alongside robust allowable solutions for local offsetting; refurbishment - decarbonising/retrofitting existing buildings
- **Governance and decision making** e.g. a clear, coordinated and transparent system, with involvement and empowerment of the whole community in energy planning activities
- **Showcasing Bristol** - as a leading smart energy city.
- **Access to heat and power** - affordable energy supplies for all
- **Local energy grid** - smart systems to manage and optimise local energy supply and demand
- **Citywide CO2 emissions** - reduction trajectory
- **Behavioural change** - instigating behavioural change through raising awareness of sustainable energy issues across all sectors
- **Data** - generation, collation, use of, openness etc (this is a focus of the Bristol Smart Energy City Collaboration ([http://www.cse.org.uk/projects/view/1296](http://www.cse.org.uk/projects/view/1296))

4.3 Objectives

Specific objectives for each goal could also come from worked-up process models for Bristol's energy system, but they will also be influenced by the 'interventions' section i.e. from the analysis of scenarios to determine which set of interventions will be most appropriate for Bristol. Each objective should then have a measurable Key Performance Indicator (KPI) to allow monitoring of the impact of the relevant interventions - see KPIs page. Specific objectives will be reflected against specific actions in the Action Planning section below.
4.4 Monitoring of goals and objectives

[Description and evaluation of KPIs for each goal/objective - with reference to STEEP mandatory KPI set]

[Description of forecast KPIs where relevant]

5 Action planning

To be structured around BCC's abilities to act:

- Directly
- In partnership
- Indirectly

And to incorporate relevant current and already planned activities (initial list below):

- The STEEP project
- BCC planning and development control activities (i.e. implementing the energy planning policies)
- The Lighthouse SCC1 proposal
- The BCC Energy Company
- The Smart Energy City Collaboration
- Warm Up Bristol
- Greening ICT

5.2.3 Florence
Smart Florence Plan
• The Vision
• The City Of The Future
• The Smart City Plan and the “system thinking” approach

• Planning Florence
• Ict Tool and Objective of Innovation
• Efficiency of the Public Administration
• Zero Volumes City
• Moving about in the City
• The Sustainability of the Plan: choices and financial tools
• Involvement of Stakeholders and Communication

• Monitoring and Control
“The Smart City Plan is a powerful tool for achieving concrete goals for the city and the metropolitan area, thanks to solutions for improving everyone’s quality of life”

Cities are living organisms. We always start from this assumption when faced with urban transformation, but it is not sufficient just to acknowledge this. A mayor’s tenure lasts five years, however the task of managing the city stretches over a much longer period of time: from the solution of small day-to-day problems to large-scale planning that reaches far beyond the official five-year period. We are inevitably projected into the future. The objective of this plan is to provide the guidelines for the future of the city, at least until 2030.

For some time now we have been talking about smart cities, intelligent cities; however it is not intelligent to confine the concept to debates among experts. If we want the guidelines and consequent actions to really have an impact on everyone’s lives, we must answer a preliminary question: who are we targeting? The city belongs to the citizens: those who are born and live in a specific place develop a sense of belonging that calls for an equally strong sense of responsibility. We are therefore targeting people who are citizens by birth as well as those who live the city every day or even for a few hours.

The Smart City Plan is a powerful tool for achiev-
ing concrete goals for the city and the metropolitan area, thanks to solutions for improving everyone’s quality of life. It is a planning tool that offers a coordinated vision of urban life from an architectural and town-planning perspective and in terms of infrastructures and mobility, energy efficiency and environmental sustainability, by always focusing on the social dimensions of civil cohabitation. And if the term *smart city* suggests something hyper-technological which is only for experts, we must immediately clarify that technology is merely a formidable tool for making life easier for citizens. In his book *The triumph of the city*, Ed Glaeser reminds us that “cities are not structures; cities are people”. “Cities have been engines of innovation since Plato and Socrates bickered in an Athenian marketplace” writes Glaeser. “The streets of Florence gave us the Renaissance, and the streets of Birmingham gave us the Industrial Revolution. The great prosperity of contemporary London and Bangalore and Tokyo comes from their ability to produce new thinking. Wandering these cities—whether down cobblestone sidewalks or grid-cutting cross streets, around roundabouts or under freeways—is to study nothing less than human progress”. The search for these success factors and the development of the city must never cease and must always focus on the citizens, experts, public and private subjects in an ongoing exchange of values and shared solutions. This is the real sense of the *smart city*: the concentrating of all the best energies on the goal of a sustainable and charitable city, really smart because – thanks to its social networks and innovative drive – it is able to constantly improve even when faced with apparently insurmountable difficulties. This is the concept of “resilience”, namely, the capacity to adapt to change, to overcome the crises by opening up new scenarios.
“It is a document that will accompany us step by step towards the Florence of tomorrow: electric, with zero volumes, green, sustainable, and resilient, in a word, smart”

We can find various definitions for the concept of the Smart City. One of the most widely diffused involves the integration of technological components, social components and a model of urban development in the Smart City, all in a vision that produces more intelligent, sustainable and charitable cities, not just by introducing technology but also by generating innovation. In order to pursue this integration, the city must adopt a planning/management model of the urban life cycle that is able to constantly integrate the ICT components with those of the governance and the decisions for pinpointing the most important urban functions, and that allows for achieving the best results in the shortest possible time and with minimum costs and effort. However, the intelligent city is also the city that adapts, in other words it shows it is able to change physical and social structures for the purpose of ensuring the quality of life and the environment, also when faced with major territorial difficulties produced by climate change, the risks of which are amplified by interference with the intense human presence and activity. It is a city that not only adapts, but also changes, by creating...
new social, economic and environmental answers that allow it to resist in the long term against environmental and historical stress. In this sense, resilience is a necessary component for sustainable and consequently durable development, as it acts in a priority manner on the organisational and management models of the urban systems. Intelligent cities are sustainable and sustainable cities are resilient. The Florence of tomorrow is a Florence that welcomes opportunities, starting off from the Sustainable Energy Action Plan (SEAP), approved after the city adhered to the Covenant of Mayors in 2010, which sees a 21% reduction in CO₂ emissions into the atmosphere by 2020 and which also looks beyond, with an estimated 40% reduction by 2030. The prospects even reach as far as 2050, with a reduction target of 70%. This is an ambitious project that no-one can guarantee at the moment because we are dealing with a historic city and a city of art in which relevant and significant interventions are not always possible. Nevertheless, we must not give up in advance as we can count on the creative and innovative energy that this territory has always known how to express.

Developing a Smart City Plan is a daunting task: thanks to the STEEP (System Thinking for Efficiency Energy Planning) project, we have been able to share our views and experiences with Europe and the cities of Bristol (UK) and San Sebastian (Spain). We are in agreement with our partners that it is necessary to consider the city as a complex system of processes where the various elements and factors of city life are all intertwined: in this context, a single action in a single sector in the city can influence and have repercussions on the realities in all sectors due to being an integrating and integral part of a single efficient and effective system. However, the Smart City Plan is an instrument – and as its name implies – it can only be smart and simple: it is a versatile instrument capable of updating and keeping account of developments and innovations, especially in the key sectors identified, and namely, energy efficiency, mobility and ICT; it is an operational instrument but also a compendium of objectives and results. It is a plan, which in order to be successful, must be participated in and therefore it must be shared with everyone who resides and works in Florence. In the participatory perspective, the stimuli and suggestions, which must arrive precisely from the bottom, then turn the strategy and planning into a winning tool for their realisation. It is a long road; the first stage of the Smart Florence Plan will be in 2030, and only with a forward-looking analysis supported by clear, easily measured and immediately recognisable indicators in which the final user is our first objective, will we be able to equip ourselves with an instrument that is not merely the enunciation of principles, but thanks to the actions it entails, it will also be capable of being implemented and giving results. With the SEAP it has been possible to obtain a multiplication of the benefits in the medium-long-term (by 2020) with a clear-cut plan and the formulisation and details of energy policies that have taken current policies into account with a more comprehensive and integrated vision and with sectorial interaction. While we prefer not to call it “the plan of plans”, we can still affirm that the Sustainable Energy Action Plan has been the expression of a single, joint and synergic action by the administration that has included and amplified the objectives and results of the various sectors and existing plans recently approved or under review.

With the Smart City Plan the City Council of Florence wishes to go even further, not only as a time horizon, but also as a programming document: not an action plan, not a simple strategic description, but rather, a space for discussion for highlighting the eventual barriers, measures and actions to be taken to implement a local strategy of smartness that will be gradually extended and made known, also by investigating how to promote and increase awareness and active involvement by the citizens themselves. It is a document that will accompany us step by step towards the Florence of tomorrow: electric, with zero volumes, green, sustainable, and resilient, in a word, smart.
The Smart City Plan and the “system thinking” approach

The Smart City Master Plan should coordinate every sector of influence, driving the city to innovation, achieving best results in less time and with less effort and cost. By taking an integrated approach to strategic city planning where all systems and their interlinkages are considered would actually result in greater efficiency in terms of both carbon and cost and also provide other benefits such as greater stakeholder engagement and ownership of actions that make the plan feels as a common property. The instrument for this endeavor should be a comprehensive Smart City Plan which includes the whole set of necessary actions following a holistic approach.

Nevertheless, developing a Smart City Plan is a difficult task. The three partner cities of the FP7 smart cities STEEP Project (San Sebastian, Florence and Bristol - Green Capital 2015) detected the following key factors for its definition:

• It is necessary to have the collaboration of all the stakeholders across the value chain: public administrations, technology experts, companies, end users, etc.
• It is necessary to consider the city as a complex system of processes, where the different elements of the city are connected and one intervention in one process of the city influences the rest of the processes.
• Building up a Smart City is a significant commitment and requires time, resources, clear vision and strong leadership.

To be successful a Smart City strategy has to be based on the four I’s: Integration of all possible sectors and aspects which are in the municipal influence Innovation spread as wide as possible (a smart city has to be a forerunner in technology implementation and in testing innovative approaches or services)
Involvement of stakeholders in setting very ambitious “visionary” targets compared to the actual situation
Information in terms of ICT as a tool for the relation with the citizens and for the monitoring and control of the strategies.

Which is the best way a city can tackle these problems, and therefore, define an optimal Smart City Plan? The three cities consider that it will be possible if they use:

1. A system thinking approach that considers the city as a complex system. Systems thinking is a framework for problem analysis and solving that allows making reliable inferences about behaviour of complex systems by developing an increasingly deep understanding of underlying structure, and which is very suited to urban environments.

2. Open Innovation for engaging the stakeholders, and open standards to ensure interoperability, and open-source to maximise uptake and impact.

In order to identify innovative measures for sustainable cities, it is necessary to use an Open and Innovative approach built upon co-production, where all stakeholders work together. The concept of Open Innovation, will not be only address involving stakeholders in the development of the Smart City Plan Process Model, but also in understanding the contribution of interventions, identifying opportunities and barriers, as well validating the Process Model.
The method used by systems thinking is to explore the relationships and changes in a system, and try to develop a comprehensive picture of how the system works. It also spurs the emergence of new important questions which help better understand the system. Systems thinking thus views problems as the products of some structure of relationships, in contrast to conventional linear thinking, which instead explains patterns in terms of simple causes and effects between separate things.

Moreover, this approach allows for the modelling of the parameters of the systems, and how the modification of these parameters will impact the whole system. It can be used to found leverage points, parts of the structure that significantly influence the system’s overall behaviour and that represent opportunities for changing system behaviour with relatively little effort.

Systems theory has been put to practical use in the business world for decades. More recently, systems thinking concepts have been incorporated into several strategic planning methods for local governments. These and other tools can help cities better understand the complex systems that exist within them, and the larger networks to which they belong. Systems thinking will also help cities to understand the role of key inputs and outputs like energy, water, waste and transport and to identify how municipalities are vulnerable to changes in the availability and price of those inputs.

The methods described facilitate the elicitation, sharing, capturing and transformation of pluralistic perspectives, knowledge claims and values about the problem situation in a collaborative process. The methodology is based upon the deliberative concept of discursive decision making with the objective to find the best possible consensus. Its overarching aim is thus to enhance moral legitimacy of decisions for intervention and to reflect social and cultural values in collective decision-making.
To achieve the City’s environmental goals, efficient cooperation among inhabitants, the private industry, the public sector and many other players is crucial. In this variegated range of players, all of whom are necessary, the Administration must play a leading role, a key role, and it must demonstrate its leadership by managing to give life to a strategic plan, the smart city plan. This new instrument does not have its roots in the laws or its regulations in a decree, rather, it is presented as the flexible, adaptable expression of the strategies that the city has set itself for outlining its future development. This strategic document is the natural consequence and integration of the plans adopted by the city over recent years that have represented, with public participation by the various stakeholders, an indispensable moment of sharing and approval. The approach of a programming policy is confirmed and reinforced, in which the administrators and citizens come together at discussion time, in this case supported by innovative methods such as “system thinking”, and motivated by the common goal of “Firenze #piùdiprima” (Florence# more than ever).

The concept of interconnection and interdependence mentioned in the introduction that are valid among the territory’s management and development instruments and also among the administration and citizens, is the logic underlying this strategic plan that sets its horizon for 2030 with a projection as far as 2050.

The year 2010 can be viewed as our reference year for the approval of the Structural Plan “with zero volumes” (2030) and the simultaneous adhesion to the Covenant of Mayors with the subsequent drawing up and approval of the SEAP, Sustainable Energy Action Pan (2020). These are the two planning instruments that have identified, in particular, concrete guidelines and actions for a sustainable and efficient city. The urban redevelopment and reduction of CO₂ emissions in the atmosphere together with the analysis of slow and sustainable mobility policies with the proposed master plan of electric transport, represent the roots of the smart city that the SCP (Smart City Plan) is now outlining with the inclusion, updating and implementation of previous and future instruments.

In fact, the SCP will include all the subsequent updates of current regulations such as those concerning the building industry with sustainability requirements and the adopting of new ones such as those concerning town planning (with a five-year duration) as well as the necessary monitoring operations, like those associated with the SEAP (the encouraging results of which spur us on to even greater action). And it is precisely in this perspective of integration of the existing and the recent, that it is possible to perceive the programming pathways: the development of the issue on resilience and the consequent integration with the Civil Protection Plan, the municipal Disaster Recovery Plan and the proposed Municipal Computerisation Plan, as well as the Urban Mobility Plan of the city of Florence, are a sign of how the process towards an increasingly smarter Florence is now underway and how this must not stop or drag behind.

The voluntary strategic plan of the City Council of Florence consists of the use of planning and legislative instruments available for giving life to proactive and synergic actions for simplifying and intensifying the instruments currently available and which will therefore become a social answer to the citizens’ growing expectations.

The digital Poster of Florence is, *inter alia*, a concrete example of that renaissance in which the agreements with third parties (such as the University of Florence, the Regione Toscana, the Careggi Hospital, the Chamber of Commerce of Florence, to mention just a few) are the condition *sine qua non* for obtaining that synergy able to provide innovative instruments for the economic and social development of the city. This is the case, for example, of the open data intended not only for statistical purposes but also as an
opportunity for growth and support in decision-making by acting as a Responsive city, placing knowledge at the heart of the activity of the city government and making it available for all the players, thus confirming the optimistic affirmation “if you can measure, you can manage”.

Florence today is a city that also looks beyond its traditional territorial boundaries, assuming its own role in the metropolitan city that has now been an official reality since January 2015. The Smart City Plan must necessarily enlarge the usual municipal planning context, not only in terms of time but also territory, integrating itself with the strategic plan being drawn up for the metropolitan city. The interactions will primarily influence the digital aspects, information technology and mobility/infomobility that will have a considerable impact on the users in the short term given the flows of commuters and tourists throughout the entire metropolitan area. The smart city plan aims to be an example of programming and multisectorial integration, a model that can be adapted to the different demands and that will also be the driving force behind the strategic metropolitan forecasts for energy efficiency and emission reduction.

**WHAT WE INTEND TO DO**
- To include and integrate the approved plans (Structural Plan) at the planning level with those being drawn up and foreseen in the medium-long term (urban mobility plan, municipal computerisation plan, resilience plan) in order to achieve synergies and amplify the effects;
- To use the regulations and monitoring operations in the short-medium term as synergic assessment instruments, also through the shared set of Key Performance Indicators, by interpreting them in a connected manner in the plan’s three focus areas (energy efficiency, sustainable mobility and ICT);
- to be a reference model for future strategic plans (such as the Strategic Metropolitan City Plan) by following a participative method and establishing ambitious objectives that could be declined at the level of the city and also in a more widespread manner.

**HOW?**
- By defining guidelines for drawing up new integrated plans, also by means of performance indicators that allow not only for observing national legislation, but also for facing up the social, environmental and sustainability challenges for which the smart city plan will be a container par excellence;
- By conducting periodic monitoring operations that allow for cross and transversal interpretation of the results in the three key sectors of the plan, with requalification of the objectives from time to time;
- By creating a dialogue among the different sectors in defining the plans and regulations envisaged and that will be forecast in the future.

| INDICATORS |
|-----------------|-----------------------|---------------------|---------------------------|
| CO2 emissions residential and tertiary sectors | Primary energy use per sector | Electrical energy use per sector | % Renewable energy |
| Smart meters coverage (%) | Resilience to natural disasters | Percentage of buildings under refurbishment according to EPBD standard | Noise pollution |
ICT TOOL AND OBJECTIVE OF INNOVATION
The information and communication technologies (ICT) represent a pivot that blocks and at the same time enables all and any actions of the Smart City Plan. They are also a strategic element for the digital culture growth in the city, and the relative development of the market linked to innovation in Florence.

The goal of the City Council is to promote new digital services and encourage their use by citizens and businesses in the aim of ensuring improvement in the quality of life of Florence, simplifying relations with the Entity and associated companies through the ICT, and providing information, data, tourist-cultural contents, and services in a manner that is always more closely connected to the use context (providing what is needed at the time it is needed and in the specific place where the user is located). This is therefore an innovation strategy that aims at identifying the ICT as tools for achieving the goals of wellness and knowledge, but also as a goal in itself, that is, to simulate and increase the use of IT equipment and services in the territory, also through information/computerisation pathways and tutoring.

In 2030 the city is envisaged as a place where all subjects supplying useful services to citizens will be using a federated model that allows for sharing digital assets such as infrastructures (network connectivity, especially wireless, sensors, video-cameras), data, and services. The latter in particular, will be extremely disaggregated and modular, meaning that it will be possible to connect multiple services of different subjects in a single, user-experience chain, thus providing the user with a unique and integrated offer.

But Florence is a city that also fits into a much wider territorial context, the metropolitan one, and the fact of being an example of good practice in the neighbouring and outlying districts will be a strategic objective to be pursued for managing to become not just a city but also a digital metropolis of national reference.

WHAT WE INTEND TO DO

The main lines of action on the ICT of the City Council will be as follows:

- **Implementation of the digital Florence manifesto**
  - Extension of the City Council's sharing model (memoranda of understanding for data and assets) to the stakeholders;
  - Implementation of the commitments foreseen in the memoranda of understanding in a 2015-2020 time horizon;
  - Structuring and implementation of a consolidated asset sharing model, exhibiting of the services in a modular logic in a 2020-2030 time horizon.

- **Digitalisation services and simplification**
  - Progressive abandoning of the physical counter for the sectors already providing online services (education, housing, SUAP – Single Contact Point for Productive Activities, taxation, demographic).
  - Massive increase in payment channels, with special focus (in view of 2030) on micropayments from mobile phones and based on SIM cards or other identification elements that will be located in the devices carried by users.
  - Defining of new, simplified digital interaction methods with disadvantaged users, recipients of the City Council’s services currently not digitalised (e.g. welfare, housing, ERP – Enterprise Resource Planning, etc.).
• The City Council's computerisation plan
  • The City Council’s computerisation plan, which has only recently been made a legal obligation, will gradually become a key element in planning the Entity’s activities, also representing an annual collection point of the digitalisation requirements of the offices of the Entity.
  • The plan envisaged for 2030 must be extended to the entire metropolitan area, including and absorbing the Strategic Digital Plan of the Metropolitan Area and the digitalisation demands of the City Council’s stakeholders.
  • For several years now the City Council has also been carrying out an innovative platform prototyping activity for providing online services at a metropolitan level (People Light Pack system at the Service Centre 055055), a regional level (eToscana interoperability) and a national level (single PIN for citizens, SPC - public connectivity system payments, interoperability of the National Territorial Data Register). These prototyping operations will be continued in the coming years, allowing the Entity to always have a vantage point over the digital innovation mechanisms that are planned at a national level.

• Availability of open data
  • The quantity and quality of the open data will constantly increase, allowing citizens, businesses, professionals and offices to access the City Council’s information heritage in an easy and automated manner.
  • Thanks to the federation mechanisms envisaged in Digital Florence, the opening of data by stakeholders will be encouraged as well as the sharing of data in a secure manner with private subjects with whom joint activities are conducted in the territory (e.g. companies that carry out road excavations).

• WIFI network extension
  • The network and the service will be constantly extended, ensuring a city that is increasingly more connected, as well as offering location-aware contents and services conveyed on the citizen WiFi network.

• Pilot actions on the Internet of things
  • The City of Florence is already experimenting with innovative solutions to offer digital services and contents supplied or controlled by things: experiments are underway using wireless beacons in museums, analysis of pattern recognition on images coming from surveillance video-cameras, and evolved sensor applications for monitoring traffic and parameters such as temperature and visitor-presence.
  • Experimentation sectors of these new technologies will be further extended, for example by exploiting them to simplify the control of vital signs and health parameters, and for communicating with subjects who require specific therapies or particular welfare care by the City Council.

• Digital skills (including welfare, disadvantaged categories, etc.....)
  • The promotion of digital skills is targeting multiple objectives: on one hand it will allow for
increasing the number of users of digital services produced by the Entity, on the other, it will stimulate the growth of new skills enabling young people and not only, to enter the labour world linked to technological innovation, and finally, it will make it possible to live the city in an increasingly more effective manner thanks to the evolved and aware use of ICT and digital services offered.

- The joint promotion of digital skills by the City Council, stakeholders and other entities with whom and which partnerships have been entered into (For Digital Florence and not only) will also allow citizens to gain knowledge of the overall “digital offer basket” of the City of Florence.

**Digital school**

- From the benchmarks pinpointed in 2013-2014, Florence is lacking in the promotion of innovation initiatives relating to the world of the Digital School. With these lines of activity the issue of broad-band availability will be addressed in Florentine schools, aimed at having all schools wired both internally and externally with up-to-date wireless technologies by 2030.
- The City Council will also be a reference point in 2030, in terms of specialised skills and consultancy for innovation, for the various Florentine schools at all levels, offering interoperable solutions with the rest of the city’s ICT structures and supporting the various educational institutions in carrying out networking with small- and large-sized companies in the ICT world.

**Customer satisfaction**

- In 2030 every digital asset exploited by citizens (whether it be a WiFi network, open data, or a digital service) will be subject to constant, continuous and structured monitoring of end-user satisfaction.
- Mechanisms that have already been experimented by the Entity during these years of verification of the quality of the service supplied in the field of ICT services, will be brought into standard usage.
- An annual revision process of the results obtained from the monitoring of customer satisfaction will be established, including any possible corrective actions in the planning by the Entity the following year, all in the aim of keeping citizens increasingly more satisfied with the “smart” Florence offered to them by the City Council.

**HOW?**

- by monitoring and comparing the data provided by the success indicators that will therefore be the periodic reference to be compared with and referred to during the various programming and progress stages and steps, with focus on some target points such as the promotion of public wireless connectivity, promotion of city broadband, promotion of digital channels, promotion of digital services usage, promotion of public sector information disclosure, promotion of city utilities public information disclosure
- by programming, approving and implementing the targeted lines of action;
- by experimenting (also thanks to the opportunities provided by the European projects and participation in national, European and international networks) with integrated actions in the services of and for the city in ongoing comparisons and long-life learning with other cities.
| INDICATORS |

<table>
<thead>
<tr>
<th>number of wireless hotspot at 2030 in the city (or % of wifi coverage)</th>
<th>number of internet connections per 100,000 inhabitants</th>
<th>number of centrally controlled (digital signage) displays</th>
<th>number of online services activated</th>
<th>number of online services users per 100,000 inhabitants</th>
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<td></td>
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<tr>
<td>number of open datasets</td>
<td>number of public owned companies open datasets</td>
<td>number of public transport stops with a real time information display</td>
<td>% of public transport e-ticketing</td>
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EFFICIENCY OF THE PUBLIC ADMINISTRATION
Cities are the places where there is the greatest concentration of energy consumption, polluting activities, congested mobility, and growing land consumption, and it is precisely from the cities that it is necessary start off again. For several years now the city of Florence has been applying a management system integrated with its own administration actions, and in particular, the programming of intervention operations in the energy field, the carrying out of specific interventions with a strong impact on the reduction of CO\textsubscript{2} emissions in the Sustainable Energy Action Plan, energy auditing campaigns of public buildings, energy efficiency in public structures, provisions for reducing consumption, energy efficiency in private buildings, incentives for sustainability actions in the redevelopment or promotion, and indications for the purchase of electric vehicles to be used for public transport.

This means that based on the decision to turn Florence into a smart and sustainable city, one of the priorities that the City Council has set itself, is that of following up with actions aimed at ensuring energy efficiency of the public administration. The methods via which it intends to pursue the goal are both operational and managerial. Florence is a medium-sized city and the managerial provision concerning energy (Energy Manager) is considered a duty by law, whereas that concerning mobility (Mobility Manager) is instead a choice that initially stemmed from the opportunity of having a specific reference figure in the sector that has the greatest impact on the CO\textsubscript{2} emissions in the territory. Having a reference figure in the Energy and Mobility fields, flanked by a Manager of the Development of ITC technological infrastructures, ensures the possibility of harmonising and standardising the actions and synergistically integrating the results. Combined with the planning and programming action are the infrastructural operations that make the decisions effective to reduce energy consumption and cut the emissions into the atmosphere.

Planning savings policies and energy efficiency for 2030 means to structure the actions per sector as well as interventions that have a spill-over effect, that is, they can be replicated.

When it comes to energy efficiency, there are two main sectors that come to mind in the public property, namely, buildings (just on 500 in the city) and lighting.

The renovation of public buildings today finds itself having to deal not only with the traditional heritage, that is, existing offices, sporting installations and school buildings, but also with the new acquisitions, such as former army barracks, that all constitute a series of particularly significant surface areas and considerable redevelopment operations that entail complete renovation (the former Lupi di Toscana Barracks, for example, has a useful surface area of approximately 33,000 m\textsuperscript{2}) and which allow for application of the incentive and energy efficiency regulations linked to sustainable recoveries promoted with the Structural Plan and the recent Urban Regulations. Whenever the interventions pertain to integral recoveries of existing structures that already have sole ownership, such as the school building and sporting installation heritage for example, it is possible to design, plan and schedule over time forms of total energy efficiency that allow for calculating considering savings (as in the case of the Calvino Bio-School with renewable energy sources, savings of about 40% for heating the building, a 15% cut in electricity costs obtained from sunlight, and the plan to make the Florentine sporting installations more efficient by using less energy and saving on consumption). However, when the interventions are not comprehensive or the buildings concerned are protected heritage, it is obvious that the operating methods and intervention choices must be differentiated and they are in any event limited in time when carried out directly by the administration.

As regards lighting, even though public lighting has a minimum percent of incidence compared to the general impact of consumption in the city (equal to only about 2%), the energy efficiency project is equally significant as it is one of the most visible examples in the territory.
The management of lighting installations in any city is a complex undertaking (there are just on 45,000 lighting points in Florence). In this new millennium, lighting is an increasingly safer element, improving the exploitation of outdoor areas at night, making it possible to meet a variety of different needs. The City Council of Florence will mainly be installing a new lighting network to replace the traditional light fixtures with new LED lights with different intensities depending on the requirements and in any case, sufficient for ensuring the comfort and safety of the citizens, thus avoiding any form of light pollution, but also and above all, via the exploitation of an intelligent lighting network with a new system capable of managing remote control functions, video surveillance, environmental monitoring and WiFi connections. A distinctive feature of the proposed interventions will be the use of avant-garde technological solutions with special reference to light flux regulators and LED light fittings, which will be used to a great extent in the renewal of the installations.

The adopting of innovative and efficient technological systems accompanied by ICT infrastructure actions in specific sectors, primarily schools and welfare areas, confirms once again how the integration of instruments and actions gives rise to results that reciprocally reinforce each other.

WHAT WE INTEND TO DO
- Implement energy efficiency measures and promotion of renewable energy in buildings, facilities and public services using innovative tools and technologies
- Strengthen the mobility and energy managers organizational structures;
- Streamline the existing structures (from renting to ownership, real-estate sales when possible,…)
- Render the public lighting system more efficient also by resorting to avant-garde and technologically advanced systems connected to the LED/video surveillance/WiFi.
- Introduce technological innovation infrastructure in the training and social/education structures-

HOW?
- Increasing the level of knowledge of energy systems and environmental public in order to identify the best solutions to optimize consumption and impacts
- By pursuing energy efficiency policies based on certain and measurable indicators of continuous improvement (total quality management)
- By fully replacing all lighting points in the city (street lighting, traffic lights…).
- By optimising the tenders for the granting and/or use of public structures (sporting and associative) based on criteria targeting energy savings and reductions in consumption (Energy Peformance Contracting)
- By experimenting innovative solutions applied to buildings bound of historical value
- By studying solutions by type of building depending on the characteristics and existing restrictions.
- By encouraging proper and responsible behaviour by the users of the buildings and public structures.
- By identifying exemplary actions to be encouraged and made attractive and replicable, also at the level of the metropolitan city, as a backup for a specific communication system.
## | INDICATORS |

<table>
<thead>
<tr>
<th>Electricity and heating consumption PA</th>
<th>Solid waste production per capita and % of solid waste recycled</th>
<th>Electricity consumption public lighting</th>
<th>Fossil fuel consumption PA’s vehicles fleet and % LEV</th>
<th>Number of Energy performance contracts/tenders</th>
</tr>
</thead>
<tbody>
<tr>
<td>% RES</td>
<td>Green Public Procurement</td>
<td>Liters of water used per capita % of losses in the water network</td>
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ZERO VOLUMES CITY
Firenze has recently armed itself with new town-planning instruments: A Structural Plan (strategic instrument) and Town-planning Regulations (operating instrument), based on urban regeneration with “zero volumes” and aimed at endowing with new functions the copious existing abandoned building heritage with historical-architectural value, and eliminating situations of degradation in order to reacquire community spaces and renovated areas.

“Zero volumes” means:
• demolition and reconstruction in situ;
• demolition +transferral+ reconstruction in other sites;
• a balance of volumes equal to “zero”.

Strategic objective for 2030:
To convey the idea that the development and future of the city no longer depend on expansion, but rather, on urban regeneration, success models for giving new vitality to the historic centre and experimenting new forms of redevelopment in the suburbs.
To encourage integration among the town-planning instruments in the metropolitan area, within the context of the future territorial plan for the purpose of optimising and amplifying the effects of the regeneration, above all in the suburbs that will be the subject of natural supra-municipal integration.

Transfer to redevelop
The possibility of creating new buildings and settlements through equalisation mechanisms is based on the thinning out of the too densely populated and degraded areas that will be reacquired by the community, and on the transfer of demolished surface areas to other sites that are however, already urbanised. Said transfer allows for the redevelopment of the vacated area via increased allocations of community green and parking areas, and the completion of fringe areas in need of intervention for improving living conditions and social relations.
WHAT WE INTEND TO DO
• To develop high energy-efficient settlements and experiment new “smart” living formulas;
• To increase the distribution of green areas in the neighbourhood as well as parking areas for residents;
• To improve the urban quality of the fringe areas.

HOW?
• The ability of the administration to create the right conditions for implementing the operations;
• The pinpointing of other transfer/landing areas.

To regenerate/compensate
The strategic regeneration interventions produce forms of compensation at all levels for the community that can be implemented via the creation of public works and installations, extraordinary urban maintenance or redevelopment and enhancement interventions of the ecological setup.
The ecological networks represent a load-bearing element of the planning, the implementation and redevelopment of which contribute to all the envisaged transformation operations.

What we intend to do
• To convey the message that the ecological network is an essential element for enhancing the quality of life in the city, and a valid alternative to the search for new areas;
• To overcome critical infrastructural issues and service shortcomings in the areas adjacent to the transformation areas, thus making the community aware that every private real estate investment corresponds proportionally to the commitment to improve the public context.

Success indicators in 2030
• The number of investments for the purpose of carrying out public works and installations, or extraordinary urban maintenance services;
• The number of investments for the purpose of implementing/redeveloping the ecological network, and more specifically, the 42 environmental redevelopment areas identified in the Planning Regulations.

Participating in the construction/monitoring of the implementation of the instruments
In order to convey the new planning methods, the construction of the instruments has been accompanied by a constant participation process implemented in various ways that has entailed the participation of citizens (Town Meetings, online questionnaires, telephone surveys, etc), corporate partners, trade unions, professional associations (focus groups, assemblies), stakeholders and privileged testimonials (interviews) for a total of over 4,000 citizens and 7,000 contacts on websites and dedicated blogs. The ongoing contacts with citizens have induced the administration to make the town-planning language understandable to everyone right from the start, in order to convey the idea of the city through a clear explanation of the project.

WHAT WE INTEND TO DO
• To promote the participatory processes for the most complex strategic interventions;
• To promote insolvency proceedings aimed at guaranteeing the quality of the transformations;
• To monitor and share the implementation of the instruments with immediate accessibility to the web.
HOW?
• To ensure ongoing and integrated participation by citizens in the administrative action for the purpose of implementing a sequential pathway that consolidates and substantiates a relationship of co-designing;
• To increase the number of Florentines who use digital technology to engage in urban policy-making in Florence.

| INDICATORS |
|-----------------|-----------------|-----------------|-----------------|------------------|
| Selection of other intervention areas (transfer/landing) | Investments for public works or services | Investments for sustainable mobility | Integration of citizens participation to design and planning processes | Number of Florentines who use digital technology (to engage them more and more in Florence’s urban policy making) |
MOVING ABOUT IN THE CITY
During the development of the Sustainable Energy Action Plan in Florence, the level of CO2 emissions into the atmosphere was analysed and the results showed that mobility contributes to the release of CO2 to the remarkable extent of 34%. This means that all the existing and planned actions can and must be aimed at establishing a city transportation system that allows people to move about freely, sustainably and in an environment-conscious manner.

Looking ahead to 2030, we would like to imagine Florence in the long-term as a city that enjoys the benefits of ongoing actions, even if developments will perhaps make life a bit more complicated during the construction of large infrastructures (as is happening with tramways #2 and #3 today and will happen with the next extension of the Bagno a Ripoli tramline in the future).

A smart city, as already mentioned, is a city that adapts to changing situations, capable of altering its structure, including its physical features, in order to improve the quality of life and the environment. This is the challenge faced by the new project of the City for a future sustainable city of Florence.

The strong objectives we have set to ourselves for the coming years, from now until 2030, will transform Florence into the national capital of electric mobility, a tourist city organised on a human scale, with an excellent transportation system enabling all users of the city to move about and be informed about the traffic situation (including problems caused by building sites), but also with multiple opportunities and alternatives to use of private vehicles, which will be just one of the many options available.

We are preparing a comprehensive project, integrated with technologies and “infomobility” to include a consistent set of tangible and intangible developments aimed at achieving the specific objective of transforming Florence into an environment-friendly city.

We intend to implement the Urban Mobility Plan (UMP) with this strategic objectives:

- satisfy the mobility needs of the population and city users in general considering the relevant flow of daily city users (tourist and commuters);
- reduce atmospheric and noise pollution in compliance with international agreements signed by the city (Covenant of Mayors, Conference of Parties COP21,....) and with EU and national laws;
- reduce energy consumption;
- increase transport and road circulation safety levels;
- minimize the individual use of private cars and reduce traffic;
- increase the load capacity by optimizing public transport;
- Increase transport and road circulation safety levels;
- to minimize the single use of the private car and moderate the traffic even increasing the percentage of citizens carried by collective systems (car pooling, car sharing,....)
- Reduce traffic jams in urban areas with a high traffic density;
- Encourage the use of alternative means of transportation with minimal environmental impact (e-mobility)

Constitute priority interventions and consequent:

- Public transport infrastructures for all transport means;
- Road infrastructures, at a local level, with special focus on the roads to be used for modal interexchange;
- Parking areas, with special focus on inter-exchanges;
- Technologies;
- Initiatives aimed at increasing and/or improving the vehicle fleet;
- Governance of the demand for transportation and mobility (traffic supervisor)
- Traffic control systems;
- User information systems (info mobility real time)
- Logistics and technologies to be used to reorganize the distribution of goods in cities, as well as the flow and regulation of tourist coaches and related parking systems.

All the actions planned should be seen as a system aimed at ensuring smart mobility in the territory by offering a range of different opportunities and information on flows and transfers. All this will be combined with other strategic choices made by the City, with the selection of electromobility as a priority. The tram system that is being built, after the excellent result of Line 1, is the cornerstone of a campaign for the promotion of use of electricity aimed at transforming Florence into the national e-mobility capital. The 4,000 electric vehicles already in use in the city, combined with a corporate fleet of over 70 recently purchased vehicles, over 400 charging stations that are to be opened, an increasingly higher number of electric buses, particularly in the historic centre, an electric car sharing system that is also about to be activated, and a strong communication campaign at a European level, with Florence as a partner, for the promotion of the delivery of goods with electric vehicles as well and the use of electric scooters (in a city with over 72,000 motorcycles in circulation) are all signs and actions of a city that can lead by example and become a model for the development of concrete and structured sustainable mobility with zero emissions.

A zero-emissions target also implies the development of cycling mobility, the primary alternative to be considered: this is the aim of the projects, already in the pipeline, of extension and interconnection of bike lanes, their improvement with the use of sensors on critical tracks to help measure traffic levels and analyse emissions, ground signal lighting at the access to/exit from bike lanes, and the activation (in compliance with the new national legislation) of specific traffic lights in intersection areas both for new and existing connecting sections.

Actions regarding the infrastructure will be combined with the use of technologies. The development of a traffic control unit, a smart parking system with a related system of sensors also for ground parking lots will all create an infomobility system to complete the mobility plan of Florence, which will also be maximized with intermodality, park-and-ride areas and a smart pricing system.

Florence is and will remain a tourist city. It has been a tourist city in the past, it is a tourist city in the present and the constantly increasing positive trends of the last few years allow us to hope it will continue to be so in the future. This is an aspect of Florence that can never be overlooked, so it is from this point of view that we must approach the analysis of the flows of tourist coaches and the connected transit point, as well as the expansion of the airport (getting to Florence remains a critical issue for a significant number of tourists), to be connected with the tramway, railway, motorway and related parking areas.

Our plan conceives a fully-fledged city where no category of user or related issue is neglected. But we must consider that Florence with approximately 380,000 inhabitants today, also includes over 1 million metropolitan residents and about 700,000 city users, who move throughout its territory everyday. This means that CMPs, which span the medium/long-term horizon and also include the mobility of neighbouring areas, can be seen as a valuable tool for organizing mobility-related actions into a system.

**WHAT WE INTEND TO DO**
- to transform Florence into a veritable “sustainable-mobility city”, to become a real and best-practice example at both a local and european level
- to implement UMP
- to become the national capital of e-mobility
- to optimize public transport integrated with the tramway system
- to strengthen the central traffic supervisor with repercussions at the metropolitan level
- to implement congestion charge policies
- to create smart parking systems
- to develop alternative mobility systems (e-mobility, cicle mobility, pedestrian mobility,....)
- to extend the UMP integrating it into the strategic plan of the mobility of the metropolitan city

**HOW?**
- By developing the planning of an integrated mobility even at metropolitan area completing the infrastructures (tramway, park, bike paths, intermodal systems,....)
- By strengthening and streamlining the public transport also by offering flexible services, adapted to the most vulnerable and low environmental impact
- By strengthening the services and information available to citizens and city users (info mobility)
- By analyzing periodically the demand for mobility and the satisfaction of citizens also via surveys

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<th>INDICATORS</th>
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<tr>
<td>km of Public Transport per 100.000 inhabitants</td>
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<td>nr of electric vehicles recharging stations</td>
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THE SUSTAINABILITY OF THE PLAN: CHOICES AND FINANCIAL TOOLS
The implementation of the actions and therefore the enforceability of the Smart City Plan, understood as a concrete intervention on the City, must necessarily pass through a careful financial planning including the phases of implementation and management in the medium and long term. Financial Programming will include investments that are strictly up to the City and those that are triggered by economic operators in the area for the implementation of actions and projects of the SCP. On this, the City Council will play an important role as facilitator in order to promote the implementation of projects in the municipal area that are in line with objectives of the SCP, with high economic sustainability, energy and environment and high level of innovation. Florence must harness the potential of attracting investment in innovative projects related to the implementation of the SCP.

Its programming/planning requires the combined allocation of human and financial resources, which should be determined for the purpose of achieving the preset goal within the shortest possible time and at the lowest possible cost.

The time schedule of the project is a primary issue in the organisation and management of the plan, as it will govern its implementation and maintenance over time. However, the feature that makes this plan really sustainable is not the direct allocation of economic resources – although they are required when the City is the exclusive backer of the project -, but rather the form of participation in said plan, i.e. the investment opportunity, its attractiveness for private entities that may be willing to play an active role and invest directly.

Just like the communication plan - “Connecting Minds, Creating the Futures” -, the capacity to import investments involves strategies that will actually enable the implementation of the plan and its maintenance in a logic of synergistic sharing: Connecting Opportunities, Creating the Smart City. The sustainability of the plan is mainly based on two coordinated actions: direct sustainability and derivative sustainability. While direct sustainability is supported by the Administration and relates to directly implemented actions that have be always oriented to innovation (such as the streamlining of public lighting or the construction of park-and-ride facilities), indirect sustainability refers to the actions that are implemented with the support of the private sector. This second form of support, whose importance and significance have been recently increasing, may be further classified into three main types of participation: one is related to the sustainability of the action, voluntary contribution and forms of service payment like road pricing policies, where revenues are then reinvested in the sector. Direct financing is linked to the spending power of the City under the new provisions on harmonised budgeting and reinforced financial reporting, as well as to the spending restrictions imposed by the so-called “Stability Pact”, so that only very few significant infrastructures can actually be built and implemented. For example, the construction of the new tram lines prevents the simultaneous development of other works, and this virtually eliminates the possibility of obtaining significant results in energy efficiency indicators associated with a reduction of emissions and polluting agents.

The use of indirect financing may be the answer to the “economic limits” of the City and a guarantee of achievement of preset goals. If, for example, pricing policies can be a tool for maintaining and developing strategies, also to convey and reinforce the meaning of the choice made , the decision of a private entity to invest in the actions proposed by the Administration with calls for tenders is the result of a careful assessment of the opportunities offered and the consequent implications both in terms of economic attractiveness (PPP/ESCO) and of result and visibility (crowd-funding).

In addition to the investments for the actual implementation of the action, i.e. the physical construction
or requalification of an infrastructure (tramway), political strategies with direct spin-offs on citizens/residents/tourists/city users (eco-road pricing policies, town planning), there are equally significant choices made by the Administration which directly affect the same Administration and are good practices. For example, the Smart City Plan can be seen as a container for collecting the suggestions of other European countries that can also be used in Florence, essentially by the City. This should be the objective of Green Public Procurement (GPP), the policy of environment-friendly buying and the increasing activity of analysis and assessment of the opportunities offered by EU programmes and funds for regional development directly linked to the theme of smart cities.

**WHAT WE ARE GOING TO DO**
- Develop an economic-financial sustainability plan for the specific actions of the Smart City Plan
- Encourage the creation of innovative investment for the implementation of the SCP
- Implement financial strategies and innovative tools for the development of public private partnership
- Reinforce strategic policies for the sustainability of the choices made (eco-road pricing)
- Adopt sustainable choices and procurement policies
- Develop a network of partnerships at European and international level for the implementation of projects of the SCP
- Assess the different forms and opportunities for financing based on the actions selected

**HOW?**
- By developing a business plan for the medium to long term
- By promoting the implementation of the SCP with institutional investors, businesses and citizens
- By planning a sustainable timeframe for the actions to be exclusively implemented by the City
- By adopting Green Public Procurement practices
- By testing PPP options
- By establishing a dialogue with ESCo’s
- By analysing civic crowd-funding initiatives
- By taking part in the smart city calls selected at a European and national level

**INDICATORS**

| INDICATORS |
|------------------|------------------|------------------|------------------|------------------|
| Number of EPC contracts | Investments for energy efficiency | Investments for sustainable mobility | Investments for ICT projects | Crowdfunding actions activated |
INVolVEMENT OF STAKEHOLDERS AND COMMUNICATION
A plan designed to have an impact on the future of a city will not have any future unless it is correctly communicated and shared with the partners and stakeholders. This also applies for all the strategic plans, but even more so for this initiative that aims to change the behaviour of citizens and those operating in the urban context in order to make everyone’s lives simpler and more sustainable.

The Florence City Council has considered this factor essential since drawing up the SEAP/Sustainable Energy Action Plan and in fundamental passages of the territorial planning such as the Structural Plan and the Urban Regulations. Based on these experiences and by extending them to the new specific dimension of the Smart City Plan, it will be possible to further strengthen a model of participation and communication that becomes crucial right from the design stage and consequently, also in the implementation stages.

The concept of “connecting minds, creating future” underlies not only any technological development that springs from the exchanging of ideas and completion of the same, but also all those actions that become successful in a process of ongoing development involving all those who are or who could be directly and indirectly affected.

By involving citizens and including them in the decision-making processes, means first and foremost to provide adequate information about the processes and the action to be implemented or planned, plus it means to render the administration transparent, accessible and interactive, in other words, capable of communicating and listening.

For this reason, the communication function plays an essential transversal role in the various inclusive and participatory decision-making processes: in fact, through communication it is possible to create knowledge and awareness among citizens not only of the activities, objectives and behaviour to be shared, but also of the opportunity of participating. By offering the necessary information and tools, areas can be created for listening and collecting citizens’ comments and ideas both physically and virtually, and it also enables the spreading of the “results” of the listening and participating moments, and the dissemination of the decisions and implementation policies.

It is essentially a question of systematizing the public action, making it proactive with sustainable behaviour and involving the entire city, also through the associations, professional rolls, and intermediate entities. No-one must feel left out.

**WHAT WE INTEND TO DO**

- To build a Communication Plan that is not merely an appendage of the Plan, but an integral part of the same in all its forms and which provides not only unilateral informative actions (from the Promoting Body of the Plan to citizens), but also ongoing interactions.
- To involve the citizens and local stakeholders right from the initial drafting of the Plan and in all the deployment activities, in order to spread awareness and the contents useful for the cultural change, but also to help come to terms with the reality and stimulate all the energies useful for achieving the goals.
- To consider the participatory, sharing and communication actions no longer just a strictly city-related dimension but as part of the metropolitan city dimension.
HOW?
- with periodic meetings with stakeholders: public and private entities and citizen organisations (associations, intermediate entities, etc.)
- with participation activities for information, collecting feedback and guaranteeing transparency.
- with coordination of the communication among all public (institutions and holding companies) and private subjects.
- with multichannel communication, planned as format and channels based on the contents to be disseminated and the feedback to be collected.
- with digital communication, starting from the specific developments of the “Digital Manifesto of Florence”
- by always considering the participation, information and communication actions in terms of Metropolitan City, creating a model of communication that can also be transferred to other urban situations or metropolitan networks.
- with dissemination of the results and periodic verifications

| INDICATORS |
|------------------|------------------|------------------|------------------|
| Voters participation | Population trends | Number of city users and tourists | Incentives for final users for energy efficiency implementation |
The underlying objective of the plan is to ensure that the actions implemented in the municipal territory are compliant with the vision of the city and in line with the overall objectives of the Smart City Plan. The implementation of the Smart City Plan requires the performing of an evolved monitoring and control activity to verify its compliance. This is a strategic document and therefore subject to periodic updates depending on the political indications, boosts from the technological and process innovation and the urban and metropolitan transformations that have increasingly more frequent impact and evaluations at a local level.

It is therefore necessary to adopt an innovative type of monitoring that is able to rapidly provide information on the evolutions and dynamics in progress so that it is possible to make decisions and advance suggestions for redirecting the actions. Consequently, a flexible and dynamic governance instrument but at the same time capable of quantifying and measuring the effects of the transformations taking place in the city. The master plan should be “live” and flexible to fit evolutions and calibrations based on the step-by-step monitoring of the achievements. There are technological, human and institutional factors which could be able to divert municipal policies: a proper control system will detect the weak points that must be recalibrated.

Based on the positive experience accrued in drawing up the SEAP (Sustainable Energy Action Plan), Florence has continued with the activities of an internal, unidirectional work group that has followed all the stages of the STEEP (Systems Thinking for Efficient Energy Project) and actively collaborated in drafting the SCP.

The Smart City Group will be enhanced with innovative instruments and will open up inside but above all, outside the City Administration in order to capitalise on the contributions of stakeholders that are continuously involved in the “System Thinking”.

Inward flexibility is essential for involving the political party that represents the stakeholders that are the driving force behind the transformations of the city. A collaboration that must have times scheduled and defined for continuously aligning vision and objectives.

The aperture inside the Organisation is a crucial element for ensuring a constant flow of information inside the structure while at the same time seizing all the opportunities and stimuli coming from the territory in order to be able to continually update and adapt the same.

The monitoring proposed is also an ambitious project that requires the application of innovative instruments supported by the most advanced information techniques to ensure immediate and efficacious communication, as well as an effective calculation of the ensuing benefits.

The instruments identified include:

- the **Energy Management System** that represents a broad exception capable of including all the actions of the SCP, that is, the Management System of the Smart City Plan SG_SCP
- the **performance indicators** identified and tested by the STEEP.

This is a modern energy management system capable of governing all the processes and transformations taking place in the city, which is positioned at a “top management” level able to capture the essence of
the evolutions in progress.

A system that will help the City Council Organisation to define the guiding strategies of energy and environmental responsibility, set short-, medium-, and long-term performance objectives and allocate the necessary resources for achieving the objectives.

In view of the strong presence of innovative elements in both actions and interactions between the various sectors, several processes have been identified that will require priority monitoring:

• **Strategic intelligence management**, that is, the process of collecting, analysing and producing the most relevant information and knowledge necessary for the decision-making process during the various stages of the innovation management; given the importance of the activities and the purposes, this process must be governed by the top management;

• **Innovation thinking**, that is, the method for in-depth troubleshooting of the problems and analysis of the opportunities in order to identify the best solutions for creating innovation, by collecting data and information from the different sources and transforming them into the knowledge required by the organisation;

• **Collaboration management**, that is, the activity often necessary because neither the individuals nor the organisations in general possess all the skills and expertise required for ensuring a regular and concrete innovation process; thanks to the management of the collaboration inside and outside the organisation it will instead be possible to significantly improve the innovation performance;

• **Creativity management**, that is, the creativity that is the very essence of innovation: in this sense all the activities must be supported that are useful for stimulating and facilitating creativity within the organisation.

The Management System of the Smart City Plan will pursue the consolidation approach of the Deming Cycle (PDCA Plan-Do-Check-Act) that finds application in all the certification systems applied to public and private entities. We have to expand the intervention contexts of the SCP, extending the assessments to other sectors that are directly involved in the implementation and range from the ICT to welfare, as well as the interactions among the sectors that raise the level of complexity.

The approach, summarised in the figure above, will allow for complete governance of the scheduled transformation and will be able to provide the necessary indications for monitoring performance.
Within the context of implementation of the Sustainable Energy Action Plan, Florence has experimented the application of instruments able to “measure” the global performance of the city by analysing six intervention areas that represent an important part of the SMP actions: Planning and Programming, Buildings and Installations, Services offered to citizens, Mobility, Internal organisation, Communication and information.

This is the *European energy award – EEA* that is currently applied in over 1,300 cities in Europe and could be further intensified in the perspective of the SMART City.

Despite being complex, the Management System can benefit from the presence of operating systems that are already available and efficient, such as the energy manager, mobility manager, ICT manager, Disaster managing, etc. These structures will enable the system to make use of an “intelligent synthesis” of the impact and effects of the transformations taking place. They are structures capable of planning the interventions and “measuring” the effectiveness of the results in the territory.

The measuring will also use the family of indicators that have been identified within the context of the STEEP. The complexity of the actions and interactions among the various sectors requires careful and flexible application of instruments to ensure compliance and representativeness between the values calculated and the actual situation. In this sense, the family of indicators has been divided into categories and it is also possible that other parameters will be identified for better representing the transformation of the city.