



# Work Package 2: 'Specifying a Transformation Agenda'

## January 20, 2015

### Key Consideration 4 'Integrated Planning'

In the Work Package 2 of the TRANSFORM project, cities' sur la forme governments have to produce a Transformation Agenda which will describe their path toward a Smart Energy City.

The main objective of the KC working groups is to provide cities with insights regarding some challenges they wish to address in their Transformation Agenda. Through the KC working groups, cities will share together and with industrial partners, their experiences, difficulties and successes regarding the KC topics.

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## 1. Objectives of the KC WG: definition of the topic, composition and expectations from the group

Along the lines of the Transform approach, also the KC group 4 tries to combine together Municipalities with partners from the world of the energy distribution and research.

Respecting this composition, the group is formed as showed below in the table:

### a. KC4 Partners

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### b. KC4 Partners' definition

Certainly, speaking about the topic, we can think about comprehensive definition: as known, for “integrated planning” we generally mean a **linking moment of vision, priorities, regulations in a flexible system of evaluation, decision-making and action.**

Agreeing on that, the concept was widely enlarged by our group, more relatively to the aspects connected to the interaction between land use and energy planning. KC4 participants purposed a definition where integrated planning is considered as a way for implementing local energy policy (at the municipal level, in this case) and as a process where interacting with legal and contractual levers in order to achieve those targets which responds more closely to the goals of energy transition.

### c. KC4 Partners' main expectations

After that, another contribution to better explain the topic is to investigate the *principal expectations* expressed by partners, for representing the various world of energy sector with its features and challenges.

- From the KC group round table, the upcoming aspects regard by municipalities, **the will of a better definition of energy planning scenarios** (and related methodologies to build them up) in order **to have more inputs for decision makers**.
- Especially for planners, the main expected results is **outlining right scales, contents and levels of detail for a proactive e planning action**.
- For energy providers and distributors the more significant contribution by the KC group is expected with **respect of the coordination between the local entities scenarios and the investments made by private companies**.

Generally speaking, a good result for everybody is the **connection of KC4 activities with those coming up by others KC groups**.

## 2. Status quo: recommendations, proposals and criticalities

To enter more deeply into the subject, in this paragraph, we report some of the reflections lead during the KC4 group activities. In particular, the text below provides a contribution addressed to cities deployed into three steps: the remind of main open questions, the synthesis of interesting aspects experimented by frontrunners municipalities and a selection of best practices rising up from the partnership.

These three steps derived from the activities done locally by partners by means of SWOT analysis and debates which were organised in the Intensive Lab Sessions and Intake Workshops (See WP 1). As a survey on key-planning issues, TRANSFORM KC4 team purposes some general themes that cities Europe-wide have considered as ***crucial for a better sustainable and smart implementation of environmental policies***.

### a. Recommendation 1: Clarify the Open data issue

First of all, there are still ***lacking or partial application of EU indications in fact of open data (COM(2011) 882) and the treatment of energy data and their public use in general***. The Commission's work in the area of open data is now focussing on generating value through re-use of all the information that public bodies produce, in order to help discover new and innovative solutions and fostering participation of citizens. The Efficiency Directive 27/2012 is somewhere confusing about the aims the information can be delivered for. This fact causes misunderstanding and mistaking interpretations at the local level that do not assure the right application of the Directive in itself and do not permit the realization of the expected results. In wider perspectives where smart communities are always connected as a sensors-network, there is no justification for the lasting absence of available data which

makes an adequate energy planning practically impossible to be fronted by municipalities and regions, too. We purpose a better clarifications of uses and targets of the treatment and availability of the energy data.

### b. Recommendation 2: To strengthen link between Energy and urban policies

Generally speaking, local entities claim a **more stringent connection between energy and urban policies**. This can be done by means of a next cooperation with the DG Regio (General Directorate for Urban and Regional Policy) in the coordination of the Structural Funds. In other words, local plans and programs are due to the municipal hand, but the energy elements that are contented inside must be done in compliance with environmental and energy directives, and, so, financed.

The exigency of transforming the **existent tools on energy planning into spatial ones**, which can be able to specify through the use of maps the potentials (as a solid basis) and the alternatives of exploitation in different scenarios. Considering that a large amount of cities in Europe tried to cope these kind of challenges by means of the SEAP-Sustainable Energy Action Plan as an interesting tool for energy planning, we can notice that the SEAP's aim of CO<sub>2</sub> reducing is expected to be achieved with the contribution of the whole municipal territory, although it is not required that each district is able to contribute significantly to the general target. In this way, it is very "realistic", because not all the neighbourhoods have improvable conditions to be exploited at the same manner, but at the same time the link between general energy targets and local territory is weak. Many can be considered transversal to all the districts and able to be applied wherever, but there are not, in the planning instruments, energy description of the areas, the estimation of the potentials and the outline of situ-specific objectives. However, sometimes energy interventions are punctual and they need not a sophisticated land or landscape study. But speaking about areas of transformation, they can be quite wide and differently featured (and so differently exploited). The **absence of a "territorialisation" (or "territorial-action") of the SEAP and its energy targets comes up as a crucial gap**.

### c. Recommendation 3: Need of a monitoring tool

Most cities underlined the **need of a technical tool for gathering information with an adequate level of sophistication and functionalities** apt to an energy dashboard, able to revise the current stage but also the drawn out previsions.

The most important thing is that what was established in a territorial perspective (e.g. photovoltaic initiatives on the whole city) can be **studied also in its foreseen impact at a more detailed** level. Regarding that, the Transform project provides a Prototype Quantitative Decision Support Model (cf. WP3 – deliverable 3.1), in order to offer cities the methodology of how to set up smart city analytics. WP3 recognizes the information required by stakeholders to make decisions and the format within which it needs to be provided (e.g. GIS maps, financial parameters). It consolidates existing datasets and then processes them to make this information available to decision makers. This is used in combination with the methodologies developed in WP2 to assist cities in producing a Transformation Agenda.

The use of data, the possibility to bring in end users for the generation of data and the use in practical applications and the use of analytics to search for better economies in scenario's are an innovative step towards smart city planning. At the district level, it can be also used by local partners in developing projects, thanks to the contribution of a tool which helps in deepening and assessing feasibility aspects. The Implementation plans made at the district level show the lasting gap between, from one side, the foreseen actions that could be lead and, from the other, the characteristics of the territory: without an intermediate step, able to verify the correspondence of the two sides, the potentials of the area risk not to be exploited and the planning actions to be programmed without a consistent background of information.

#### d. Proposals and opportunities

Another aspect which grounds our survey is represented by some tips, derived from the reflections made among partner cities around the role of the municipalities in building up **strategies and proposals**, not only for being respectful with the Directives, but as a sort of experimentation "in field" of the declination the mentioned laws at the local level. Two categories of reflections can be listed: a set of actions/initiatives that are representatives of some "**attempts**" which municipalities have been experimenting during the recent years, and some points which sum up criticalities encountered in the daily planning activities. These two are due above all to the work done for the WP 4 on the Implementation Plans, where each city tried to implement projects on a district and, so, practically, recognized supports and barriers, linked to the above cited issues, that can hinder initiatives and innovative choices.

Municipalities have been involved in the recent years in experimenting, which seem to be interesting as a set of **opportunities** to be caught:

- The collaboration of energy agencies: infact, they are responsible for elaborating proposals to be submitted to the municipalities as decision makers. Generally speaking, they are engaged for developing plans plus establishing operating and maintain agreed energy plants and infrastructures. *This form of governance can be, at the end of a period retained significant, be assessed Europe-wide among municipalities, analysing benefits and weaknesses.* Most of participation actions are made at the local scale. The stakeholders' involvement is practised by municipalities widely, but not all experiences represented positive achievements. In some cases, the municipality took the lead in creating the mission statement and this process has become part of the setting up of a new public-private partnership. Others experiment encounters and matching, as also the Intensive Lab Sessions are. Often, they accomplished a serious commitment that put in light the availability of actors to overcome laws' minimum. In other cases, the confusion of roles and the not transferred sense of profitability generated reluctant positions and not-collaborative behaviours. *Best protocols could be sustained and encouraged, avoiding municipalities at an early stage, to start with un-useful initiatives and in the wrong way.*
- Municipalities or agencies sometimes build up by their own a general framework that shall be used in the economic evaluations as well as in an emission evaluation to be applied in feasibility

studies. *These aspects can be more disseminated and shared, and, if the case, elevated at the level of guidelines for committed cities.*

- For encouraging performing solutions, local entities sometimes provided indications and norms for addressing citizenship and professionals (we had fruitful examples in Amsterdam) who want to invest or work in renewable resources or energy efficient buildings or plants. These norms are legally binding, if belonging to the municipalities' jurisdiction, otherwise they are not, but the majority takes them into account: this means that it is easy enough for most of the mentioned categories to respect them. *Experiences in this field (municipal indications to voluntary performances) can be transferred and some successful become elements to plan out a set of common guidelines.*
- Following the same issue, local bodies often purposed system of internal certification or labelling, connected to the contribution to the achievement of energy targets by the whole city-community. *Brownfields' transformations can be purposed as "energy lab" where new methods and tools for design and dimensioning future cost-effective solutions and technologies can be experimented and being certificated with a "city brand" label.*
- About brownfields some municipalities, exploit at most the opportunity to limit peripheral transformation areas which are, in compliance to existent law, submitted to particular rules. This kind of planning actions could result very useful even in the energy field: examples of the turn to these tools are the concerted management zones in France (ZAC) (for example in Lyon, where key energy issues were imposed from the very beginning of the creation of the ZAC community, especially for housing) or some other types of model districts, which can be considered experimental and so, not being affective by too many binding rules, but at the same time free to put restrictions for the energy performances on what will be built up in the area. *These experiences could be taken into account by EU for monitoring urban solutions provided by municipalities.*
- *Local entities reckoned significant also the initiative of interest-free eco-loans as an experimental tool to be tested.* The eco-loan provides financing for energy saving initiatives and potential costs resulting from these kind of initiatives in order to make buildings more energy-efficient, more comfortable and less-emitting greenhouse gases. It can be an important subsidy for the rehabilitation for existing housing stock.

## e. Criticalities

Among **criticalities**, coming up by the activities of the KC4 WG, can be underlined the following ones:

- About *social buildings*, the related corporations are sometimes restricted to raise the rent in case of energy rehabilitation. The allowed amount to raise the rent is not enough to pay for the investments, even though the financial benefits for the users are profitable enough to compensate for a higher rent.?
- Many cities have strict rules about *heating system* (city heating is obliged quite always for new buildings), in most case for assuring district heating and cooling profitability, and sometimes DH must be operated on a non-profit base.. Contrary, DC run as private business, this means that it will only be implemented if there is an economic incentive.

- Concerning *electricity grids*, planning usually happens very differently than the heat one. Various distribution system operating companies are responsible for that, sometimes we have only one, but the municipal influence or role in tendering on this is relatively small.
- Agencies (or municipalities themselves) are often in charge of elaborating districts or brownfields' evaluation not only in *economy feasibility concerns*, but also considering socio-economic analyses. The socio-economic feasibility should be taken into account only the actual costs for society, disregarding subsidies and taxes. The way it is ensured that the solutions are actually the best and not the most favourable due to the present incentives.
- There are cases where cities asked for developers to demonstrate impacts on climate changes in consequent to the transformation of a district. At the same time, lacking definite rules, it seems to them very difficult to require special measures without a binding framework.

### 3. Best practices feedbacks

A third level in our survey is represented by a series of **best practises** that can be useful in order to disseminate correct approach and share expectations and actual results.

Best Practice n.1 - Energy planning approach at the urban policy level	
=> From Genoa	
Theme description	<p>The Genoa SEAP is not only focused on energy as a sector theme, but put itself conceptually as a response to a wider framework of European policies. In particular, it considers three key-elements: the increase of renewable resources, the use of technologies for achieving the goals of energy consumptions' and air pollution reducing, and the relation between the new communitarian policies about the "smart cities" and the SEAP tool.</p> <p>The method purposed by the plan is based on two complementary approaches: firstly, a quantitative one, although grounded sometimes on estimations, and another one directly related to the urban planning, as a test of the overall territorial feasibility of the selected initiatives.</p> <p>The interpretation given to the SEAP wished, not much adding contents to the ordinary planning, but above all locating the plan at the centre of a governance perspective of the city, at the short and long term.</p>
Main objective of the action	<p>Besides the list of interventions of the action plan, what is really meaningful (and transferable) is above all the insertion of the SEAP at the strategic level as a guide concerning metropolitan policies' matter. The sectors involved (Mobility, Energy and Environment, Public Procurement, Territorial Systems, Land Use Planning...) in the plan are those where the urban governance is, for legislative competence, more active and the more relevant</p>

	<p>aspect is the link with the territorial planning action, that is mainly “urban”.</p> <p>In other words, the energy issues of the city are fronted essentially in an urban planning framework, in which the first evaluation is the territorial context and its capabilities of accepting and developing transformations, putting in value its energy peculiarities.</p> <p>For instance, concerning the dialogue between the regulatory masterplan and the SEAP, was applied for the brownfield areas of the city: for those sites where the Municipality is engaged in a recovery process, the project proposals have to be subjected to an internal process of environmental assessment which evaluate the outcomes of the transformation according to the objectives of the SEAP, declined at the local level (public transportation accessibility, renewable resources’ employment,...).</p>
Support tools (qualitative and/or quantitative)	<p>During the drawing up of the SEAP, the creation of a « energy database » was needed, comprehensive of consumptions, public and private, besides the illumination plants and other synthetic indicators.</p> <p>The Energy Database is useful for the day-by-day consultation of the data and for their geo-referring in territorial base. Within the Municipality, it was implemented by the Territorial Systems Sector.</p> <p>This activity, in phase of refining, are strictly related to the decision about the monitoring ways of updating and monitoring of the SEAP tool by the Covenant and also connected with the results of the WP3 “Development of a Quantitative Decision Support Model” fo the Transform Project.</p>
Key players	<ul style="list-style-type: none"> <li>- Municipality, Genoa Smart City Association and its members</li> <li>- Covenant of Mayors for the monitoring process aspects</li> <li>- University and IRE for the methodological concerns of the approach</li> <li>- Other public bodies, linked with the urban transformations that were inserted in the action plan</li> </ul>
Legislative framework to be taken into account	<p>The targets of the action are referred to the institutional themes of the Covenant of Mayors : the increase of renewable resources (in compliance with the 2009 Directive), the use of technologies for achieving the goals of energy consumptions’ and air pollution reducing (objectives of the SET plan of 2008, Strategic Energy Technology). A third target can be considered as a conceptual evolution of the SET Plan towards the “smart cities approach”.</p>
Main criticalities and barriers	<ul style="list-style-type: none"> <li>- Times of the procedural updating of the regulatory masterplan and the urban mobility plan (that needed to be aligned periodically) longer than the SEAP</li> <li>- Deepening of the financial aspects of the implementation of the SEAP’s actions</li> <li>- Connection with the PEC (Urban Energy Plan, mandatory for big cities, in compliance with the Italian law, L. 10/1991) already to be drawn up</li> </ul>
Main aspects for replication	<ul style="list-style-type: none"> <li>- Insertion of the SEAP as a voluntary planning option within the ordinary framework of existing plans</li> <li>- Locating the energy theme (considering that it also affects environmental issues in general) at the strategic level of planning, not only at the sector and operative one</li> </ul>

## Best Practice n. 2 - Implementation of an Energy Master Plan



## => From Lyon

<p>Theme description</p>	<p>The Community Council deliberation no. 2012-2754 dated February 13, 2012, which approves the Lyon Urban Community energy-climate plan, provides for the implementation of an Energy Master Plan as one of the tools for carrying out its action plan.</p> <p>The Energy Master Plan envisaged by Greater Lyon is a tool for the regional planning of an energy transition. This tool aims to give a prospective vision of energy planning to be implemented over the Grand Lyon area in order to better understand the energy consequences of public policies and to guide and enrich the implementation of a local energy policy.</p> <p>In this context, it proposes an optimal vision of the organization and development of the energy system (production, networks, consumption) over the territory which will meet the goals of sustainable development and the smart city and which takes into account:</p> <ul style="list-style-type: none"> <li>- the area's current state;</li> <li>- energy transition goals;</li> <li>- the area's resources, advantages and constraints;</li> <li>- territorial public policies and their consequent projects (development, travel, housing, waste, etc.).</li> </ul> <p>Work on the key factors for implementing an urban planning and energy approach from the viewpoint of regulatory and legal aspects and computer tools. – work on infrastructures</p> <p>→ link with the energy-planning workshops - already in operation</p> <p>Tool core definition (input and output data, type of results)</p> <p>Describe the points of interface between the Energy Master Plan and the master plans of other departments (water, streets and roads, etc.) + prioritizing (according to critical points)</p> <p>Identify services with an impact on energy</p>
<p>Main objective of the action</p>	<p>Energy systems planning will be done with the goal of reducing CO2 and increasing renewables production.</p>
<p>Support tools and legislative frame work</p>	<p>This action is not a separate action PCET action; rather, it provides a tool for PCET territorializing. Its implementation has been planned for in energy mission work. At this stage, an analysis has been made of the methodology implemented with the identification of participants and necessary tools. The Transform project could accompany the energy mission in carrying out the initial work.</p> <p>A first budgetary allocation has been committed to by Greater Lyon through the organization of an energy mission and the launch of an AMO.</p>
<p>Key players</p>	<p>Organizing authority for electricity and gas networks, communities, network operators (heating/cooling, electricity and gas), ALE, SEPAL (SCOT), region (SRCAE), etc.</p>
<p>Main criticalities and barriers</p>	<p>Other energy departments (water, sanitation, etc) don't have enough time. For example, network operators are heavily solicited to recover heat from waste water.</p> <p>The water department is not suited to leading the participants because it is an</p>

	<p>interested party → role of TRANSFORM and the energy mission</p> <p>Include the evaluation of fatal energy</p> <p>If we focus only on the implementation of the sub-theme, the community has the necessary competence to federate the interested parties around the theme of planning.</p> <p>Regulatory obstacles could limit the scope of action by the community and its access to energy data. The goal of this work is also to highlight these blocking points.</p>
Main aspects for replication	<p>To provide an example of preparation stepwise of an Energy master Plan:</p> <ul style="list-style-type: none"> <li>- Work on the implementation of a method for building an energy master plan by following these steps: <ul style="list-style-type: none"> <li>o Identify the interested parties</li> <li>o Analyze urban planning and network methods</li> <li>o Analyze framework documents on urban planning and energy (contracts, regulations, strategic documents)</li> <li>o Analyze existing IT resources and the functionalities required</li> <li>o Identify how these planning approaches interact with legal and contractual levers in order to achieve energy planning which responds more closely to the goals of energy transition</li> <li>o Define the contents of an Energy Master Plan</li> </ul> </li> </ul>
	<p>List of acronyms:</p> <ul style="list-style-type: none"> <li>- PCET is for "plan climat énergie territorial". Current SEAP in matter of energy and climate.</li> <li>- ALE is for "agence locale de l'énergie" which is an local association specialised in energy efficiency of buildings and renewable energy and which is one of our partner in the climate action plan.</li> <li>- AMO est for "assistance à maîtrise d'ouvrage". It's when a public body or city decides to take a sub contractor to lead somme tasks instead of lead them directly.</li> </ul>

<b>Best Practice n. 3 - Sustainable buildings – concept tender offer</b>	
<b>=&gt; From Hamburg</b>	
Theme description	The implementation of high energy efficient buildings, including the use of environmentally friendly building materials, in the context of urban development.
Main objective of the action	Several reasons demand a more innovative and sustainable approach for new buildings. The building sector accounts for 40 % of our CO <sub>2</sub> emissions. Buildings have a lifetime of up to 100 hundred years thus they should be build using sustainable materials and the latest technology. The grey energy, energy that is needed to build a house including all the necessary materials and the energy during operation and deconstruction, is very high. This should be taken into account in the planning process and demands the use of sustainable materials and technologies, which can be recycled.
Support tools and legislative frame	The city of Hamburg is applying a particular internal agreement, called "Concept tender offer" when selling municipally owned land to investors or

work	<p>project developers. Since the beginning of 2010 different authorities responsible for urban planning in Hamburg are applying the method “Concept tender offer”, which was agreed on in a housing development plan to support more energy efficiency and affordable housing especially social housing, successfully. Since then for the allocation of property the quality of a concept is assessed with 70 % and the offered price with 30 %.</p> <p>At the start the weighting of the evaluation criteria for the concept quality were evenly distributed: one third for housing and social criteria, one third for urban design and one third for energetic criteria. This has now shifted more towards the housing and social policy criteria. Currently, the housing and social aspects as well as architecture and urban design are rated with 40 % each (280 of total 700 pts.) and the energy standard with 20 % (140 pts.). In the overall evaluation of price and concept of a bid, the sustainability and energetic criteria only account for 14%.</p> <p>The energetic criteria are usually evaluated as follows:</p> <table data-bbox="448 672 1279 1097"> <tr> <td>KfW Efficiency House 70</td> <td>20 points</td> </tr> <tr> <td>KfW Efficiency House 55</td> <td>50 points</td> </tr> <tr> <td>Efficiency House 40</td> <td>80 points</td> </tr> <tr> <td>Passive House</td> <td>100 points</td> </tr> <tr> <td>Efficiency House Plus:</td> <td>120 points</td> </tr> <tr> <td>Sustainable insulation materials with Blue Angel seal of approval:</td> <td>10 points</td> </tr> <tr> <td>DGNB certification or NaWoh (certificate for sustainable building):</td> <td>10 points</td> </tr> </table> <p>This evaluation has been applied for the majority of the 30 concept tender offer so far. There are no minimum requirements regarding the energy standard of a building. However, a bid scores 0 if only the legally required building standard is met by the bid. A commission consisting of all relevant authorities (local district, ministry for finances, ministry for urban planning and environment) decides over the bids according to these criteria. Exceptions apply for the municipally owned housing company (SAGA GWG) and housing associations. The allocation of property for housing associations is done by the agency for housing associations (part of the ministry for urban planning and environment).</p> <p>In case of projects and building sites of the areas of the IBA Hamburg, each investor has to agree on a “Quality Assurance Contract”, in which the specific IBA minimum energy standard, EnEV 2009 minus 30 % or KfW Efficiency House 55, is stated. As a result, concepts only get additional scores in this part if their building energy standard is higher than this requirement.</p> <p>Also additionally, IBA Hamburg added aspects like sustainable wooden construction and the installation of photovoltaics to this selection and partly increased the relevance of the energy aspects up to 30 % of the total score.</p>	KfW Efficiency House 70	20 points	KfW Efficiency House 55	50 points	Efficiency House 40	80 points	Passive House	100 points	Efficiency House Plus:	120 points	Sustainable insulation materials with Blue Angel seal of approval:	10 points	DGNB certification or NaWoh (certificate for sustainable building):	10 points
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Passive House	100 points														
Efficiency House Plus:	120 points														
Sustainable insulation materials with Blue Angel seal of approval:	10 points														
DGNB certification or NaWoh (certificate for sustainable building):	10 points														
Key players	<ul style="list-style-type: none"> <li>- IBA Hamburg</li> <li>- Ministry for Urban development and Environment</li> <li>- project developers and investors</li> <li>- Hamburg Senate</li> <li>- building companies</li> </ul>														

Main criticalities and barriers	<ul style="list-style-type: none"> <li>- The concept tender offer and “Quality assurance contracts” can only be applied for urban development on municipal owned land</li> <li>- Be aware of the equity demand in the local planning regulations, apply comparable criteria to every one</li> <li>- transparency</li> <li>- The energy standards might scare off investors.</li> </ul>
Main aspects for replication	<ul style="list-style-type: none"> <li>- A tool that combines all three dimensions of sustainability (equity, economy &amp; environment)</li> <li>- Design the guidelines according to your objectives, e.g. greater focus on sustainable building materials rather than energy efficiency</li> <li>- Clear guidelines for the procurement of the plots which could be used in other municipalities as well</li> </ul>

### Best Practice n. 4 - Renewable district heating grids – mandatory use and procurement of concession

=> From Hamburg

Theme description	Tools for the implementation of renewable district heating grids in the context of urban development.
Main objective of the action	The share of renewable energy in the heating sector is still relatively low. However, this share has to considerably increase if the climate protection targets should be achieved. District heating grids provide a good technical possibility to integrate local renewable energy sources and thus increase the share of RES in the heating sector.
Support tools and legislative frame work	<p>All German federal states have agreed on a connection- and use enforcement of district heating grids stated in their municipal codes and land use plans. To justify these regulations, the Hamburg parliament has passed a climate protection law (Hamburgisches Klimaschutzgesetz) in 1997. Until today it is the only federal state in Germany that has a law like this. The aim of the law is to protect the climate through the reduction of the energy demand. To achieve this, it has legally binding requirements for e.g. electrical heating, district heating and the building envelops.</p> <p>The Hamburg Climate Protection law makes it possible for the municipality to enact an ordinance that regulates that all new buildings in a specific area have to connect to a district heating grid (§ 4 I HmbKliSchG). The only exemptions in this context are for buildings with a very low energy demand such as passive houses.</p> <p>The process for implementing a district heating grid goes as follows:</p> <p>Firstly, an urban design of an area is developed. The data about the density, uses of the area and the foreseen energy standard is used in a heat survey and report, which investigates the heating demand and whether a grid based energy supply would be feasible.</p> <p>As a next step, based on this survey the municipality can enact a mandatory district heating grid for this area, which means that all buildings have to be connected to it and have to use the district heating.</p> <p>Furthermore, for the implementation of a grid supplied by local RES, procurement of the concession for the installation and supply of the heating grid can be done, which means that different contractors or utility companies, who want to run and supply the grid, can apply with their individual concept. A</p>

	winner is chosen on the basis of the best concept and price. The main criteria for the best concept could be the amount of CO <sub>2</sub> emission per kWh.
Key players	<ul style="list-style-type: none"> <li>- IBA Hamburg</li> <li>- Ministry for Urban development and Environment</li> <li>- Engineering or consulting company</li> <li>- Hamburg Senate</li> <li>- Utility companies</li> </ul>
Main criticalities and barriers	<ul style="list-style-type: none"> <li>- transparency</li> <li>- equity demand in the local planning regulations (a grid connection might cause higher initial costs for building owners)</li> </ul>
Main aspects for replication	<ul style="list-style-type: none"> <li>- Procurements can open the market and generate innovative concepts</li> <li>- Clear guidelines for the procurement of the grid which could be used in other municipalities as well</li> <li>- All federal states have a mandatory use and connection force for district heating grids, which shows that this has proven to be a good tool</li> </ul>

### Best Practice n. 5 - Powerful interaction of electricity consumption data with statistical indicators

#### => From Genoa

Theme description	<p>The six Transform's cities have strongly acknowledged and advocated the primary role that data of different urban dimensions (electricity, gas, waste, water, transport, etc), play in the planning process of "Smart" measures/projects by enabling the Energy Manager/Planner to become aware of the "State of Art" of its municipality's dimensions along with to set the Base line, goals and KPIs. In this regard, the electricity consumption data have a central role to define a "City Map of the Electricity Consumption" with the aim to support the Municipality in the decision making process by easily identify the area/districts in which the interventions of energy efficiency measures/projects are more needed. As a matter of fact the consumption of energy has a strongly impact on the level of CO<sub>2</sub> emissions released on the atmosphere and it is where most of the municipality's planning efforts are focused in order to reach the 20 20 20 goals. It is in this context that through a strong collaboration between the Municipalities of Genoa, IRE Liguria, the University of Genoa and Enel Distribuzione has been possible to shape a fruitful database/template to collect electricity consumption data of the whole municipality to be handed over to the Mayor/Energy Manager in order to support them to take decisions, policies and measures to increase energy efficiency and sustainability at urban level.</p> <p>The electricity consumption data, that will fill in the database/template, will be georeferentiated and will have a level of aggregation that will ensure to avoid privacy issue.</p> <p>The structure of the template, that will host the electricity consumption data, has been totally aligned and developed according to the Genoa's <i>census area net</i> realized by the Italian National Institute of Statistics (ISTAT) that has elaborated for all the Italian cities (Genoa included) a high-quality statistical information, analyses, forecasts as well as scientific standard. Notably the new template of data collection will provide the electricity consumption of each census area enabling to carry out analysis on the correlation of electricity consumption with other statistical information provided by the Italian</p>
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	<p>National Institute of Statistics (such as average income, women/man percentage, unemployment rate, etc) as well as to better define the impact of the decision taken by the Local Government through the elaboration of measureable KPIs.</p> <p>Through the synergies between the Genoa's <i>census area net</i> and the new template of data collection for the electricity consumption, the municipality can count on a reliable and powerful database to be used also for the development of decision support tools, such as the one currently under development within the WP3 of Transform.</p>
Main objective of the action	<p>Enel Distribuzione has defined a template for the collection of the electricity consumption data, totally aligned with the <i>census area net</i> realized by the Italian National Institute of Statistics.</p> <p>For each census area it is already available high-quality statistical information, analyses, forecasts and scientific standard.</p> <p>The interaction of the electricity consumption data with statistical data/analysis will enable the Local Authorities to count on a reliable and powerful database to be used to develop and activate the Decision Support Tools. In this way the Municipality will have not only an useful tool to better face the decision making process but also to become aware of the impacts of its policies/measures on increasing the energy efficiency and sustainability. As a matter of fact, a deep knowledge of the census area features, thanks to the ISTAT indicators and the related electricity consumption, will lead the Local Authorities to better pave the way toward a low-carbon transition.</p>
Support tools (qualitative and/or quantitative)	<p>The new template of electricity consumption data will be provided by Enel Distribuzione to the Genoa' Municipality in order to feed in the DST. In this way the municipality would be able to outline a city map of its electricity consumption and to elaborate different electricity scenarios according to each measures/KPIs planned such as building refurbishment, smart grids, active demand and so on.</p>
Key players	<ul style="list-style-type: none"> <li>- Enel Distribuzione</li> <li>- Covenant of Mayors for the monitoring process aspects</li> <li>- University and IRE for the methodological concerns of the approach</li> </ul>
Legislative framework to be taken into account	<p>The main legislative and regulatory problems are represented by the following aspects:</p> <ul style="list-style-type: none"> <li>• Privacy issue</li> <li>• Lack of a clear role of the DSO to provide the electricity consumption data and notably to act as a third part market facilitator</li> </ul>
Main criticalities and barriers	<ul style="list-style-type: none"> <li>- cost benefit analysis</li> <li>- Innovative business model</li> <li>- financial and budgetary issue</li> </ul>
Main aspects for replication	<ul style="list-style-type: none"> <li>- The new template of electricity consumption data has a strong replication and dissemination potential since in each MSs there is an Institute of Statistics.</li> <li>- The synergies raising from the powerful interaction of the electricity consumption data with statistic indicators can have a strong impact on speed up the planning and decision making process of the Local Authorities to become Smart Cities</li> </ul>