Roadmap to make an Implementation Plan

Deliverable 4.1

Christof Schremmer, Heidi Collon, Max Kintisch, Ursula Mollay (ÖIR)
in cooperation with Geert den Boogert, Stef le Fevre, Bob Mantel (City of Amsterdam)

with detailed inputs from
Laura Hakvoort (City of Amsterdam)
Tina Hjøllund, Emilie Sofie Hvidtfeldt and Else Kloppenborg (City of Copenhagen),
Jørgen Boldt (Greater Copenhagen Utility)
Gloria Piaggio, Mirella Marrazzo (City of Genoa)
Jan Gerbitz, Simona Weisleder (IBA Hamburg GmbH)
Béatrice Couturier (City of Lyon)
Peter Hinterkörner (Wien 3420)
Volkmar Pamer, Pia Hlava (City of Vienna)

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1. Introduction

1.1 The purpose of TRANSFORM Implementation Plans – The task of WP4

Implementation Plans are about action. How and with whom to implement projects, that contribute directly to the main TRANSFORM KPI's (CO_2 reduction, energy demand reduction, increase of renewable energy production or energy efficiency). How to develop a city's quarters towards 'smart urban areas'? How to find investors and projects contributing to the area transformation, and how to link local development approaches to the wider city strategies? TRANSFORM helps 6 cities to discuss different approaches and to figure out best practices and practicable solutions – and come to tangible projects and implementation.

Nevertheless, as implementation plans are about changing existing parts of our cities they are able to influence local peoples' lives considerably. Thus, planning our urban areas is not only about dealing with energy issues, but has to base on a broad understanding of quality of life aspects and the impacts of the IP on these local circumstances.

For each Smart Urban Lab in TRANSFORM, an Implementation Plan is being drafted by the city and the stakeholders involved or by a development organization in charge. This making of Implementation Plans involves the **use and synthesising of existing plans and ongoing planning processes** and brings them to a **comprehensive format**. The Smart Urban Lab processes and the focus of their Implementation Plans in the 6 cities will be individual in character and in scope of participation, but will also cover comparable main issues relating to the objectives of improving energy efficiency and increasing renewable energy components in the remaining resource consumption.

The WP 4 contribution lies with the intensive exchange between partner cities about the making of Implementation Plans, how these processes and their impact can be improved. Thus, key issue of TRANSFORM WP 4 is to contribute to the making of comprehensive Implementation Plans by bringing in expertise from the TRANSFORM team to the elaboration process, as well as by comparing (intermediate) strategies and learning from (first) results.

1.2 The SULs' Implementation Plans in the context of the city wide Transformation Agenda (WP2)

Within the TRANSFORM project, the idea of Smart Urban Labs (SULs) was created from several observations:

- New technologies are being applied first in individual projects, where testing can take place and learning for future improvements is being sought
- Smart urban technologies, however, need to be bundled and rolled out in a minimum of scale and applications, in order to provide a realistic test for further spreading out: Buildings, grids, energy production and storage facilities energy need to be developed and linked in coherent way
- Local networks and exchange of energy, renewable energy produced locally, the use of waste heat – all these relevant types of projects in a 'smart neighbourhood' related to energy and CO_2 reduction – need to be integrated in real urban uses, be they residential, services, offices or manufacturing
- This kind of 'real life' implementation in selected target areas (SULs) is needed in order to develop realistic strategies for the city wide development overall; this is particularly relevant in terms of the impact legal and economic framework conditions form for local implementation, but also with respect to technological innovations, which may be of quite different relevance in various parts of a city.

The vision of creating a smart future neighbourhood is the background of the WP 4 SUL approach. It can be seen as working both ways, top down as an element in a city-wide transformation strategy or bottom-up, as an experimental way of learning and testing in order to develop the city-wide transformation strategy. In reality, both streams, up and down, will flow and work continuously: A city needs a general transformation strategy with binding targets, the implementation is being rolled out in the city's neighbourhoods and from that experience the city-wide strategy will be adapted repeatedly, changing local implementation subsequently.

It seems essential that databases used, performance targets, urban development targets and the expected impacts of the measures taken in the IPs form a coherent system at the city-wide level (⇨ Transformation Agenda, WP 2) and at the district or urban quarter levels (⇨ Implementation Plan, WP 4). Ideally, the **aggregate contributions of the numerous urban districts** should form the basis for the achievement of the goals set at city-level. Since urban areas are most differentiated in

terms of uses, densities, building types etc., the general, city-wide transformation strategy needs quite substantial adaptations at the sub-city level. Therefore, performance targets will also have to be different between e.g. old urban quarters and newly built areas, where the latest technologies and know-how can be applied.

1.3 Definition of Implementation Plans

An Implementation Plan is an **area-based comprehensive strategy and investment programme** geared to significantly reduce per capita/workplace energy consumption and CO_2 emissions in the area, in line with EU 2020/2050 targets and the city wide development targets. Implementation plans (IP) contain the outline of the process as well as feasible projects and a description of planned investments. Investments and measures related to the energy systems in the area, including building stock, technical infrastructure and mobility systems are at the core of the IP. They include a wide range of measures and projects, from retrofitting of building stock, heating and cooling systems, the use of intelligence on both electric and thermal networks, the development potentials of existing water systems etc. to innovative (electrical) transportation modes and the development of urban green.

Implementation Plans for the SUL-areas are made in a joint effort by the city and all relevant local stakeholders. During the process of making the IP, stakeholders scan for possibilities, relate local developments with strategic choices made on the (energy) infrastructures by building feasible business plans, take into account the costs, pay-back periods, regulatory issues, and market conditions (e.g. energy and service prices).

In order to bring the desired investments about, a number of regulatory measures and aid or tax measures will be needed, e.g. relating to energy prices, rents, owner-tenant-utility relations etc. A regulatory system designed to induce individuals, firms and public entities to become active contributors to the energy transformation will be needed. Together with a governance system inclusive of utilities, citizens and stakeholders IP-measures are about to be rolled out in the respective SUL areas and, hopefully, beyond.

Main **expected impacts** of the Implementation Plan are carbon emission and energy consumption reduction, production of renewable energy and increased energy

efficiency, but major impacts are also to be expected – but more difficult to be evaluated – in terms of jobs created, investments induced, energy imports saved, etc.). Highly relevant are also realistic data on the cost-effectiveness of measures, e.g. investment needed in relation to energy costs saved. Measures in the Implementation Plan are scalable.

1.4 Differences in focus and actual phase of Implementation

Planning, programming and implementation in the 7 SUL areas are in quite different phases. Institutional frameworks, planning competencies and methods vary widely between the cities participating in the TRANSFORM project. As there are SULs already built up fully and others which are in a starting phase of green field or brown field development, the measures included in the IPs will be quite different accordingly.

Therefore, each SUL area requires an Implementation Plan focused on the area's specific development objectives. In terms of measures and projects as well as in terms of the individual process design, there is no standard approach, but there will be a great opportunity to learn from the partner cities' experience. Energy-related objectives, technologies applied and governance methods, however, will probably have many elements in common. All participating cities have begun in one or the other way to elaborate comprehensive implementation plans and will be working on them continuously in the next years.

The exchange between the participating cities and SUL coordinators has led to a tentative description of the scope and contents of comprehensive Implementation Plans. It is the task of WP 4 to elaborate this outline in the course of the project and develop a more generic recommendation for future IPs, based on the participating cities' and their project partners experience.

According to the project proposal, the **Implementation Plans** for SULs in the TRANSFORM project will deal with and have to address some key questions, such as

- ★ different timelines of the internal planning and investment agendas of different organizations,
- ★ the interrelation between planning guidelines and the organization of the energy chains,

- the influence of the ownership of energy networks and energy production: on concessions, contract, contract period and termination,
- the possible competition between utilities; e.g. gas and district heating networks and possible difficulties to implement the recommendations of local energy planning guidelines in real life,
- the role of urban developers, the ownership structures in general and possible divergence of interests.

1.5 Potential key considerations and problem statements – the discussion so far

What is needed to successfully develop a smart urban quarter or transform an existing urban area – with a SUL approach? This list provides with a first comprehensive look at the actual major questions stated by responsible SULCOs (SUL-Coordinators), following the PESTLEGS categorization (political, economical, social, technological, legal, environmental, governance, space).

Political commitment and strategies

- Strong political commitment for the realisation of aspern Seestadt (Vienna, aspern Seestadt)
- Lack of energy standards for public properties, lack of public examples (Hamburg, Wilhelmsburg)
- Shift of paradigm to understand new urban districts not only as area for the provision of housing opportunities (Vienna, aspern Seestadt)
- New construction is not only a question of realized numbers of apartments but a question of quality on different levels (Hamburg, Wilhelmsburg)
- A vision 2025 is needed for the whole area as well as embedding into the surroundings (Vienna, Liesing)

Economic

- What are the business cases to develop a smart energy system in a new build area? (Copenhagen, Nordhavn)
- Controlling, monitoring and dissemination of realized activities – without any special funding programmes – there are no future instruments to identify weaknesses and barriers and to resolve them (Hamburg, Wilhelmsburg)

- Implementation matters (process organisation, finance of projects) (Amsterdam, Energiek Zuidoost)
- Comparative technical & economic analysis of different solutions buildings energy supply and for the development of energy networks (instead of competition between networks). (Lyon, Part Dieu)

Social

- Realization of refurbishments on a high standard (lack of planners with sufficient know how, small number of crafts men, little independent information for house owners, missing quality assurance of refurbishment measures) and socially acceptable by cost sharing between house owner, tenant and state (Hamburg, Wilhelmsburg) (Lyon, Part Dieu)
- Especially complex encouragement of private house owners to refurbish their homes on high standards and with the integration of renewable energies (long term planning, refinancing of investments, complex and changing subsidy programmes on national, state and local level) (Hamburg, Wilhelmsburg)
- Connecting of existing buildings to new district heating grids only depending on cost efficiency – sustainable and renewable energy supply without any relevance for most house owners (Hamburg, Wilhelmsburg)
- Future of mobility: What is the right balance of pedestrian paths (rewarding walks), bike tracks, public transport and of course individual traffic? (Vienna, Liesing)
- Involvement of buildings users: Part Dieu is the main business centre of Lyon and most of the buildings are related to offices, commercial or services. To achieve the energy targets, users behaviours will be critical. (Part Dieu, Lyon)
- Trust is an issue. Building owners are not used to the ESCO concept, and contracting is normally for more than 10 years. (Amsterdam, Energiek Zuidoost)
- The projects are about raising awareness and citizen involvement. The social impact will be the biggest for the community lighthouse project. This project combines sustainability goals with education, integration, health and safety goals. The solar gambling should help bring in energy as a topic in day to day conversations. (Amsterdam, Energiek Zuidoost)

Technological

- How to come to decisions content wise (energy saving strategies, local electricity production, waste heat use, needed infrastructure) (Amsterdam, Energiek Zuidoost)
- How do we strengthen linkage between demand and supply side? E.g. How to make it easier for the end-user to act smart (e.g. smart flat, demand side management)? (Copenhagen, Nordhavn)
- Can we increase the share of renewable energy or recovery across the district? (Lyon, Part Dieu)
- How is the implementation of new energy supplies also on a small scale e.g. on a laboratory stage level possible (to minimize the risk in implementing new energy supply systems)? (Vienna, Liesing)
- How to achieve climate neutral local energy supply until 2050? (Hamburg, Wilhelmsburg)
- Heat & cold: Are the buildings equipped to use the heat from the grid? Or are big investments needed? Is a low temperature grid able to produce hot tap water in an energy efficient way? (Amsterdam, Energiek Zuidoost)

Legal

- Realization of CHP and PV and internal power supply disabled and complicated by laws and regulations (Hamburg, Wilhelmsburg)
- Which basic regulations have to be adopted (laws, decrees, standard procedures)? (Vienna, aspern Seestadt)
- What is the legal framework for a local energy market which generates flexibility locally and nationally)? (Amsterdam, Energiek Zuidoost)
- Heat & cold grid: There is a need to change legislation and existing agreements/contract formats. The combination of local production, storage, use and the interaction between users demands a new regulatory framework with new legal conditions. This is similar for the guarantee and monitoring of the quality of the heat delivery. (Amsterdam, Energiek Zuidoost)
- ESCO are no standard contracts, these will have to be defined individually. (Amsterdam, Energiek Zuidoost)

Environmental

- Environmental issues are mainly connected to technological questions linked to energy system transformations, the changing of environmental qualities in the SUL areas is not an issue so far.

Governance – Reliable partnerships between stakeholders, public participation and involvement of people

- Common Agenda for the development (common goals of area stakeholders incl. commitment) (Amsterdam, Energiek Zuidoost) (Lyon, Part-Dieu)
- Reliable partnerships between the actors (city, development agency, owner, housing agency – Wohnfonds) (Vienna, aspern Seestadt) (Lyon, Part-Dieu)
- How do we secure that the current development co-relates with the vision of a Smart City? (Copenhagen, Nordhavn)
- How impose higher levels of energy performance to building developers? (Vienna, Liesing) (Lyon, Part-Dieu)
- How can we use public-private partnerships in the development process? (Copenhagen, Nordhavn)
- How can we deal with and solve potential or supposed conflicts of goals? (Vienna, aspern Seestadt)
- Monitoring of target achievement (keyword: emission accounting) (Vienna, aspern Seestadt)
- How to formulate clear and ambitioned but realizable targets (Vienna, aspern Seestadt)
- The general problem in implementing is the communication challenge – communication and dialogue with population and district politicians. How to convince people that development in this area is necessary, sustainable and for the benefit for all (shift of paradigm from suburban to urban thinking, Vienna, Liesing)
- Awareness-raising for the "Smart city" idea and its tasks? (Vienna, Liesing)
- How and when should we involve citizens, developers and other stakeholders in the development process of a new build area? (Copenhagen, Nordhavn)
- How to create mutual understanding between city, population and stakeholders? How to win stakeholder as partners? (Vienna, aspern Seestadt)

Space

- Where and how to fit in the extra volume and does spatial design have directly effects the main KPI's? (Vienna, aspern Seestadt), (Copenhagen, Nordhavn), (Vienna, Liesing), (Lyon, Part Dieu)
- How better knowledge on energy consumption (building per building) can optimise the deployment strategies of energy networks. (Lyon, Part Dieu)
- The future layout of 'smart urban neighbourhoods' should be thematized – will they look different from urban quarters as they had been set up so far? Higher or lower densities, compact or spread out? Mixed uses or mono-functional?
- In relation to the above questions research is needed and learning from good practice:

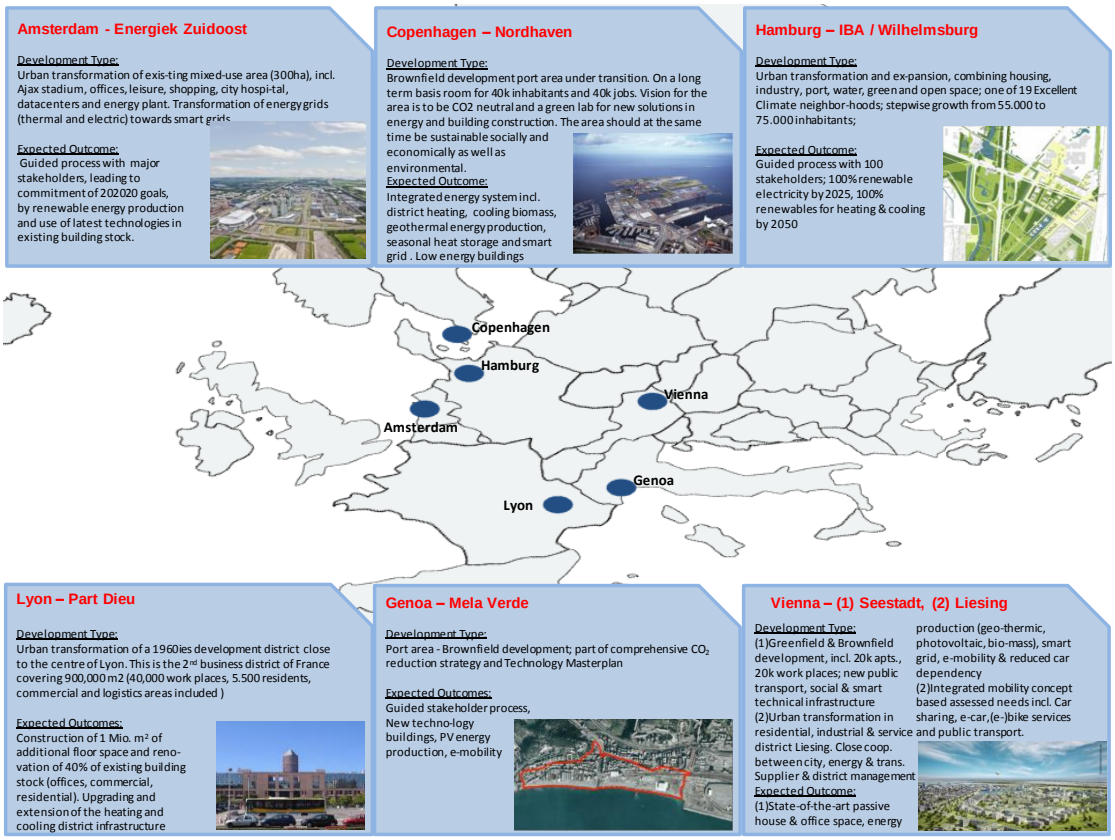
  Densities and the morphology of urban development projects need to be considered and analysed, in terms of their relationship with energy efficiency, with the integration of the production of renewables within a building compound, with energy storage facilities etc. All new building types in various lay-outs and densities need also be tested in terms of their impact on building costs, particularly for residential uses.

2. Results from the survey on status and focus of Smart Urban Labs – a first appraisal

2.1 Characterization of the 7 SULs

The Smart Urban Labs in Copenhagen, Genoa and Vienna (aspern Seestadt) represent urban development districts which attempt to create a major innovative breakthrough in the integration of building technologies, smart infrastructure and sustainable mobility concepts in greenfield or brownfield areas.

The Smart Urban Labs in Amsterdam, Grand Lyon, Hamburg and Vienna (Liesing) deal with the transformation of fully or partly built-up urban quarters, taking up the challenge of technological and functional improvements of existing buildings and technical infrastructure to be combined with changes in the functional mix in the urban quarters.



2.2 Development status and IP perspectives in the 7 SULs

2.2.1 SUL Amsterdam – Energiek Zuidoost

Topic/issue	Short Description of smart activities
Type of SUL	Guiding question: How to make Amsterdam South East a 202020 area? Amsterdam South East is a complex, mixed use area (300 ha) incl. Ajax soccer stadium, offices, enterprises, leisure and entertainment industry, shopping malls, academic hospital, data centers, residential areas and an energy plant. Part of the area consists of office buildings that will transform towards a more mix used area. Part of the residential area has been retrofitted, part of the area has to be retrofitted. A new park will be created next to the railwayline, and part of the road infrastructure will be brought underground, covered by a park. The area is perfectly suitable for smart grid developments, both for thermic web and for electricity grid.
Status of Development	The development of South East is a bundle of several projects running at different timelines. Infrastructure, public space, retrofit, acupuncture transformation projects, energy projects. For the energy part, a general concept and studies are available, through the development of a decision support tool (Energy Atlas); Setting up of business cases for 4 projects is underway. The development process is bottom up, thriving on local stakeholders'energy.
Actors	Amsterdam Arena, Amsterdam Medical Centre, Ikea, City of Amsterdam, Alliander, Waternet, Nuon, Ecofys, Loyens en Loeff, University of Amsterdam, Ministery of Economic Affairs, other local stakeholders.
Energy systems	No goals defined yet, other than companies' goals (example: soccer stadium will be climate neutral in 2015); Governmental measures: new zoning plan makes energy measures possible
Low energy demand, energy efficiency (targets)	Demand reduction in buildings is being investigated (Improvement of building properties, LED lighting in buildings and street lighting); Energy demand targets are not defined. Building codes and/or standards for new residential, industrial, commercial developments as well as for renovation thereof are defined for the implementation area.
Renewable Energy (targets)	Local Energy production: Solar (PV on roofs), Wind and Waste (Grinder/organic waste upcycling; use of waste heat) as well as Business models for the provision of energy and energy services are being investigated by the Stakeholders and the city.
Mobility (targets)	Projects in the field of electric vehicles are planned starting in 2015; No strategies on the development of transport networks; no modal split targets available.
ICT	
Water	Strategies for sustainable water use available
Waste	Strategies on sustainable waste systems are being developed
Further information	goal: step-by-step realization through short-termed projects, energy co-operations putting together several products of utilities into one box (challenges in financing)

2.2.2 SUL Copenhagen – Nordhavn

Topic/issue	Short Description of smart activities
Type of SUL	Brownfield development area under transition. On a long term basis room for 40.000 inhabitants and 40.000 jobs, 3.500.000m2. Vision for the area: Contributing to the CO_2 neutrality of the city, as well as being a green lab for new solutions in energy and building construction
Status of Development	Consideration in TRANSFORM: Phase 1 (Inner Nordhavn: overall planning and zoning plan completed and start of construction phase) and phase 2 (start of planning phase: Municipal planning & detailed zoning plan). Further phases awaiting.
Actors	CPH: Climate & Energy Bureau, Center for city development; Urban Planning Department Main others: City&port development (land owner); Nordhavn Energy Partners); HOFOR (proposal for energy plan for area); DTU (other universities); COBE architects
Energy systems	Energy supply plan in Nordhavn: District heating in first phases, proposal for energy plan for the area (on water and water management, cooling, gas) – not finally agreed on. PPPs energy partnerships investigating smart, sustainable energy solutions in the area.
Low energy demand, energy efficiency (targets)	Municipal plan and national building code; City working to certify area and buildings by DGNB in cooperation with the land owner and developers. In phase 1 it will be voluntary, but in phase 2 it will be mandatory. The area needs to comply with the overall vision for CPH described in the Climate Plan 2025 (20% reduction in heat usage, 10-20% in electricity use etc.).
Renewable Energy (targets)	Production of energy: Reduction in CO_2 (target CO_2 neutrality), Solar, Geothermal plant, district cooling, Wind, Biomass, Waste Energy distribution infrastructure: smart grid, thermal networks and gas networks are being investigated by the city
Mobility (targets)	Local plan (detailed) of the new buildings, metro (under construction – finish 2018) demand reduction: electric vehicles, switch to alternative fuels, increase public transport, car sharing (early phase project); Cycling and walking; Projections and plans available
ICT	Pilot projects being planned on district heating system etc.
Water	Strategies available; Goals of annual water consumption available and use of non-portable water for toilet flushing.
Waste	Strategies available; Due to high use of district heating
Further information	Pilot actions/important projects: Digital infrastructure (monitoring), flexible consumption and Smart Grid, Smart building ? Main issues: how to secure smart city vision? ⇨ “smart processes” = citizens involvement, PPPs, business cases ⇨connecting the climate program and the smart city strategy with TRANSFORM (gap between Transformation Agenda, Implementation Plan and Smart City Strategy to be filled)

2.2.3 SUL Genoa – Mela Verde

Topic/issue	Short Description of smart activities
Type of SUL	Port area – Brownfield development; a part of comprehensive CO_2 reduction strategy and Technology Masterplan
Status of Development	Information and targets are mainly derived from existing works and studies done on CAT Med project, the Port energy Plan and strategic documents on the city wide level (SEAP, Genua Smart City). Local Urbanism Plan has been defined but has yet to be approved; Stakeholder process has been started.
Actors	Municipality Departments (Smart City, Urban Planning, Planning and Organization, ICT, Energy & Environment, Mobility, others eventually), Are Liguria, Enel, University of Genoa, Region Liguria through its Bruxelles office and the Genoa Smart City Association.
Energy systems	Scouting and planning of a smart grid (in the small or in new dwellings (schools, residential buildings, new metropolitan railway station, beach resorts); currently investigated are the integration of renewables into networks; electric mobility and customer awareness solutions
Low energy demand, energy efficiency (targets)	Actions for improvement of building properties (building audit map) and plan for more efficient public lightning
Renewable Energy (targets)	Currently investigated are production of energy from the sea (geothermal technologies and wave motion), from the mini-hydraulic solutions applied to the two Voltri torrents, from the PV with third generation panels (without silicon); potential for solar panels on public buildings and wind plant installations.
Mobility (targets)	Not specified yet
ICT	Planned project: Implementation of a smart grid (in the small historical centre or in new dwellings (schools, residential buildings, new metropolitan railway station, beach resorts); demand side management.
Water	Planned actions: 1. to collect water (from torrents and rainy), useful for cleaning activities (e. g. vehicles of the municipal fleet), 2. b. to return to use traditional constructive techniques and materials (lime plaster or clear clay, colors, small openings, adapted to guideline etc…)
Waste	Not specified (yet)
Further information	Main questions : 1. How to implement the project, i.e. how to trigger the actual realization of the planned smart district in the context of a strong economic crisis and spending review translating into no resources for urban developments; 2. How to involve the main industrial actors, RFI (Italian Railways) and Port Authority at the same time promoting and guiding a strong participation process with the population and other stakeholders 3. Finding feasible business models

2.2.4 SUL Hamburg – IBA/Wilhelmsburg

Topic/issue	Short Description of smart activities
Type of SUL	Existing residential and mixed-used area, Urban transformation and expansion, combining housing, industry, port, water, green and open space; stepwise growth from 55.000 to 75.000 inhabitants;
Status of Development	Overall planning concluded, start of construction/realisation phase, most buildings finished, presented during exhibition period of the IBA until Novemer 3rd, 2013 (realised actions: Release of ENERGY ATLAS, Quality Contracts between IBA and investors, Estate Contracts based on Quality Contracts, Planning and realisation of several single projects, Monitoring of the whole area and single projects)
Actors	Planning and implementation: IBA Hamburg Company (will be newly defined in October 2013); Hamburg Ministry for Urban Development and the Envorinment, Hamburg Ministry of Economy, Transport and Innovation, Financial Administration, Districts Administration Hamburg Mitte and Hamburg Harburg, Hamburg Energie, TU Braunschweig and EFZN/TU Clausthal, 150 Partnerships
Energy systems	Energy Atlas, Renewable energy plan, new developed district heating
Low energy demand, energy efficiency (targets)	Reduction of energy demand by several measures (-40% heat; +10% power): Subsidies for energy efficient systems; Building management systems in several building projects, subsidies by IBA.
Renewable Energy (targets)	Several renewable district heating (100% of densed areas) Quantitative Targets: Increase of production of renewable energies 100% RE power in 2025, 85% RE heat in 2050 (Subsidies for Solar thermal, PV investments by Hamburg Energie (Energy Hill/Energy Bunker); planned Deep Geothermal by Hamburg Energie; Wind: Repowering by HE (Energy Hill) and others; Biomass: Subsidies for biomass boilers, biogas CHP and biomass by HE (Energy Bunker/Central Network)
Mobility (targets)	Projects within Programme "e-Quartier Hamburg" Concepts "Fahrradstadt/Cycling City Wilhelmsburg" Modal Split targets for city and implementation area
ICT	Demand Side Management project “Smart Power Hamburg”, “Power-to-Heat” concept for Energy Bunker
Water	Not relevant – little local influence
Waste	Not relevant – little local influence
Further information	Main issues: different parallel responsibilities (Government of Hamburg, General Urban Planning and Development, Urban Land Use etc…) ⇨ uncertainty how it will be organized after IBA (follow-up company planned) ⇨ future development of business models and contracting

2.2.5 SUL Lyon – Part Dieu

Topic/issue	Short Description of smart activities
Type of SUL	Urban transformation of a 1960ies development district (135 ha, 3.500 homes, 5.000 population, 2.200 workplaces) close to the centre of Lyon; at the moment mediocre energy performance of buildings construction of 1 mio m2 additional floor space renovation of 40% of existing building stock; upgrading and extension of the heating and cooling district infrastructure
Status of Development	Implementation of some real estate buildings already started; first buildings will be finished in 2015;Projet Rue Garibaldi finished in 2014; General concept and studies on energy issues are available. Work on-going to complete the Part-Dieu 2030 Energy strategy. Estimation of energy consumption of existing building stock; development of an energy tool permitting to develop scenarios of energy consumption and to monitor if the energy targets will be achieved;
Actors	Grand Lyon District heating & cooling network operator (Dalkia),, Property developers, Gas and electricity grid operators (*DSO,* ERDF, GRDF), buildings users (Club Part Dieu), Hespul.
Energy systems	Goals defined for Energy networks and Energy supply; Energy system plan: (⇨ number of buildings connected to district heating/cooling shall be increased) Solar, geothermal and heat recovery are themes which might be of relevance
Low energy demand, energy efficiency (targets)	**Energy objective is to double the building capacity with constant energy balance.**Specific objectives regarding new buildings and refurbishments are under elaboration depending of building typologies (offices, housing, hotels, etc.) Public lighting: study on-going Pilot project “Tour Incity”: application of low energy standards for a skyscraper Working groups with end-users (and especially private companies whose offices are in the Part-dieu District) to ensure the energy efficient use of the buildings.
Renewable Energy (targets)	Objective: increase the share of renewable energy on the District heating network from 50% to 60% Increase the number of buildings connected to the District heating network
Mobility (targets)	Modal Split available (status quo and projection as well as targets)
ICT	Smart meters: comparative advantages of smart meters for energy atlas making and monitoring and evaluation of the strategy
Water	Relevant issues are: alternatives to the use of drinking water for street cleaning; reuse of used water, leakage reduction network
Waste	Re-use of waste due to demolition is a subject
Further information	Main issues: energy consumption, future demand and smart management of the system, diversify the energy system, use of renewable/recovered energy, conditions to guarantee a good performance of buildings, innovative processes; retrofitting and/or replacement of existing buildings

2.2.6 SUL Vienna, aspern Seestadt

Topic/issue	Short Description of smart activities
Type of SUL	Greenfield development, new urban quarter (all functions) for about 25.000 inhabitants and 17.000 work places (total area); Consideration in TRANSFORM: Phase 1 (about 3500 housing units and a substantial number of work places) and phases 2 and 3 (about 7000 housing units)
Status of Development	Consideration in TRANSFORM: Phase 1 (overall planning concluded, start of construction phase, first buildings finished) and phase 2 (start of planning phase), realization of phase 1 and 2 planned for 2025, environmental impact declaration ongoing (basis for EIA 2015)
Actors	WIen 3420 AG (development company), various municipal departments (MA) for planning, energy and infrastructure, Municipal Utility Company (“Stadtwerke”), Aspern Smart City Research company (incl. Siemens, Mun. Utility)Austrian Institute of Technology, Vienna University of Technology
Energy systems	Phase 1: Existing energy concept; district heating system; conventional electricity and water supply; some gas supply for industrial processes; demonstration objects with alternative supply systems (renewables) incl. photovoltaic; Phase 2: Revision of energy concept foreseen (also as an input for the EIA), discussion on requirements for new buildings and energy supply in the area is ongoing. First ideas on use of waste heat and micro-grids. District heating will be (partly) in place, gas network only punctually planned. A research association (ASCR) has been founded that will analyze distributed energy generation, ICT-infrastructure, energy storage and marketing on the basis of pilot projects.
Low energy demand, energy efficiency (targets)	Defined criteria for subsidized housing (via architectural competition), same applies for public building (schools eg.); prescription of min. 750 points of TQB (total quality building)-standard (by Austrian Sustainable Building Council), some demonstration objects in zero-energy, plus-energy and passive house standard erected or in construction; Monitoring of energy use is being prepared. LED street lightning Pilot action foreseen: Smart urban assistant, comprehensive information system for inhabitants (energy use, local energy production, local services, mobility, etc.)
Renewable Energy (targets)	Preparation for PV-retrofitting is compulsory; demonstration projects with alternative supply managed by ASCR (no district heating; focus on PV, heat pump and storage facilities)
Mobility (targets)	Construction of a new subway into the area (operation from Oct. 2013), additional tramways and busses; Parking restrictions (higher than in the overall city); collective garages; “mobility fund” (funded by a fee on every single parking lot in garages) for investments in services and projects for e-mobility and car sharing; Specific attention on attractive conditions for cycling and walking and public spaces; Quantitative targets: Modal split of 40 public transport/20 motorized/40 non-motorized

Topic/issue	Short Description of smart activities
ICT	Smart metering rollout for all buildings within the SUL. Very detailed energy monitoring foreseen in selected buildings, smart grid pilot research (ASCR); general energy monitoring in preparation Pilot project: Smart Citizen Assistant – information on energy issues and other topics via ICT-platform
Water	Concept/study for integrated rainwater management (via green infrastructure) is near completion, implementation is up to decision making in municipality
Waste	Organization according to waste management for the entire city of Vienna (waste separation: energy/heat production in an incineration plant and use of biogenic waste for biogas and compost production within Vienna)
Further information	Pilot actions by ASCR (Aspern Smart City Research) for selected buildings (3-4 buildings); R&D on demand side management, common energy infrastructure, monitoring on energy use, etc. Broad public relations activity in parallel (Citylab aspern, http://www.aspern-seestadt.at/), ombudsperson in place, mobile information for neighbouring quarters, divers events with different target audience; “district management” from 2014 onwards

2.2.7 SUL Vienna, Liesing Groß Erlaa

Topic/issue	Short Description
Type of SUL	Existing industrial area and housing (mainly from 60s to 80s), densification by greenland development for new housing (about 8.500 housing units)
Status of Development	Industrial area: General concept and studies are available. Investigation phase for energy planning is starting; neighbourhood management accompanies and coordinates activities. Housing area and densification: Planning phase started on a small-scale basis (building related), no integration with neighbourhood (existing housing areas, industrial area) so far.
Actors	MA21 – land use planning department (urban area manager for Liesing, housing concepts), MA20 – Energy department (energy concepts), Wien Energie (municipal energy supplier), Standpunkt Liesing – development association for the industrial area, ...
Energy systems	Energy atlas and concept are currently elaborated District heating is not in place so far, but transport network is leading through the area (connection possible), gas-network is in place. Options for the energetic use of groundwater will be assessed.
Low energy demand, energy efficiency (targets)	Ideas are available for low energy projects and innovative renewable energy systems for housing projects Energy consulting for selected (large) enterprises, ongoing
Renewable Energy (targets)	PV-use in the industrial area is being investigated Small wind power plant planned Industrial companies: Use of waste heat and common PV-installation discussed, in depth energy consulting for large companies is planned Other innovative systems are being currently discussed
Mobility (targets)	Pilot action foreseen: e-delivery (development of a vehicle fleet for delivery by enterprises from the industrial area) Concept for Transportation under development, ongoing discussion on the improvement of public transport and cycling/walking conditions
ICT	Not specified yet
Water	Not specified (yet)
Waste	Organization according to waste management for the entire city of Vienna (waste separation: energy/heat production in an incineration plant and use of biogenic waste for biogas and compost production within Vienna)
Further information	Existing concepts for the development of an “eco-holistic industrial area”, activities by local association for the industrial area and other local actors. Housing: New concepts for urban farming will be put in place in order to investigate in the effects of high quality urban housing with access to private green areas on living quality and lifestyle (transportation trends). Main issue: public awareness for future dynamic development of the area, lack of policy support on district level, bridging between residents and future new residents needed Concept on public participation will be started in August 2013, additional work and actions/events with inhabitants are planned.

2.3 Variation of planning and implementation phases in the SULs

As shown in the overview on the status quo of SUL developments, the planning phases in which the SULs currently stand (during the project running time) differ from each other. Some of the SULs just start with a coordinated planning process for the whole SUL, others have already successfully carried out a large part of planning work and are already in a revision phase, starting monitoring activities.

The following figure shall provide an overall impression on the actual status of the development processes the SULs currently face. It shows different development phases from general conception to integrated urban and energy planning followed by realisation activities which are most probably interjected by revision loops concerning conception and planning (e.g. due to changes, new knowledge or problems in implementation). The duration of the process may differ considerably (about 10-25 years) nevertheless major steps or phases are stated to stay similar in most of the SULs.

Figure 1: Scheme of SUL realization phases

Source: OIR

In the first discussion of this scheme (at the first SULCo meeting in Vienna, 18.3.2013) it came clear that processes are less stringent in reality, also due to circumstances within the SULs, political necessities and pragmatic causes. In some cases there has been started construction partly before a coordinated planning phase or conception and planning of urban development and energy issues has not always been carried out together but rather one after another or at least with different starting dates. In large SULs there are often subdivided parts showing differences in the pace of development and realization although planned in a coordinated way.

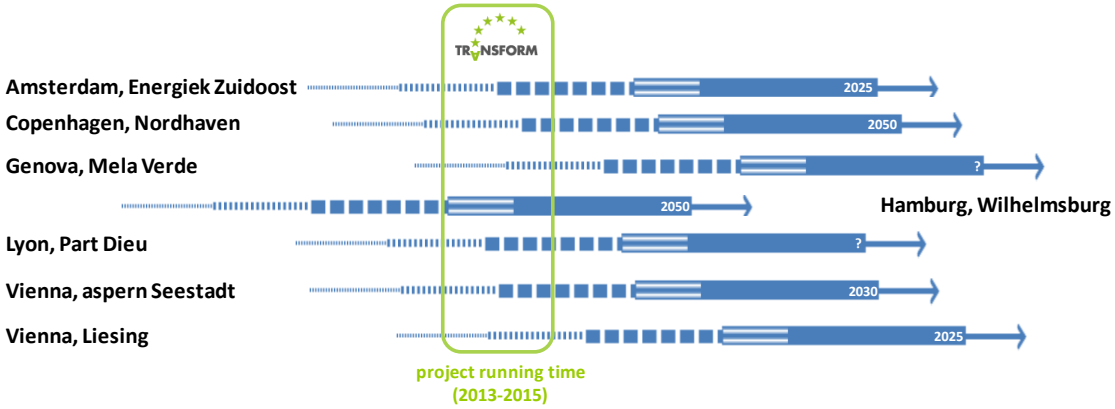
Even though it's clear that the presented scheme of development phases is only a simplified model of an urban and energy related planning process it allows for a quick comparison and placement of the SULs in the course of the undergone process.

Thus the following figure presents the actual situation in the SULs, based on the first appraisal (chapter 2) and on the discussion at the first SULCo meeting in Vienna.

Basically it shows (very roughly), that

- Hamburg Wilhelmsburg is quite ahead both in planning and realisation and will be able to provide with experiences from implementation, re-vision of plans and first monitoring activities;
- followed by Amsterdam Energiek Zuidoost, Lyon Part Dieu, Vienna aspern Seestadt and Copenhagen Nordhavn, where the planning processes are in place and considerable work with key actors has been done already, additionally some measures, rather punctually have been implemented so far;
- whereas Vienna Liesing and Genoa Mela Verde are rather standing at the beginning of the planning process.

Figure 2: Realization phases of TRANSFORM SULs



Source: OIR

This comparison will be actualized on the basis of deeper information gained during the formulation of implementation plans and ongoing discussion.

2.4 Thematic focus and priority issues in the SULs

Not only the phase of realization but also the thematic focus, priorities and key issues differ between SULs, mainly triggered by their current situation and structure and by accompanying circumstances.

So far, there can be stated some important common key issues as well as major distinctions in terms of objectives and topics. What is similar in all SULs is the high priority for issues concerning energy demand and energy efficiency (including buildings), energy systems and renewable energy production.

Even though mobility is not of high priority in all SULs so far, the discussion at the first SULCo meeting in Vienna came to the conclusion, that the issue of mobility should be part of the implementation plans, including objectives and quantitative targets for the SUL.

Water and waste on the other hand, do not seem to be a main issue for all SULs, the integration of these topics has been discussed as optional (depending on the importance in the respective SUL).

The following figure shows a rough overview on the importance of key issues for the respective SUL. It is based on the survey done by WP4 and on the discussion at the first SULCo meeting in Vienna.

Figure 3: Main themes of TRANSFORM SULs – the actual assessment

Topic/issue	Amsterdam, Energiek Zuidoost	Copenhagen, Nordhaven	Genova, Mela Verde	Hamburg, IBA / Wilhelmsburg	Lyon, Part Dieu	Vienna, aspern Seestadt	Vienna, Liesing Groß Erlaa
Low energy demand, energy efficiency	targets and strategies	binding targets and measures	ideas	binding targets and measures	targets and strategies	targets and strategies	some measures / projects
Energy systems	objectives defined	targets and strategies	ideas	binding targets and measures	objectives defined	some measures / projects	ideas
Renewable Energy	pilot actions	targets and strategies	ideas	binding targets and measures	binding targets and measures	pilot actions	ideas
Mobility	some measures / projects	binding targets and measures	-	targets and strategies	some measures / projects	binding targets and measures	some measures / projects
Water	ideas	guidelines	ideas	-	ideas	ideas	-
Waste	ideas	guidelines	-	-	some measures / projects	-	-

Qualitative legend on the priority of respective topics

no priority (or not yet decided during the planning process)						**very high priority**	
no activity	ideas	some measures / projects	guidelines	pilot actions	objectives defined	targets and strategies	binding targets and measures
no objectives, no measures foreseen	some ideas are being discussed	some measures / projects are foreseen	general guidelines/ qualitative objectives, some measures	pilot projects, priority actions	guidelines/ qualitative objectives and measures	quantitative or qualitative targets and strategies	binding quantitative targets plus aligned measures (with defined effects)

Source: OIR

Nevertheless, for cities just starting the planning process (esp. Genova Mela Verde and Vienna Liesing Groß Erlaa) the lack of high priorities can be mainly explained by their early planning phase in which final important decisions on priorities have not been taken so far.

In addition to these technical options, the necessity to consider and include social issues was particularly often highlighted in the discussion at the SULCo meeting. Issues, such as citizens (energy demand, the cost of living related to rents and energy, environmental consciousness, behaviour, local policy and smart processes (relating to the engagement and involvement of citizens and enhancing awareness) were specified as important.

3. The process of making an Implementation plan – approaches in the TRANSFORM cities

The following comparison of SUL development processes is based on a description provided by SULCos (SUL coordinators, designated within the TRANSFORM project, persons within the institution which is responsible for the development or at least closely connected to this entity).

Whereas the tables reflect the statements from SULCos, the following conclusion points out differences and similarities, draws links between the processes in the different cities and relates statements with framework conditions and relevant circumstances.

3.1 Institutional setting – key actors and stakeholders

3.1.1 Leaders of the process – institutions driving the IP processes

The process of developing an area to a smart urban lab and elaborating an Implementation Plan is lead by different actors respectively institutions in the SULS of TRANSFORM.

Table 1: Institutions driving the IP process and their competences and powers

City	Institution driving the process	Competences and powers
Amsterdam	The Amsterdam Energy and Climate Office, part of the urban planning department of the municipality.	Decision on the input of human resources only (no own assets or resources to invest, no competency to enforce e.g. the environmental act). It supports projects to make use of the Amsterdam investment funds (60 million Euro, funding to support projects throughout the city in the first phase of the development with loans, guarantees and shares).
Copenhagen	The Finance Administration and the Technical and Environmental Administration (TEA), municipal administration City of Copenhagen	Respective tasks as a municipal authorities Main resource to support the development are person hours.
Genoa	Genoa Smart City Office, municipal administration	Respective tasks as a municipal authority, further ressources will have to be decided in the course of the process

City	Institution driving the process	Competences and powers
Hamburg	IBA GmbH, limited liability company	IBA has no sovereign rights and administrative tasks, but it does have a remit defined by the parliament (called Bürgerschaft in Hamburg) and is legitimated by democratic process.
Lyon	Department for Urban development Grand Lyon Administration	Responsible for the elaboration of land use and zoning plans (PLU), housing and social housing policy, shared urban infrastructures on the level of the agglomeration and the operation of urban development projects such as Part-Dieu. Grand Lyon remains a key institutional actor, both in connection to TRANFORM and the Part-Dieu project (competences in terms of urban planning)
Vienna – aspern Seestadt	Wien 3420 stock corporation (AG), general agreement between the city and Wien 3420 (cooperation and requirements, co-financing)	Responsibility for the development and promotion of aspern Seestadt to an urban center (development of urban planning concepts, urban design and definition of planning guidelines, property provision and consultancy for projects, coordination of infrastructure provision, public participation). Wien 3420 is generating revenue through the sale of property.
Vienna – Liesing Groß Erlaa	Municipal department MA21 (land use planning and zoning), Municipal administration	Municipal department responsible for land use planning and zoning permissions, which is also coordinating the development of the target area Liesing Mitte (larger than Groß Erlaa). No specific budget provided for the development of the SUL except manpower for coordination so far.

Conclusions

The by far larger share of the SUL developments is lead by urban planning departments of the cities, with competences and power mainly for strategic urban planning or land use planning/zoning (Amsterdam, Lyon with the specifics of a planning department at the level of the agglomeration Grand Lyon, Vienna – Liesing Groß Erlaa and partly Copenhagen but with the difference of an additional close partnership with a publicly owned development company, see below).

Usually they are endowed with a municipal mandate and human resources (team of several persons) and they use their knowledge to coordinate other municipal departments and key stakeholders, support projects in terms of (mainly city wide) funding options. These teams mostly have the mandate to develop these selected areas, nevertheless, they often act within the usual municipal schemes and competences. In the case of Lyon, a special entity has been created within the administrative structures of the Grand Lyon, the mission Part Dieu, which holds responsibility for the development of the Part Dieu project. The legal status of this entity will be changed to a municipally owned company by 2014. This is a peculiar legal status in the French legal system- while being "exterior" to the municipality, such company can only be owned by a public actor and will legally be subject to a similar degree of public control as other municipal services.

Deviating from this "usual case", there are two SULs, in which the cities decided to assign the development of selected areas to private companies (with institutional proximity to the municipal authority), thus in these SULs development essentially is driven by a non municipal company or corporation.

- In the case of Hamburg, it is the city owned IBA GmbH, which is/was responsible for the development of the area till the International Building Exhibition (IBA) in 2013. Due to the lack of sovereign rights and administrative tasks, the IBA GmbH has to work with several official administrations (e.g. Hamburg Ministry of Urban Development and the Environment, Hamburg Ministry of Financial Affairs, Administrations of districts, etc.). After the realization of IBA, a follow-up organization will take over the existing competences and network in order to develop and market several new development areas, both within the borders of the exhibition area as well as areas outside of the former area. In order to operate this process, IBA Hamburg was endowed with a budget of 90 million Euros (for 7 years) to be used for person resources (IBA team) and a small share of investments (IBA-excellence projects). In addition investments have been made by private investors as partners of the IBA.
- For the SUL aspern Seestadt, Wien 3420 AG was founded – by the former landowners, Austrian Real Estate Company (BIG) and Vienna Business Agency (WA) – to develop and promote aspern Seestadt as a new urban centre within Vienna. It is indirectly connected to the city by one of the stock owners (Vienna

Business Agency is a service point for Vienna's enterprises, its services are mainly funded by the City of Vienna, sectoral self-financing is being achieved due to the management of commercial and industrial real estate). Wien 3420 works together with relevant municipal departments which are coordinated by a so-called municipal "coordination unit aspern Seestadt". It is endowed with personal resources and a budget for investments, which is based on equity capital from the owners of Wien 3420[1] (about 27 million Euros, mainly used for infrastructure provision for the first implementation phase financed together with the city). As a revenue through the sale of property, provided by a profit participation right for property owned by Vienna Business Agency and from a servitude for the metro, ca. 30 million Euros could be gained additionally until 2013. The budget of Wien 3420 is entirely financed through private equity, with no further reliance on credit.

Whereas in the first case (urban planning departments as drivers of the development), selected competencies and powers (as sovereign planning rights and administrative tasks) are with the institution which is driving the process, the two private organisations presented above, are lacking these competences, but endowed with a municipal mandate and additional financial means dedicated specifically for the development of the area.

In Copenhagen, these tasks are divided – as the municipal department is leading the process and is responsible for a smart development of the area, whereas realization of commercial development lies in the hands of CPH City & Port Development

(as urban development company, jointly owned by the City of Copenhagen (55%) and the Danish state (45%),which is owning the land in Nordhavn). This solution has been chosen partly due to the fact that the City of Copenhagen is not allowed to co-finance the development of the city and support sustainable solutions in buildings in the private sector, whereas this company may engage in such activities as well. Nevertheless strategic planning and strategy development stays in the responsibility of the municipal department.

[1] GELUP GmbH: 73,4% (a limited liability company as a subcontractor of the Vienna Business Agency Group (Wirtschaftsagentur) , Vienna Insurance Group and the Bausparkassen der Österreichischen Sparkassen (a specialized bank, dealing mainly with financing of housing projects) and the Austrian Real Estate Company (BIG): 26,6% (institution owning and managing federal buildings and estates) .

3.1.2 Further key actors and stakeholders involved

In addition to the institutions, which lead the process, a number of additional key actors and local stakeholders are involved in the development of the SUL.

Table 2: Important Stakeholders involved in the process

City	Involved stakeholders
Amsterdam	Municipal institutions and city districts, energy management companies, major corporate partners as well as social infrastructure such as, Amsterdam Arena and a medical center and companies like IKEA. The development process is bottom up, thriving on local stakeholders' energy.
Copenhagen	Greater Copenhagen Utility CPH City & Port Development (an urban development company owning the land in Nordhavn and developing the area primarily on a commercial basis). CCPD is jointly owned by the City of Copenhagen (55%) and the Danish state (45%). The City of Copenhagen is not allowed to co-finance the development of the city and support sustainable solutions in buildings in the private sector.
Genoa	Planned involvement: Departments of the municipality including Energy and Environment, Urban Planning, Mobility, ICT, Planning & Organization, as well as ARE, Enel and International Relationships
Hamburg	Hamburg Ministry of Urban Development and the Environment (Behörde für Stadtentwicklung und Umwelt, BSU), the Hamburg Ministry of Financial Affairs (owner of the city owned land), the Administrations of Districts of Hamburg Central and Hamburg Harburg and other responsible administrations and city owned companies.
Lyon	Grand Lyon (political authority, competences in urban planning), ville de Lyon (political authority, owner if both local gas and electricty distribution network), mission Part Dieu (publicly funded and controlled association of Grand Lyon), ERDF (national operator of electricity distribution networks), District Heating and cooling network operator (Dalkia), buildings users (Club Part Dieu), Hespul (supporting Grand Lyon in the elaboration of the GIS database and Part Dieu energy strategy)
Vienna – aspern Seestadt	Municipal Departments (energy planning, traffic planning and public spaces, urban planning, land use planning and zoning, etc.); aspern Seestadt coordination unit of the city , municipal energy provider and utility companies (Wiener Stadtwerke Holding and its entities – Wiener Netze, Wien Energie, Wiener Linien).
Vienna – Liesing Groß Erlaa	IG Liesing (EU funded project acting as Agency for the industrial area as part of the SUL), municipal Departments (energy planning, traffic planning and public spaces, urban planning, etc.), municipal energy provider and utility companies (Wiener Stadtwerke Holding and its entities – Wiener Netze, Wien Energie, Wiener Linien).

Conclusions

In most cases, various municipal departments and the respective representatives of city districts as well as (municipal or private) energy utilities, network providers and municipality owned companies usually are intensively involved as partners in the process of developing the SULs and bringing about the development of an IP for a smart urban lab.

While the integration of non-municipal actors(companies, residents etc) partakes in most of the process descriptions, there are variations as to the degree of this integration between the TRANSFORM cities. In this context, the bottom-up stakeholder process exemplified in the case of Amsterdam contrasts starkly with the more top-down type of processes planned in other TRANSFORM cities. Only in the case of Amsterdam, the city administration has chosen to involve major corporate partners and social infrastructure institutions as key partners in the process of developing the area and bringing about the IP.

As the processes are started mainly by municipal urban planning departments, the involvement of actors in the field of energy, both municipal departments and utilities, seems to be essential in order to change the sequence of usual planning and to assure integrated planning processes and strategies. Often this is the first time for urban planning and energy actors to work in an integrated way, involving a number of challenges in terms of coordination of planning competencies and the way of planning itself.

3.2 Function of the IP in the development process

The understanding of the function of an Implementation plan in place differs between two groups of cities. Overall it can nevertheless be stated, that all TRANSFORM cities expect additional support for the objective “(further) development of a smart urban area”. Differences in the understanding of the function of the IP may stem, amongst others, from two main factors: the different realisation phases the SULs are facing at the moment (just starting the development process versus already worked intensively for several years); contrasting planning ideologies that either favour a top –down development predominantly lead by guidelines or a municipally governed bottom up development.

Table 3: Function of the IP and basis for bringing about the IP

City	Function of the IP within the city development	Existing knowledge, basis for bringing about the IP
Amsterdam	The IP is a visionary framework to speed up a multiplicity of existing and planned transformative projects, and thereby link local needs with key themes and considerations of the city's transformation agenda. The products of the implementation plan should have added value for (a) implementation speed-up, (b) creation of buzz in South East to attract new initiatives, (c) learning factor for other areas in Amsterdam and (d) learning factor for other cities.	Energy strategy for the city by indicating the most relevant themes, enabling themes or key considerations for the city as a whole, and bringing those themes to more detail and implementation on a district level. General concept and studies are available, through the development of a decision support tool (Energy Atlas); Business cases for 4 projects is underway.
Copenhagen	The IP shall help to develop a strategy to facilitate dialogue among stakeholders and to foster existing development ambitions for the area.	Strategic planning documents for the first part of the project, studies on the energy supply of the area and environmental impact assessments for the new metro. First input was given from an internal workshop in the City of Copenhagen (May 2013) where all relevant administrative partners were gathered.
Genoa	Transform and the Implementation plan should be part of the process promoting and supporting the actual realization of the Green Apple.	Urban Plan approval, SEAP, Smart City process, works done for the CAT MED Project (concept for Mediterranean Smart District Planning and KPIs);
Hamburg	The IP will have the function to deepen and speed up processes started during IBA and more generally organize the period post-IBA until 2020 or 2025 . It will do so by (1) continuing ongoing IBA projects, (2) realization of already planned projects (3) transfer existing IBA structures, concepts and networks into a "post IBA period", (4) develop new projects and (5) attend the general German and Hamburg development.	Detailed concepts, strategic discussions, as well as monitoring of results form IBA Quantitative targets in urban planning, energy planning and mobility are stated. Main outputs 'Energetic optimisation of the IBA Hamburg Model Region' and 'Climate Protection Concepts Renewable Wilhelmsburg' together with its associated energy atlas.
Lyon	The IP functions as the strategy to organize for the transition of Part Dieu "from of a " simple urban project " to a project aiming at an energy transition".	General concept and studies (energy strategy of Lyon Part Dieu) Estimation of energy consumption of existing building stock; Energy tool permitting to develop scenarios of energy consumption and to monitor energy targets;

City	Function of the IP within the city development	Existing knowledge, basis for bringing about the IP
		Strategies and regulations that give detail on the energy performance requirements of buildings are available and will be finalized into a comprehensive strategy by end of 2013.
Vienna – aspern Seestadt	The function of the IP will be to sharpen, deepen and enhance existing energy strategies for the next development phase of the area.	First phase of implementation: Masterplan, mobility concept, energy concept planning for phase 2 is in progress
Vienna – Liesing Groß Erlaa	The IP will help to structure the dialog between most important stakeholders and to develop a comprehensive strategy for the area.	Based on the coordinative work done in the course of a target area for urban development since 2007, there are various concepts available in terms of urban development, transport and development of the industrial area, further deepening is needed.

Conclusions

Overall, the Implementation Plan is understood as a strategic document which can be used to support the development of a strategy for an urban area both, in terms of supporting and organizing the development process (mainly during its elaboration) and in terms of laying down the content related framework and important themes.

Specifically, the main emphasis of the function of IPs – as understood form the TRANSFORM cities – ranges from

- a visionary framework in a rather open, bottom-up process (Amsterdam),
- to a process-orientated strategy to organize (Lyon) or structure a platform of dialogue between the most important stakeholders in order to come to a comprehensive strategy for the area (Vienna, Liesing Groß Erlaa),
- and finally to a more content-related, comprehensive strategy development (Copenhagen), the sharpening, deepening and enhancing of an existing strategy (Vienna, aspern Seestadt) or the speeding up of the implementation process in the next phase (Hamburg).

In the case of Genoa, due to the early stage of the SUL , the IP aims also to support the promotion and the actual decision for a realization (Genoa).

The understanding of the Implementation Plan is closely connected to its embedding in the municipal landscape of programs and strategies. From the TRANSFORM examples it seems that most of the cities are on the way or have at least planned to develop a program in order to structure future area-based developments in a similar way. The SUL in Amsterdam can for instance be regarded as a part of a wider program.

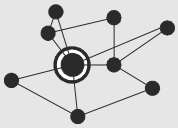
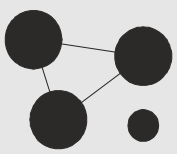
In the other TRANSFORM cities, the SULs represent individual projects or rather pilot actions, nevertheless, there are already further municipal activities on the way: Hamburg currently develops a program to transfer the best practice experience from IBA Hamburg to other selected areas of the city, in Vienna a municipal initiative is currently being started in order to develop a standardized practice for an area-based, integrated spatial and energy planning process. Both Viennese SULs as well as the experiences from TRANSFORM cities will be taken as pilot cases for developing this practice. Copenhagen plans to further develop such a program in case of positive experiences with the pilot implementation of Nordhavn.

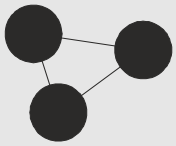
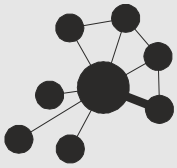
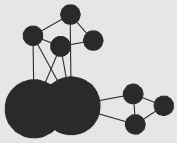
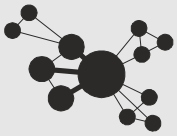
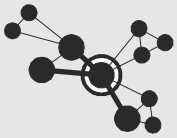
3.3 Modes of governance

3.3.1 Organisation of the stakeholder process

The organisation of the stakeholder process widely reflects the planning ideology in place as well as the range of competences and power that the lead institution holds.

Table 4: Organisation of the stakeholder process

City	Organisation
Amsterdam 	The separate products of the implementation plan are the results of different stakeholder processes. To drive an efficient work progress there will be different and separated work groups for most part of the process. The TRANSFORM team will make sure the progress per project is monitored and the project is evaluated. Furthermore the team will act as a relation and information broker between the parties in the different projects. However, there should also be opportunities for all stakeholders to participate in certain events together. The goal of the TRANSFORM team is to sustain and strengthen the local ownership and to gradually step back as a government.
Copenhagen 	Municipal administration departments – Finance Administration and Technical and Environmental Administration (TEA) and Greater Copenhagen Utility will co-draft the IP with the TEA coordinating the process. An important issue is to develop a strategy for the early dialogue with developers. SUL initiatives are accompanying the IP elaboration 1) early dialogue with developers, 2) intelligent use of energy data (flexibility) and 3) dialogue with citizens to adapt buildings to citizen requirements for a more sustainable living

City	Organisation
Genoa 	Major stakeholders relate to the Mayor and Alderpeople; local stakeholders are partly contacted by the Municipio, partly by the Municipality. People's involvement is mainly managed by the Municipio. Genoa Smart City Association will support in the planned process.
Hamburg 	Cooperation with several departments of municipal administration. Within the ministry for building and environment (BSU), a special "taskforce" for the whole development project "Leap across the Elbe" was established. To coordinate the activities and all relevant administrations, a coordination group with regular meetings was established (Koordinierungskreis "Sprung über die Elbe", KKS). After the realization of the IBA: a follow-up organization will use the existing competence and network to develop and market several new development areas, both within the borders as well as areas outside the former IBA area.
Lyon 	In the making of the IP, work is closely coordinated with 'mission Part- Dieu' and its associated experts. The inclusion of stakeholders is managed within the framework of a working group on issues of energy and urban planning, which includes main responsible institutions for urban planning for Lyon and public and private actors in the field. It is planned to widen the engagement of private sector stakeholders in the project soon.
Vienna – aspern Seestadt 	Wien 3420 is main responsible for the development of the area, in close partnership with the City of Vienna. The different stakeholders (municipal and private) are involved in working groups, based on the existing masterplan and accompanying concepts, partly the work has been handed over to consultants, nevertheless main responsibility for the process and formulating targets stays with Wien 3420. Finally, the implementation of the energy concept is carried out together with the energy department (MA20) and municipal utilities (Wiener Stadtwerke) under consideration of the overall strategy for Vienna. At the moment, in terms of energy, an energy working group elaborates the basis for an environmental impact statement.
Vienna – Liesing Groß Erlaa 	Vienna Liesing Groß Erlaa is lead by MA21 (department for urban land use and zoning) supported by TRANSFORM partner OIR (for the time of the project). In addition other municipal departments and the development agency for the industrial area are most important partners in this development process. Work is organized in sub-groups to advance the process in certain dedicated subject areas such as energy or the pilot-project in e-delivery.

Conclusions

All cities introduced (or will introduce) regular stakeholder meetings and/or work groups for the most important themes.

Amsterdam is working on the basis of a broad stakeholder involvement process, including a number of private actors and with the pronounced goal to sustain and strengthen the local ownership and to gradually step back as a municipal government.

Hamburg has chosen a two-step process, (1) starting with a stakeholder process and coordination within the municipal departments, lead by IBA in order to come to concerted actions within the city authority,(2) involvement of private actors (and finally public participation) was a later step in the stakeholder process. A similar approach is planned for the new planning period after 2013.

All other TRANSFORM cities begun/will begin a restricted process together with selected stakeholders, in order to start the strategic discussion and to set the framework, clarify basic elements and guidelines. Whereas this group is rather small and restricted to few major stakeholders in Copenhagen (with a next step envisaged to involve developers as the CPH City & Port Development) and Genoa (also due to the early stage of the process), a larger number of stakeholders, divided in thematic working groups are involved in the development process from an early point in time as e.g. in Lyon (with the guiding duo of the department for urban development Grand Lyon and the urban development mission for Part-Dieu) and both SULs in Vienna (aspern Seestadt and Liesing Groß Erlaa, with municipal departments as important partners).

3.3.2 Main procedural challenges to be addressed

The main challenges of the TRANSFORM cities in terms of process are closely connected to their approach to steer development and their modes of governance. In addition external factors play an important role in terms of realization and implementation.

Table 5: Specific procedural challenges during the process

City	Challenges during the process
Amsterdam	How to assure the fit of multiple different projects with the TRANSFORM agenda. When and how to appoint ownership, and step back as e.g. a municipality or consultant
Copenhagen	Supporting the city's ability to start a process and facilitate dialogue among stakeholders, despite limited resources (mainly personal resources).
Genoa	Governing the process with two very powerful private stakeholders (RFI and Port Authority) which can strongly influence the development largely together with external factors as e.g. national economic and financial issues.

City	Challenges during the process
Hamburg	The specific role of the IBA follow-up organization is under ongoing discussions: different parallel responsibilities (Government of Hamburg, General Urban Planning and Development, Urban Land Use etc…) lead to general uncertainty how process will be organized after IBA.
Lyon	How to convince (private) actors to involve and apply the energy performance requirements and targets in the building sector.
Vienna – aspern Seestadt	How to create mutual understanding between stakeholders and win stakeholders as partners. How to deal with target conflicts, how to define clear and ambitioned, but realizable targets.
Vienna – Liesing Groß Erlaa	How to secure public and political commitment towards the planned residential projects in the area. Development visions for the housing development in the area of "In der Wiesen" have been challenged both by the local authority and the local community. How to commit property developers and industrial enterprises to an 'eco-holistic', resource use reduced development of the area.

Conclusions

The involvement of private stakeholders is the most important challenge in many cities from the viewpoint of the process (planning and performing). This challenge divides in a set of different problems: how to to convince private actors to involve themselves in the process; to create mutual understanding about the projects objectives; the commitment to contribute (in kind as well as financially); which should match the overall targets of the envisaged development as a smart urban lab. Especially in case of strong private actors (with a lot of competences and financial power) this can be an enormous challenge. Thus in the course of the process it is necessary to define common objectives and quantitative targets and to deal with (potentially arising) target conflicts. This challenge forms an integral part in the process descriptions of both Amsterdam, Genoa, Lyon and the Vienna SULs.

Another aspect to be mentioned is the question of the way of facilitating the dialog among stakeholders despite limited resources, which are mainly personal ones (Copenhagen), and – later on – when and how to step back after having started the process and to appoint ownership (to a further bottom up process, Amsterdam).

In addition external factors can play a major role, influencing the process and the development of the SUL, as e.g. national economic and financial issues or changes in the municipal political landscape.

In the case of Hamburg, most procedural uncertainty comes from the – not yet finished – discussion on the future role of an IBA follow-up organization.

3.4 Fields of activity and key actors

What fields of activity are to feature in the implementation plan will depend on the general approach of cities in the elaboration the IP, as outlined above. The selection of activities in the implementation plan will also reflect thstage of implementation in the different TRANSFORM cities which decisively impacts on the allocation of future work resources. t. Finally key fields of activities in new development areas differ from those in existing urban areas in terms of themes, challenges and possibilities.

Table 6: Main fields of activities and responsible key actors

City	Main fields of activities	Key actors driving the process in the respective fields
Amsterdam	Modelling the energy situation and needs; Analysis of the area energy household	TRANSFORM team
	Vision. Mission statement for the area	Municipality
	Making projects. List of projects and monitoring;	Local stakeholders and companies.
	Evaluation: overall-cooperation and projects	AMS Energy and the Climate Office (depends on the project)
	Heating & cooling Energy cooperation for the area Retrofit of existing buildings Enabling themes: needed infrastructure for this in terms of smart integrated grids, software development (powermatcher)	yet to be decided
Copenhagen	Early dialogue with developers: Better solutions and resources	City of Copenhagen, Technical and Environmental Administration
	Intelligent use of data: Smart energy managment (e.g. provide energy demand flexibility, energy storages etc)	Greater Copenhagen Utility
	Citizen and stakeholder involvement: How to live in a more sustainable manner	City of Copenhagen, Technical and Environmental Administration
Genoa	Multiplicity of activities foreseen in all fields of urban and energy planning , but no concrete definition of outputs yet. Seeking commitment for start of project and finding of project finance stand out as activity areas as a first step.	The start of the project is negotiated between municipality, RFI and port authority.

City	Main fields of activities	Key actors driving the process in the respective fields
	Urban development, Energy planning and mobility	Respective department within the municipality
	Waste management	AMIU
	Water Management	Mediterranea delle Acque
	Concepts on smart grids	Enel
	Public participation	Municipio
Hamburg	Development of new, extension of old and implementation of new technologies for district heating.	Hamburg Energie GmbH and Hamburg Ministry
	Fostering energy performance of buildings	Hamburg Ministry
	Renewables- Installation of new Wind Turbines in the Harbour area, Storage of renewable power by “Power-to-Heat””	Private investors
	E-Mobility Strengthening biking, extension of public transport and car sharing	Private investors Ministry and districts
	Demand side Management, storage of renewable power "Power to Gas",	Research projects, nationally funded
Lyon	Modelling the energy situation and needs through an Energy Atlas Fostering the energy performance of buildings Increasing the part of renewable energies in the heating and cooling network	Department for Urban Development will be the main responsible actor of the process
	Optimizing electricity networks deployment and piloting new technologies	ERDF
	Optimizing District heating & cooling networks deployment and piloting new technologies	District H&C network operator (Dalkia)
	New energy efficient buildings & Retrofit of existing buildings	Private developers and building owners
Vienna – aspern Seestadt	Concepts for multimodal mobility and public spaces	Wien 3420 will be the main actor leading the process towards the EIS, together with relevant municipal departments
	Integrated energy concept, esp. in terms of increasing the use of renewable energy and decentralized energy networks/demand side management	Wien 3420 will be the main actor leading the process towards the EIS, together with relevant municipal departments
Vienna – Liesing Groß Erlaa	Integrated urban planning concept Participatory planning concept (planned) Mobility Concept (planned)	MA 21 (municipal department for urban land use and zoning) will be leading the way in all the processes defined, except the integrated energy strategy.

City	Main fields of activities	Key actors driving the process in the respective fields
	Integrated energy strategy and energy atlas	Process- and content-wise lead by MA20 (energy planning department)

Conclusions

As Genoa is just starting the process, main fields of activity at the moment concentrate on convincing major stakeholders and the municipality to give their commitment for realization of the project and on obtaining project finance.

From a short term perspective, Copenhagen (already affirmed by the municipality) concentrates also mainly on governance issues and convincing stakeholders. Besides, intelligent use of data (smart energy managment) is a topic of major importance in the near future. Due to the early state of planning in Vienna – Liesing Groß-Erlaa, this team will also have to elaborate general concepts in a first step, comprising urban planning and integrated energy planning, mobility and participatory planning (including the task to convince local population and stakeholders).

Finally there are cities/areas having general concepts already available widely, which are focussing on a number of detailed questions, mainly in terms of energy issues, as e.g.:

- new technologies for district heating, fostering energy performance of buildings, installation of renewables and “Power-to-Heat” or "Power to Gas" storage, e-mobility, biking, public transport and car sharing, demand side management (Hamburg)
- elaborating an energy atlas, fostering energy performance of buildings, increasing the share of renewable energies in the heating and cooling network and piloting new technologies in the electricity and district heating and cooling networks (Lyon)
- increasing the use of renewable energy and establishing decentralized energy networks/demand side management (Vienna – aspern Seestadt)

According to the bottom up approach Amsterdam pursues, main fields of activities have also been defined along the envisaged projects (energy atlas, vision, individual projects, evaluation). From the themes point of view the main fields of activities will be:

energy atlas, district heating and cooling, energy cooperation, building retrofit, enabling theme: smart grids/software.

3.5 Realization is also a question of commitment

Political commitment (e.g. from the Mayor or from the Municipal Council) or at least the commitment of high level administrative representatives is crucial for the realization of such an ambitious project as it is the SUL development. Although a general commitment to smart cities activities and resource efficient development can be stated in all cities, the specific acknowledgement referring to the development of the SUL area is still missing in some TRANSFORM cities, which is an urgent but often difficult task for the leaders of the development.

At the level of the development area, commitment of the involved stakeholders is an important requirement in order to achieve a prosperous development.

Table 7: Commitment given or expected

City	Description of the situation Commitment given (✓), not foreseen (-) expected (!), not decided yet (?)	Commitment by stakeholders	Commitment by high level administration	Political commitment (mayor, municipal/distr. council, or aldermen)
Amsterdam	The commitment to the implementation plan differs according to the roles in the different projects that will be initiated. Commitment to the mission statement will be by all main stakeholders. Others stakeholders are encouraged to be committed to create the buzz. Commitment to each of the projects is needed by stakeholders involved, through instruments like Letters of Intent and investment decisions.	✓	✓	!
Copenhagen	The planned events, such as the intake workshop and the early dialogue with developers, are expected to yield a clearer picture of who will commit to the IP. Some backing is expected also the making of the transformation agenda.	?	✓	?
Genoa	At this stage it is too early to know, as too many variables are at stake. TRANSFORM shall be part of the process of promoting and supporting the actual realization of the Green Apple project. The first	?	✓	!

City	Description of the situation Commitment given (✓), not foreseen (-) expected (!), not decided yet (?)	Commitment by stakeholders	Commitment by high level administration	Political commitment (mayor, municipal/distr. council, or aldermen)
	commitment will have to come from the municipality, rapidly followed by a joint agreement with RFI and Port Authority, another one with local stakeholders.			
Hamburg	There is no official political commitment planned but the IP will be developed in close cooperation with the Hamburg Ministry of Urban Development and the Environment. All specific activities will be developed and discussed with the relevant key-actors.	✓	✓	-
Lyon	The implementation plan must be politically validated by the mayor of Lyon and vice – presidents in charge of the Transform project. Special focus areas to be validated concern: building energy performance targets and the objectives for energy mix of the heating/cooling network.	!	✓	!
Vienna – aspern Seestadt	Commitment is expected from Wien 3420, the relevant municipal departments and other involved stakeholders. The specific form of such commitment is still open.	✓	✓	✓
Vienna – Liesing Groß Erlaa	At the moment, the topic of commitment and involvement is under discussion. Commitment from stakeholders is clearly expected (aimed at).	!	✓	?

At the moment, even though general commitment is to be stated, the TRANSFORM cities still do not have the preferable commitment of stakeholders, administration and politics. Most of the cities still work for additional commitment mostly either from stakeholders and/or from politics.

3.6 Key considerations as ‘game changers’ in the SULs

The TRANSFORM SUL areas show different conditions and situations, framework conditions in the cities (and countries) differ as well, thus key considerations or ‘game changers’ vary considerably between the SULs as presented below.

Table 8: Most important themes and key considerations as 'game changers'

City	Themes and key considerations
Amsterdam	Participatory models and end-user engagement, financing the project management, legal framework for energy cooperation, organizing stakeholders in an esco model.
Copenhagen	Internal organisation within the City of Copenhagen to secure political commitment Good business cases on sustainable building are crucial in discussions with developers. Access to data and success in coordinating models Creating lively urban area. involving citizens from neighbouring areas, or, alternatively, newly developed land in other parts of the city
Genoa	How to implement the project, i.e. how to trigger the actual realization of the planned smart district in the context of a strong economic crisis and spending review translating into no (very limited) resources for urban developments; Involving stakeholders. How to involve the main industrial actors, RFI (Italian Railways) and Port Authority at the same time promoting and guiding a strong participation process with the population and other stakeholders. Finding feasible business models applicable under existing laws and rules and interesting for banks or other financial institutions or companies to invest and support the action or project, also considering the very tight spending situation of many countries and specifically in Italy
Hamburg	Energy Standards vs. Economic viability: Higher energy standards being barriers during the development of areas and the tender process to sell the sites which has to be discussed with the financial administration. Legal commitment . Fear of binding connection set in the Land Use Plans which has to be discussed with the districts administration Financial situation of house owners which prevents even high economic efficient refurbishments or technical installations Risks of investments in district heating grids in existing areas with high number of several house owners
Lyon	Assessment of heat recovery potential of the area (incl. heat recovery on sewage) to evaluate the financial investment needed, the technical process to be set up. Behavioral change: the active involvement of the employees of office buildings in the reduction of energy consumptions Methodological change, adapt the methods of energy planning and sizing of networks: Decentralized production. Study the passage of a method of current planning in the smart " planning " by taking into account possibilities of piloting of the uses and coupling decentralized production and specific uses, International knowledge transfer and exchange on these stakes and on the methods used with the other administrators of European electricity networks. Widening the usability of energy data. Combining energy data (from networks operators) with urban and socio economic data through GIS database to support energy planning
Vienna – aspern Seestadt	Legal framework. Adaptation of basic rules (laws, decrees, standard procedures), Creating lively urban area. Shift of paradigm – supporting the function of new urban districts beyond producing living space for additional inhabitants (For completion see also challenges in modes of governance)

City	Themes and key considerations
Vienna – Liesing Groß Erlaa	Involving local population Close the gaps between fragmented developments to form unitary urban development vision of the SUL, creating agreement to a holistic development vision Municipal investments (legally and/or financially) in public transport and alternative forms of mobility Energy performance of buildings, feasibility, agreements on higher requirements Energy planning in industrial districts, cooperation with stakeholders, coordination models

Conclusions

The following table shows similarities and differences between TRANSFORM cities via a summary on key considerations as 'game changers' according to the PESTLEGS categorization (political, economical, social, technological, legal, environmental, governance, space).

The greatest difference lies between SULs with largely existing urban development with the focus on transforming the building stock (e.g. Amsterdam, Lyon, Hamburg) and SULs representing new urban quarters, planned from scratch (e.g. Copenhagen, Vienna – aspern Seestadt). A game changer in the former is getting owners and users of existing properties on board, whilst in the latter it is more about the integration of developers and utility companies as partners for investing in a the future new area system.

Although current situations and implementation phases differ between the cities, convergence can be seen around the following the key considerations (important for at least 3 SULs):

- Development of successful participatory models, end-user involvement, behaviour
- Feasible business models for private investment (e.g. for new or existing energy efficient buildings, as well as technological innovation, etc.), applicable under existing laws and rules and interesting for banks or other financial institutions or companies to invest and support the action or project
- Solutions for district heating systems (with different specifications of the important issues: recovered by renewables/waste heat, risk of investment due to lacking obligation)

- ★ Coordination models/legal framework for energy cooperations, combining energy data
- ★ Involving important stakeholders, agreement to a holistic development

Table 9: Summary on key considerations as 'game changers'

City	PESTLEGS categorization	Amsterdam	Copenhagen	Genoa	Hamburg	Lyon	Vienna – aspern Seestadt	Vienna – Liesing Groß Erlaa
Internal organisation within the authority, secure commitment	P/G		★	★				
Financing of municipal project management	Econ	★		★				
Feasible business models for private investment (e.g. for new or existing energy efficient buildings)	Econ		★	★	★			★
Creating a lively urban area	S		★				★	
District heating systems – recovered by renewables/waste heat	T/Econ					★		★
Methodology of integrated spatial and energy systems planning	T					★		★
ESCO-model with local stakeholders	L	★						
Legal commitment by the administration (e.g. land use plans, organization of mobility)	L				★			★
District heating systems – risk of investment due to lacking obligation	L				★			
Legal framework of new, 'smart' technical solutions	L						★	★
Coordination models/legal framework for energy cooperations, combining energy data	G/L	★	★			★		
Participatory models, end-user involvement, behaviour	G	★	★	★		★		★
Involving important stakeholders, agreement to a holistic development vision	G			★		★		★

3.7 Overview

	Governance													Content							
	Type	Organisations		Stakeholders	Administration	Political	Key considerations P	E	S	T	L	E	G	S	Type	Phase	Themes Energy systems	Low energy de - mand	Renewable energy	Mobility	ICT	Water	Waste
Amsterdam		City of Amsterdam, The Amsterdam Energy and **Climate Office department of** Urban Planning	Municipal institutions and city districts, Energy management companies, Major corporate partners, IKEA, Amsterdam, Arena, AMC	✓	✓	!		★★		★	★		★★		**Brownfield**	Planning/ (re) construction					-	-
Copenhagen		The Finance Administration and the Technical and Environmental Administration, municipal administration City of Copenhagen	Greater Copenhagen Utility, CPH City & Port Development, CCPD	?	✓	?	★	★	★				★★		**Greenfield**	Planning/ (re) construction							
Genoa		**Genoa Smart City Office,** municipal Administration	Departments of the municipality including: Energy and Enviroment, Urban Planning, Mobility, ICT, Planning & Organization, ARE, Enel, International Relationships	?	✓	!	★	★★					★★		**Brownfield**	Conception/ planning				-	-	-
Hamburg		IBA GmbH, limited liability company	Hamburg Ministry: -of Urban Development and the Environment, -of Financial Affairs, Administration of Districts of Hamburg Central and Hamburg Harburg, other responsible administrations and city owned companies	✓	✓	–		★			★★				**Brownfield**	Construction					Smart Power Hamburg Power-to-Heat	-	-
Lyon		Department for Urban development Grand Lyon Administration	The city of Lyon, mission Part Dieu, ERDF, Hespul	!	✓	!				★★★			★★		**Brownfield**	Planning/ (re) construction			-	-	-		
Vienna - Aspern Seestadt		Wien 3420 stock corporation (AG), general agreement between the city and Wien 3420	Municipal Departments, municipal energy provider and utility companies	✓	✓	✓			★		★				**Greenfield**	Planning/ (re) construction							-
Vienna - Liesing Gross Erlaa		Municipal department MA21, Municipal Administration	IG Liesing, municipal Departments, municipal energy provider and utility companies	!	✓	?		★		★★	★★		★★		**Brownfield**	Conception/ planning					-	-	-

Governance

Main Organisation(s)

Other Organisation(s)

Commitment

✓ Commitment given

! Expected

? Not decided yet

– Not foreseen

Pollitical
Economic
Social
Technological
Legal
Environmental
Government
Spacial

Content

District heating
District cooling
Energy plan
Smart grid
Gas network
District management
Improvement building properties
LED street lighting
Building codes or standards
Subsidies
Building management
Information system for inhabitants
Energy from the sun
Energy from the wind
Energy from the sea
Energy from waste
Geothermal plant
Energy from biomass
Electric vehicles
Increase Cycling
Increase Walking
Increase public transport
Car sharing
Alternative fuels
Collect water
Use of other water for cleaning
Re-use of product

4. Draft Outline
Implementation Plan for SUL [XYZ] in [city xyz]

The following section is a draft outline for the Implementation Plan document, which is to be provided by each city as contribution to Deliverable D4.2, due next year.

The IP document in TRANSFORM is intended to be as short as possible, but given the scope and list of content we expect a 30-40 page document per SUL, including tables, graphs and maps.

WP 4 leaders VIE and AMS are going to integrate and edit the cities' contributions and produce the joint document on IPs, D 4.2.

The comparative summary of the cities' experience, synthesis on key considerations and final recommendations will be discussed and elaborated after D 4.2 has been finished and will lead to our final Deliverable D 4.3.

Whereas chapters 1 and 2 are about understanding the actual situation and framework conditions of the SUL, chapters 3 and 4 are forming the actual heart of the implementation plan, highlighting development visions, objectives and targets as well as future organization and management of the SUL and important measures to be set in a mid-term perspective. Finally, chapter 5 shall provide with a preliminary assessment of experiences of the process from the viewpoint of SULCos.

We understand that each city and SUL will have a different approach and it is clear that the documents will vary in the depth of elaborating the proposed chapters. Nevertheless, filling the comprehensive outline with your SULs content will contribute to a better understanding of such differences – which is most relevant for the subsequent synthesis and elaborating more general recommendations.

[Please use maps and relevant graphs/tables as appropriate/if available]

1. Background and context information on the SUL and the city

1.1 Description of the area and its overall development

Description of the area (built environment and characteristics/land use of the built up area, technical and social infrastructure, etc.) and its urban development perspective (10-15 years and long term vision, i.e. 2050)

Overall urban/regional development (urban region) and integration of the area within the city/urban region (location, functions, etc.);

Guiding questions:

- *What are the relevant characteristics of the SUL and its built structures? Which circumstances are important in terms of energy use and production within the SUL? (map, rendering etc.)*
- *Where is the SUL located within the city, how is it connected (motorized traffic, public transport, cycling), what are its functions? (map)*
- *Why and how is the SUL specific within the city, particularly in term of energy?*
- *What is the overriding objective in terms of energy and resources? What are the objectives of the most important local stakeholders?*

1.2 Structure of population and businesses

Description of demographic development/expected development, socio-economic structure of inhabitants in the area; description of characteristics of enterprises and businesses

Actual and expected quantitative framework (population, jobs, type and age of buildings, floor space, densities, etc.);

Guiding questions:

- *How has the SUL developed so far, what future development is expected (in terms of characteristics and numbers)?*
- *Which kind of population and businesses are/will be located within the SUL and therefore be touched by measures (indicated e.g. by social structure, incomes, educational levels etc. also in comparison with the city average)?*

Table 1: Basic data for the SUL

	Status quo (year)	Projection (year)
Total area		
... of which built up area		
Nr of population		
Nr of households		
Nr of enterprises, businesses		
Nr of jobs total		
Structure of jobs in % (e.g. office, commercial, other services, manufacturing, logistics ...)		

2. Development process (so far)

2.1 Insight in the ongoing development process

Guiding questions:

- *When did the SUL development process start? What were the topics dealt with so far (urban development and planning, energy planning)? Which milestones can be named?*
- *Who is in charge/key actors of strategic planning (for urban development and energy planning)?*
- *What is the role of the city in developing the SUL? Is there a specific organizational structure in charge of the SUL (urban and energy) development?*
- *What is the role of stakeholders (local institutions and organizations, local businesses) and other partners (e.g. energy supplier, ESCOs, etc.) for the SUL development?*
- *Who is committing to the development objectives/to specific (energy-related) objectives and targets (e.g. mandate and commitment from the mayor, commitment from the municipal department, other public statements in terms of development and targets, etc.).*
- *In the process: What has been the way of working, decision making, stakeholder involvement, citizens' involvement? Which instruments/techniques have been used to support this process?*

2.2 Basis for decisions – available data and detailed knowledge

Guiding questions:

- *Which relevant data is available as a basis for decision (on future urban development processes, infrastructure investment, the operationalization of desired energy scenarios etc)/which data do you use for the work in the SUL (statistical and empirical data, e.g. energy atlas, data from energy companies on energy consumption, building typologies, etc.)?*

- *How detailed and precise is the available data (disaggregated down to census cells, blocks, buildings, even more detailed?, disaggregated data on different users and uses, etc.)*
- *Is there important data lacking for the SUL? Are there actually any activities to overcome this lack?*
- *In case of lacking data: Are studies and analyses used to substitute gaps of empirical or other important data?*

2.3 Legal framework, tax incentives, aid schemes

Overview – Listing and descriptions:

- *What are most important legal regulations and financial incentives already in place creating progress and barriers for the development (e.g. funding and regulations for energy efficiency, retrofit, use of renewables etc)?*
- *How are they related to city-wide or regional or national regulations, tax incentives or aid schemes related to the energy field?*
- *How do these regulations etc. impact the business cases of investors, developers, utilities, ESCOs etc.?*

2.4 Achievements and experiences

Guiding questions:

- *Which steps have been taken so far/which measures have been set?*
- *What have been development costs?*
- *Who have been and will be main investors (energy system, other infrastructure, residential, business)?*
- *What are the results so far (short assessment of main achievements, maybe failures)?*
- *Which specific challenges can be stated from this experience? What has been prepared to overcome these challenges in order to be successful in the future?*

3. Status of the energy system and related themes and enabling themes

Description of the current situation (2013 or close) in terms of the existing energy system and relevant public measures taken, also if public aid/public funding is in place – with figures and maps (as disaggregate as possible and appropriate), references to the overall situation in the city (if appropriate)

3.1 Energy systems and networks

Guiding questions:

- *Which types of energy supply networks are in place? (district heating networks, gas network, electricity, etc.), maps if possible*
- *Are there energy storage facilities within the SUL (to be used by more than one building)?*
- *Is there energy production in or near the SUL (e.g. power plants, etc.)? Is distributed energy generation (CHP) in place in the SUL (large and/or small scale)? To what extent?*
- *Is waste-heat being used already?*
- *Is there potential for waste-heat from industry/services?*
- *Which energy sources (to which quantities) are used in the city and in the SUL? (if possible: electricity, gas, district heating, oil, renewable sources etc.; what is the energy source for district heating?)*
- ***What are specific challenges and opportunities within the SUL?***

3.2 Buildings, industry and services – energy demand and energy efficiency

Guiding questions:

- *What is the energy consumption by use categories (residential, services, industry; heating and cooling, production) and energy type (electricity, gas, district heating, oil, renewables etc.)*
- *Which factors drive the development of energy demand in the area?*
- *What is the quality of the building stock? What is the specific energy demand for heating (and cooling) of buildings in the area? (if possible: per m2 by construction period and building type (kWh/m2/a), specified for residential, services, industries and other usages)*
- *What are the differences in energy efficiency in the SUL compared to the entire city?*
- *Are there specific business models in place in order to implement energy efficiency measures?*
- ***What are specific challenges and opportunities within the SUL?***

*If an **Energy Atlas** or parts of it exists, this would be the place to present it and summarize the main characteristics of the SUL area.*

3.3 Local renewable energy sources

Guiding questions:

- *Which renewable energy sources are currently used within the SUL? What is the actual renewable energy production per source?*
- *What is the renewable potential of the area and from what source (PV, wind, ground water etc.) ?*
- *What are the differences in renewable energy production in the SUL compared to the entire city?*
- *Are there specific business models in place in order to implement renewable energy production?*
- ***What are specific challenges and opportunities within the SUL?***

3.4 Mobility

Please provide map(s) showing the access to public transport and individual traffic (status quo and projection)

If possible please provide data on modal split (public transport, motorized transportation, bikes, walking), level of motorization, average daily distance (city/SUL)

Guiding questions:

- *How are private and public mobility and transport organised in the city and the SUL (accessibility, frequency and quality of service)?*
- *Which infrastructures and incentives are specifically provided for walking and cycling (quantitative, qualitative) ?*
- *What are the car parking and car use regimes in place in the city/in the SUL (obligatory provision of parking in new developments, parking restrictions, access restrictions or fees etc.) ?*
- *How can the mobility behavior of population and working people be described?*
- *Are alternative fuels (e-mobility, biofuels etc.) and/or innovative mobility solutions (e.g. car sharing etc.) being used in the SUL and to what extent?*
- *What changes are to be expected due to development of population and/or jobs (projection)?*
- *What is the status of goods transport and logistics in the SUL? Is resource efficient transport an issue for enterprises within the SUL?*
- ***What are specific challenges and opportunities in the SUL?***

3.5 Use of ICT and smart grids (enabling theme)

Guiding questions:

- *What kind(s) of ICT provisions are available in the SUL (infrastructure, technology, services)?*
- *Is the implementation of smart grids an issue within the SUL? Which smart grid solutions are in place? Are smart grinds being used to increase energy efficiency (e.g. by monitoring, facility management, interactive tariff incentives etc.)?*
- *What is the status of smart metering in the city/the SUL?*
- *Is ICT used for easing mobility (information, booking/ticketing, control systems, mobility platforms etc.)?*

3.6 Other important issues (optional, e.g. Water, Waste)

Optional if specifically relevant in the SUL, e.g.:

- *Are there measures in place/planned for sustainable use of water?*
- *Are sustainable waste systems used/planned in the SUL (waste, waste water/rainwater management)?*
- *Is climate adaptation an important topic in the SUL? Is the issue of heat islands discussed in the SUL/are there measures set against urban overheating?*
- *Is resource efficiency in a more general sense relevant, e.g. with respect to sustainable building materials, urban mining, etc.*
- *How can awareness and involvement in relation to energy and resource issues of the resident population and businesses in the SUL area be characterized? Are there key activities?*
- *Any other issues?*

4. Overall development visions, objectives and targets, future organization and management of the SUL from the policy perspective

4.1 Objectives, targets and KPIs, development vision and end-state of urban development

State qualitative objectives and quantitative targets for future development (10-15 years with a long-term perspective, i.e. 2050)

Guiding questions:

- *What are energy related quantitative targets for the future development of the SUL (esp. energy use, CO_2-emission, use of renewable sources)?*
- *Are there formulated non-energy related objectives and/or targets (e.g. impact on local population, social mix, quality of living, achievements in terms of adaptation, micro-climate etc.)?*
- *Who is committed to these targets/objectives?*
- *What is the long-term vision for the SUL (beyond 2030)? When should the (major) development be completed?*
- *How was the process organized in order to define the objectives and targets at hand? Who was included in the discussion? Who finally decided?*
- *Maps, renderings of the future state of the SUL area*

Table 2: Basic KPIs for the SUL

	Status quo (year)	Target (year)
Energy use		
Emission of CO_2 and/or CO_2-equivalent		
Local energy production from renewable energy sources		

Since the calculation of these KPIs is differing from country to country, please describe what is considered in the KPI. More and/or more detailed KPIs are welcome!

4.2 Development strategies and priorities of future development activities

Guiding questions:

- *What are the priorities of future development? (which topics, target groups, etc.)*
- *Which key development strategies are being put in place?*

- *Overview and priority of measures (to be described in detail in section 5, below)*
- *Expected overall impact of the measures (by categories, as in section 5, below)*
- *What are flagship/pilot projects to be realized?*

4.3 Future management and organization of the SUL

Guiding questions:

- *How shall the further process be organized? Who is in charge of ongoing strategic planning, implementation, monitoring?*
- *What is the role of the city/the public sector for accompanying and governing the development? Are there new structures to be introduced compared to the process organization so far?*
- *What is the future institutional framework? Who is expected as (additional) important actor-groups? Who will gain/loose influence in the course of the development process?*
- *How is the management of actions named in the Implementation Plan set up?*
- *What kind of monitoring is planned? Who will be in charge of monitoring? Which activities will be monitored? Who will pay for monitoring and who will obtain the data? What will be done with the data?*
- *How will the local population and enterprises be invited and integrated in the development process?*

5. Implementation measures, key actors for future realization

Description of concrete measures for reaching the defined targets and objectives of the Implementation Plan (10-15 years).

Definition of key actors for the respective measures, description of expected start and finishing dates, investments/running costs and other financial issues relevant for implementation (e.g. public aids, subsidy schemes, business models)

Mapping of key measures, projects and investments per relevant theme or enabling theme

5.1 Energy systems and networks

Description of important measures, key projects etc.

Measure X			
Start of implementation	[year]	(Planned) Completion	[year]
Description of the measure	[Why is the measure necessary/reasonable? What shall be done/changed? What is the expected impact/outcome of the measure?]		
Key-actors	[Who is especially relevant for the implementation of this measure? What is the specific role of these key-actors?]		
Target group	[Who in the SUL is influenced by the measure (in his daily life)?]		
Financing	[Investment costs and operating costs, who finances the measure, funding schemes/public aids, business model]		
Publicity, participation	How will the public be involved in the implementation or be informed about planning and/or implementation?		

If appropriate please add pictures/maps or integrate in overall mapping

5.2 Buildings, industry and services – energy demand and energy efficiency

Description of important measures, key projects etc.

Measure X			
Start of implementation	[year]	(Planned) Completion	[year]
Description of the measure	[Why is the measure necessary/reasonable? What shall be done/changed? What is the expected impact/outcome of the measure?]		
Key-actors	[Who is especially relevant for the implementation of this measure? What is the specific role of these key-actors?]		
Target group	[Who in the SUL is influenced by the measure (in his daily life)?]		
Financing	[Investment costs and operating costs, who finances the measure, funding schemes/public aids, business model]		
Publicity, participation	How will the public be involved in the implementation or be informed about planning and/or implementation?		

If appropriate please add pictures/maps or integrate in overall mapping

5.3 Local renewable energy sources

Description of important measures, key projects etc.

Measure X			
Start of implementation	[year]	(Planned) Completion	[year]
Description of the measure	[Why is the measure necessary/reasonable? What shall be done/changed? What is the expected impact/outcome of the measure?]		
Key-actors	[Who is especially relevant for the implementation of this measure? What is the specific role of these key-actors?]		
Target group	[Who in the SUL is influenced by the measure (in his daily life)?]		
Financing	[Investment costs and operating costs, who finances the measure, funding schemes/public aids, business model]		
Publicity, participation	How will the public be involved in the implementation or be informed about planning and/or implementation?		

If appropriate please add pictures/maps or integrate in overall mapping

5.4 Mobility

Description of important measures, key projects etc.

Measure X			
Start of implementation	[year]	(Planned) Completion	[year]
Description of the measure	[Why is the measure necessary/reasonable? What shall be done/changed? What is the expected impact/outcome of the measure?]		
Key-actors	[Who is especially relevant for the implementation of this measure? What is the specific role of these key-actors?]		
Target group	[Who in the SUL is influenced by the measure (in his daily life)?]		
Financing	[Investment costs and operating costs, who finances the measure, funding schemes/public aids, business model]		
Publicity, participation	How will the public be involved in the implementation or be informed about planning and/or implementation?		

If appropriate please add pictures/maps or integrate in overall mapping

5.5 Use of ICT and smart grids

Description of important measures, key projects etc.

Measure X			
Start of implementation	[year]	(Planned) Completion	[year]
Description of the measure	[Why is the measure necessary/reasonable? What shall be done/changed? What is the expected impact/outcome of the measure?]		
Key-actors	[Who is especially relevant for the implementation of this measure? What is the specific role of these key-actors?]		
Target group	[Who in the SUL is influenced by the measure (in his daily life)?]		
Financing	[Investment costs and operating costs, who finances the measure, funding schemes/public aids, business model]		
Publicity, participation	How will the public be involved in the implementation or be informed about planning and/or implementation?		

If appropriate please add pictures/maps or integrate in overall mapping

5.6 Other important issues (optional, e.g. Water, Waste)

Description of important measures, key projects etc.

Measure X			
Start of implementation	[year]	(Planned) Completion	[year]
Description of the measure	[Why is the measure necessary/reasonable? What shall be done/changed? What is the expected impact/outcome of the measure?]		
Key-actors	[Who is especially relevant for the implementation of this measure? What is the specific role of these key-actors?]		
Target group	[Who in the SUL is influenced by the measure (in his daily life)?]		
Financing	[Investment costs and operating costs, who finances the measure, funding schemes/public aids, business model]		
Publicity, participation	How will the public be involved in the implementation or be informed about planning and/or implementation?		

If appropriate please add pictures/maps or integrate in overall mapping

5.7 Measures concerning the legal framework, tax incentives and aid schemes

Overview – Listing and descriptions:

- *What are most important <u>new</u> legal regulations and financial incentives?*
- *How are they related to city-wide or regional or national regulations, tax incentives or aid schemes?*
- *How do these regulations etc. impact the business cases of investors, developers, utilities, ESCOs etc.*

6. Reflection – preliminary assessment

Guiding questions:

- *Which measures can be named as "best practice"? How could they be transferred to other cities, what has to be considered? (Please fill in relevant best practices in the PESTLEGS table additionally)*
- *Which measures could not be implemented/due to which causes? Which barriers have been recognised so far (in general)? (Please fill in relevant barriers in the PESTLEGS table additionally).*
- *How will the development of the SUL influence e.g. composition of inhabitants, life of inhabitants (social issues)?*
- *What are the experiences in linking urban planning with energy planning?*
- *What are experiences/best practice in financing the transformation of urban areas?*
- *Other*

Overview table in addition to the text.

Table 3: Overview on best practice and barriers for implementation – PESTLEGS

Short description	Categorization by PESTLEGS
Best practices	
Barriers for implementation	

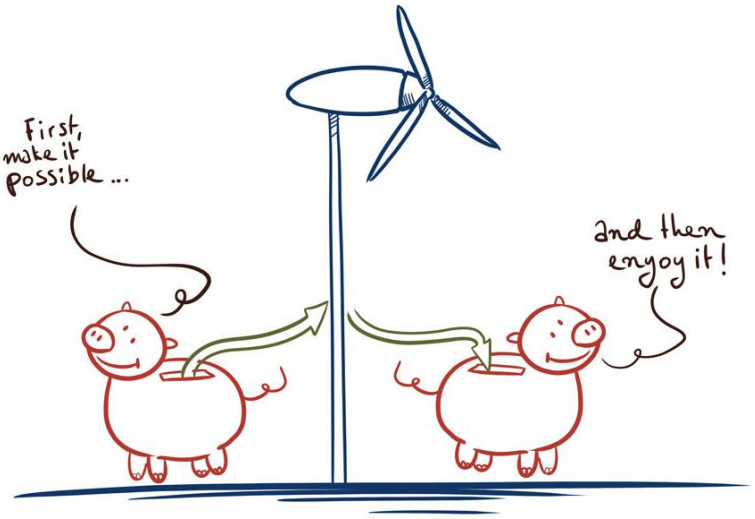
Annex

Processes of making Implementation Plans

The process of making an Implementation Plan in Amsterdam

Bob Mantel, Geert den Boogert, Stef le Fevre, Laura Hakvoort

August, 2013



Content of this document

This documents provides information on the Implementation Plan that Amsterdam makes for the Smart Urban Lab in Amsterdam South East. It contains three parts

(1) the product: what will the Implementation Plan look like, and what is the relation with the Transformation agenda??
(2) the process: what are the process steps we take to get to the desired products
(3) the stakeholders: who is involved in the process?

Products: the Implementation Plan

The Implementation Plan for the Amsterdam Smart Urban Area of Amsterdam South East consists of five products:

1. Analysis of the area energy household

This analysis shows the amount and type of energy used in the area, the possible sources for local production, and gives insight in the context. The analysis has a focus on possibilities for energy demand reduction, production of renewables and efficiency – without ignoring the relation with the urban fabric, uses in the area, and possible links with the water system, waste treatment and mobility.

2. Mission statement for the Area

Next to the existing 202020 targets, we create a mission statement for the area – based on local values, together with the local actors. A statement that inspires and shows where we want to go to! The mission statement functions as a dot on the local energy horizon that stakeholders in the area can commit to or agree upon. It can be extended with a wish list. Here stakeholders can put their biggest wish on to share agenda's. The mission statements will include some quantitative overall targets in general. They will be more specified after consulting the stakeholders. The energy atlas provides quantitative analysis about use and potentials. But, there won't be a comprehensive quantitative framework with targets within the mission statement.

3. List of projects + monitor

We make a list of started or ready-to-start projects, that are a result of the cooperation process until now. This is a living document, that grows the coming 1,5 years – or even after. A small monitor will keep an eye on the 202020 targets and the relation with the local mission statement.

4.Projects

The projects form the real and most important products. These are not paper documents, but consist of actions, letters of intent, investment decisions. One of the projects will aspire to set up a local 'project management fund', to make it possible to keep setting up new projects.

5. Evaluation: overall-cooperation and projects

The most important questions in the overall evaluation will be: "How did we work together?" and "What did we achieve?". It will give insight in the working process of last years and share our successes and failures. The different projects will be evaluated separately. Interesting in the project evaluations are the success and fail factors.

The products should have added value for (a) Implementation speed-up, (b) Creation of buzz in South East to attract new initiatives, (c) Learning factor for other areas in Amsterdam and (d) Learning factor for other Cities.

Relation Implementation Plan and Transformation agenda

The implementation plan draws on the Energy strategy for the city by indicating the most relevant themes, enabling themes or key considerations for the city as a whole, and bringing those themes to more detail and implementation on a district level. If we look at the key challenges for the Smart Urban Lab in South East – we see the immediate parallel with the key challenges in the Transformation Agenda for the city as a whole.

Key challenges SUL in Implementation Plan, divided into themes, enabling themes and key considerations (following PESTLEG):

Themes: heating & cooling, energy cooperation for the area, retrofit existing buildings
Enabling themes: needed infrastructure for this in terms of smart integrated grids, software development (powermatcher)
Key considerations: participatory models and end-user engagement, financing the project management, legal framework for energy cooperation, organizing stakeholders in an esco model.

The key consideration aims at more co-creation between companies, residents, end-users, government and knowledge institutions in order to speed up implementation.

Process of bringing about the Implementation Plan

The separate products are the results of different processes.

1. Analysis of the area energy household

The analysis is based on the data produced for the energy atlas. Steps in the process are:

(a) Contact actors with relevant data (source holders)
(b) Start working together with relevant stakeholders within 'Amsterdam Smart City'
(c) Collect data and make the data workable
(d) Transform the data into information by mapping
(e) Generate general information and overview by calculation and graphs.
(f) Analyse the data visualization with local stakeholders
(g) Make an analysis that serves as an information tool during workshops
(h) Share with stakeholders final analysis

2. Mission statement for the Area

The municipality will take the lead in creating the mission statement. The activities are:

(a) ILS helped in creating a vision, especially for the theme Heating&Cooling
(b) Interview with local stakeholders
(c) Combine the results of the interviews in a pamphlet with the mission statement
(d) Ratify the product in the VAZO (association of companies in the area) All stakeholders will be invited commit themselves to the mission statement. The VAZO is the official cooperation of the companies in the area. This organization should ratify the mission statement.

3. List of projects

The following activities create the list of projects.

(a) Design thinkers: meetings with the local stakeholders to brainstorm about possible project on CO2 reduction. A first selection of projects is made. Values are shared and concepts are built.
(b) Match making: bringing the relevant actors together on a promising project.
(c) 1 on 1 contact: get projects more clear and appoint ownership.
(d) ILS helped in defining projects, especially around the key challenge of public participation and of retrofitting.

Everybody can take and is challenged to take the initiative for a new project. Amsterdam Smart city is open to incorporate new projects. After the first start of the AMS city and climate office, the city will not be able to maintain the role of initiator in the long run. When the project of TRANSFORM is over in 1,5 year, the goal is that the energy and climate office made itself redundant. Other parties, new associations will be welcomed to take the lead. For example Amsterdam SMART city or the Green Business Club might play this role. It will be important that the stakeholders in the area are willing to contribute financially.

4. Projects

Activities in the process are:

(a) Expertise workshops

(b) Residents' workshops. (Depending on the project and there will be tailor made solutions for public participation. Different projects can help to find persons who can represent a local group. For example, a project directed at children involving schools that stimulates local activities concerning sustainability, might bring up an enthusiastic parent who can be involved in another project).

(c) Stakeholders work out the business case and start the project.

(d) Match projects with national funding schemes if necessary

5. Evaluation: overall-cooperation and projects

The projects will be separately evaluated by the involved partners.

The overall evaluation will be done in the local platform with all the important partners. The overall evaluation is presented within the municipality to share experiences.

Stakeholders involved in the process

The SUL in Amsterdam holds the middle between a playground and a "rational" organization. There is no single party that is responsible for the whole process. The TRANSFORM Team is most likely seen by other parties to have this role, but it is not institutionalized. The stakeholders will be together responsible for the final outcome.

The Amsterdam Energy and Climate Office started as the accelerator of the process, and also took the initiative. The Office is part of the urban planning department, to

make sure energy and planning are combined. The people from the Amsterdam TRANSFORM-team work for this organisation. The TRANSFORM team will ensure the production of the four products, and make sure that the products are meaningful for local stakeholders. The TRANSFORM team is not responsible for the conceptive planning of initiatives of other parties. The TRANSFORM team will be responsible for the accompanying in the implementation phase, and make sure the progress is monitored and the project is evaluated.

The Climate and Energy office can only decide on the input of human resources. The office does not own assets and is does not have the competency to enforce e.g. the environmental act. The Climate and Energy office has no resources to invest other than the Amsterdam investment funds of 60 million for which projects can apply and compete. The climate and energy office and all other partners contribute in kind to support the project management. Each of the projects is funded individually by the partners concerned. However through the Amsterdam Funds the city is able to support projects throughout the city in the first phase of the development with loans, guarantees and shares.

The Amsterdam Climate Office has not been selected. It just started and took the initiative. Strong points to start an intervention in South East for the office are: connections with the main stakeholders on the city level – within the cooperation of Amsterdam SMART city -, strong in network building, the knowledge base of the physical planning department, the potential to translate knowledge in understandable products, the focus on sustainability, an impartial position in the area of South East, the possibility to test plans by the city alderman.

At the same time companies like the Arena Soccer stadium, the hospital (AMC) and IKEA took initiatives from their own perspectives. They might not see the municipality as initiator, but they follow their agenda's and timelines. The overall concept for the SUL will be clarified in the mission statement. If a project comes up, it should be in the spirit of the mission statement. In general this will be the case and we will follow the flow. Sometimes this means a project does not fit within the TRANSFORM agenda. Of course there is room for conversation.

However, through cooperation we succeeded in joint efforts. The TRANSFORM team helps to get their initiatives into a broader vision and guards the focus. The most

important question is about ownership of the projects; when and how to appoint ownership, and step back as e.g. a municipality or consultant.

The goal of the TRANSFORM team is to sustain and strengthen the local ownership and to gradually step back as a government. For the first product 'analysis of energy household' the TRANSFORM team does all of the work. For the fourth product 'the projects' the local stakeholders will be most important. The task and responsibility of AMS Energy and the Climate Office in this final phase depends on the project. The TRANSFORM team will make sure the progress per project is monitored and the project is evaluated. Furthermore the team will act as a relation and information broker between the parties in the different projects.

In the description of the process the type of stakeholders are mentioned. For the products 2, 3, 4 and 5 the main stakeholders in the area are involved. To drive an efficient work progress there will be different and separated work groups for most part of the process. However, there should also be opportunities for all stakeholders to participate in certain events together.

The main stakeholders in South East are:

- Amsterdam Medical Center (AMC): *http://www.amc.nl/web/Het-AMC.htm*
- Amsterdam ARENA (stadium): *http://www.amsterdamarena.nl/*
- Evoswitch Datacenter: *www.evoswitch.com*
- IKEA South East: *http://www.ikea.com/nl/nl/store/amsterdam*
- Stadgenoot (housing corporation) *http://www.stadgenoot.nl/woningcorporatie/over-stadgenoot/english*
- Liander (grid company): *http://www.liander.nl*
- NUON (energy supplier): *http://www.nuon.nl/*
- Waternet (watermanagement authority): *https://www.waternet.nl/*
- City District Amsterdam South East: *http://www.zuidoost.amsterdam.nl/*
- City of Amsterdam (TRANSFORM team): *http://www.amsterdam.nl/*

Other stakeholders are residents, other housing corporations, the research Centre for Energy and companies like: entertainment companies, connectivity company, investors, banks, SME's and creative industry, real estate portfolio managers and mobility companies.

Commitment

The commitment of the various stakeholders differs by product and projects.
The commitment to the implementation plan differs according to the roles in the different projects that will be initiated Commitment to the mission statement will be by all main stakeholders. Others stakeholders are encouraged to be committed to create the buzz.
In a way the mission statement is the heart of the implementation plan, because the mission statement shows where South East believes in and aims for. It is easy to be committed to the mission statement, because it will be more general..The city district of South East will be stimulated to subscribe the mission statement. The local aldermen of the district will be the one to do this.
Commitment to each of the projects is needed by stakeholders involved, through instruments like Letters of Intent and investment decisions.

The process of making an Implementation Plan in Copenhagen

Tina Hjøllund, Emilie Sofie Hvidtfeldt and Else Kloppenborg, City of Copenhagen

Jørgen Boldt, Greater Copenhagen Utility

20 September 2013

Smart Urban Lab Copenhagen: Nordhavn

Nordhavn: a major development area in Copenhagen

Copenhagen defined Nordhavn as its Smart Urban Lab (SUL) in Transform. Nordhavn is a peninsula located in the Northern part of Copenhagen and for long functioned primarily as an industrial harbour.

Nordhavn is one of the largest urban development projects in Copenhagen. It is a brownfield area whose development was laid down in the Act on urban development of Nordhavn from 2007.

The development process consists of five phases with the first one starting in 2013 and concerning the first district of the peninsula. There are no dates as of yet for the following phases. In total, Nordhavn will add approx. 3.5 million square metres residential and commercial floor area, equalling some 40,000 residences and 40,000 work places.

According to City strategies, Nordhavn must be sustainable, in particular as regards traffic structure and energy supply. It should function as a green laboratory. And the so-called 'Inner Nordhavn' must at the same time be a vibrant and compact city.

In the first phase of the building process in Nordhavn, existing building codes define the requirements for the buildings. In the following phases buildings must be certified according to the Danish adaptation of the DGNB standard. In the SUL there are no specific goals for renewable energy, energy efficiency. To avoid 'island thinking' and the risk of suboptimsing vis-à-vis the energy system, the SUL is subject to the overall goals as defined in the city-wide Copenhagen 2025 Climate Plan.

In Nordhavn, the City of Copenhagen aims to test initiatives on top of the conventional planning tools. If successful, the City could develop further or implement these initiatives elsewhere. The conventional tools include municipal and local plans, local plan supplements and urban development agreements.

In addition, the SUL will the set up 1) early dialogue with developers, 2) intelligent use of data to address the need for flexibility in the future energy system and 3) dialogue with citizens to adapt buildings to citizen requirements for a more sustainable living.

Links:

- CPH 2025 Climate Plan. A green, smart and carbon neutral city (2012): *http://kk.sites.itera.dk/apps/kk_pub2/pdf/983_jkP0ekKMyD.pdf*
- Masterplan for Nordhavn (2012), by CPH City & Port Development: *http://www.byoghavn.dk/files/arhusgade_170912_low.pdf*
- Local plan for the first district of Nordhavn, Aarhusgadekvarteret, adopted June 2011: *http://soap.plansystem.dk/pdfarchive/20_1364532_PROPOSAL_1312184990306.pdf*
- Nordhavn received Gold in the Danish version of the DGNB Certification system for urban district development: *http://www.kk.dk/da/om-kommunen/nyhedsliste/2013/2-kvartal/okf-nordhavnen-er-guldcertificeret* *http://www.dk-gbc.dk/certificering/dgnb-certificerede-bydele-i-danmark.aspx*

Commitment to and process of bringing about the Implementation Plan

This section first describes the organisation around and ownership as regards Nordhavn, and, second, outlines the way in which the Implementation Plan will be developed.

Framework: Nordhavn, ownership and organisation

CPH City & Port Development (CCPD) is an urban development company established in 2007. The primary tasks of the company are to develop Ørestaden and the Port of Copenhagen on a commercial basis, as well as to manage certain port operations. CCPD is jointly owned by the City of Copenhagen (55 pct.) and the Danish state (45 pct.).

CCPD owns the land in Nordhavn. The prices of the land in Nordhavn are among the most expensive ones in the Copenhagen. This is both due to location, and to the fact that the construction of the new City Circle Line (metro) in Copenhagen is financed through the sale of land in Nordhavn.

CCPD are very cautious to make demands on developers that could further increase costs such as through strengthened sustainability goals suggested in e.g. local plans or development agreements between CCPD and the City of Copenhagen.

However, in response to an increasing number of renters and building owners who demand certified buildings – that, among others, allow for international comparison of standards – CCPD engaged in a process to certify three districts and a building in Nordhavn. The three districts (Trælastholmen, Levantkaj Vest and Sundmolen covering a total of 26.2 hectares) received Gold in the Danish adaptation of the DGNB-certification in May 2013. Shortly upon this KMC, a building built and owned by CCPD but co-financed and used by the City of Copenhagen on the very outskirts of Nordhavn received Bronze in the DGNB certification process.

The three districts belong to the areas of the second phase of the building process in Nordhavn. The certification implies that the CCPD agreed to demand that buildings in those districts be DGNB-certified too.

The City of Copenhagen is not allowed to co-finance the development of the city and support sustainable solutions in buildings in the private sector.

http://kk.sites.itera.dk/apps/kk_pub2/pdf/762_9gqRMgTcg3.pdf

Drafting of IP

The first draft of the IP builds largely on input from an internal workshop in the City of Copenhagen on 14 May 2013. The workshop gathered for the first time everybody within the City administration with stakes or projects pertaining to Nordhavn. The overall guiding question at the workshop was: ‘How do we ensure that the actual development fleshes out the Smart City visions of Nordhavn?’

The IP and concrete SUL initiatives will be coordinated with stakeholders, other projects and strategy processes in the City of Copenhagen concerning ‘smart cities’.

At present, a process to identify stakeholders, next steps, and more specific issues to collaborate on in the SUL has been set up. The first steps include the following events (with more details to follow in due time):

- Intake workshop (October/November 2013)
- Citizens involvement workshop (date to be defined)
- Early dialogue with developers (October 2013 to March 2014)
- ILS (April 2014).

The driving organisations behind the Implementation Plan (IP), and also key for long term commitment to the IP, are first of all, City of Copenhagen (The Finance Administration and the Technical and Environmental Administration (TEA)), second the Greater Copenhagen Utility.

These three bodies will co-draft the IP with the TEA coordinating the process. Resources are limited, and the main resource consists in man hours. An important delivery of the IP is to develop a strategy for the City of Copenhagen's early dialogue with developers. A key asset in the strategy and its implementation will be the City's ability to start a process and facilitate dialogue among stakeholders.

If successful, the initiative will result in a more sustainable development of Nordhavn than would have ensued without the dialogue with developers. Also, the idea is to build a concept for early dialogue with developers that shall prove useful elsewhere too.

The planned events, such as the intake workshop and the early dialogue with developers, are expected to yield a clearer picture of who will commitment to the IP in the short and long run. We are also expecting some input from WP2 and the making of the transformation agenda.

SUL: Focus and main fields of activity

The SUL focuses on three fields of activities that are described in this section. More areas such as mobility, urban planning, the renovating of buildings, or the handling of waste will be covered in the Transformation Agenda in WP2 of TRANSFORM, based on coordination with the relevant sections of the City Administration.

Field of activity 1: Early dialogue with developers

Dialogue with developers at early stages of the building processes can produce better solutions and better use of resources, i.e. ensure better integration of local solutions with system requirements, or deliver a means to optimising each solution, given the local context. Local plans represent a limited tool to fuel sustainability because they are, as a tool, regulated by law to deal with only a limited and pre-defined, mainly technical, set of issues. Dialogue – especially early in the process with developers – provides an additional platform that allows the municipality to inspire, spur innovative and sustainable solutions.

Responsible institution	Role/tasks
City of Copenhagen, Technical and Environmental Administration	Develop concept, coordinate and facilitate process for the dialogue Planning – making local plans Authority – enforcing local plans
Further stakeholders involved	**Role/tasks**
CPH City and Port Development	Owns the land and can set up contact between developers and the City.
Developers	They have the money and the interested stakes in building
Greater Copenhagen Utility	Needs to know the estimated energy demands of new buildings well in advance to prepare the proper infrastructure.
Building sector	Can contribute technical insights and, ideally, be motivated to work more innovatively.

Field of activity 2: Intelligent use of data

The SUL will begin the process that leads to 'Smart energy management' (SEM). SEM has the potential to provide energy demand flexibility, energy storages and integration of the different energy systems – in particular electricity, heating, and cooling – utilizing the energy flexibility and buffer potentials in the infrastructure, buildings and district heating system. A new key aspect of the SEM approach results from the more fine-grained data-level, moving roughly speaking from block to building or even floor level, within buildings. Another new dimension is the perspective to optimize across utilities,

or plan more systematically the use of buildings in terms of, for instance, functions relative to the four cardinal directions of the earth.

Responsible institution	Role/tasks
Greater Copenhagen Utility	Automatic real-time optimization of flows and temperatures. Improved forecasting of the energy demands next day, thereby improving load dispatching. Optimal design of new pipelines for district heating, district cooling, city gas, and water. Improved integration of heat and electricity planning and systems operation. Evaluation of actual vs. expected energy consumption-
Further stakeholders involved	**Role/tasks**
City of Copenhagen	Assisting in defining goals and facilitating collaborative efforts with other stakeholders.
DTU	
Universities	Bring new knowledge about methods or technologies
Electricity providers	Data on electricity consumption

Field of activity 3: Citizen & stakeholder involvement on 'how to live in a more sustainable manner'

Involvement of citizens and committed associations in the process of defining and fuelling a more sustainable living is key to multiplying both the number of innovative ideas, and strengthening the understanding of the interplay of technologies and everyday life. Moreover, broad involvement is critical to ensure a more transparent process. Citizens can deliver input (e.g. on requirements for ways to build and design buildings and their surroundings that make sustainable choices in everyday life easy). Likewise, citizen can learn about new technologies or solutions that they should, ideally, be able and willing to use.

Responsible institution	Role/tasks
City of Copenhagen (Technical and Environmental Administration)	Plan and facilitate the process.
Further stakeholders involved	**Role/tasks**
Local Council of Østerbro	Helping in making contacts with local citizens and associations.
Associations, including housing associations	Deliver focused input to the process, and ideally, become ambassadors for the use of new and better solutions.
Citizens	As experts on everyday life, they can contribute key insights to make technical solutions better adapted to every day life.

Key challenges for the SUL to be handled in the Implementation Plan

(1) Internal organisation within the City of Copenhagen:

How can we best support the development of sustainable development and the smart cities agenda? An improved process for joined up government is critical to making real progress. Commitment from a broad set of administrations and centres within the City, including clear and open channels of communication are key.

(2) Early dialogue with developers:

Good business cases on sustainable building are crucial in discussions with developers. Owing to the limited set of demands that the City can make through for instance local plans, the challenge is instead, through dialogue, to make agreements with developers.

(3) Intelligent use of data: Access to data and success in coordinating models

The work on more intelligent use of data relies on the access to data and a smarter design of models and system integrations that will yield the desired outcomes.

(4) Nordhavn is a SUL in the making = no citizens yet live in the area

At present, there are no residential areas in Nordhavn, that is, no citizens living there. There is only industry and private companies. The SUL relies on involving citizens from neighbouring areas, or, alternatively, newly developed land in other parts of the city.

The process of making an Implementation Plan in Genoa

Gloria Piaggio, Mirella Marrazzo

August 30th 2013

Process of bringing about the IP document

The IP document will be elaborated by the Genoa Transform Team (GTT), which includes Municipality* Departments (Smart City, Urban Planning, Planning and Organization, ICT, Energy & Environment, Mobility, others eventually), Are Liguria, Enel, University of Genoa, Region Liguria through its Bruxelles office and the Genoa Smart City Association.

The IP will proceed on two tracks, the political and the technical one. Genoa's SUL is presently at a very early stage and its contribution to the overall Transformation Agenda is the approach to implementation plans before the actual starting of the works.

The first step will be entering into a bigger detail from a technical point of view, i.e. the GTT will start on the existing papers and projects, including the Cat Med Green Apple, the Urban Plan, the SEAP, the Municipality's internal planning, Port Authority's Development and Energy Plan, Railway Company (RFI)'s Development strategy and projects, and elaborate a draft proposal of next steps.

This will then be validated by the political level, both at City and District Level. Meetings will be organized and once the overall idea of implementing the project is approved, possibly in a formal document, it will return to the technical level.

At this point a first analysis of resources, costs, possible funding will be started with all stakeholders, and at the same time the citizens' involvement will be continued.

The actual realization of the Mela Verde depends on a number of factors including many which are not controlled by the Municipality, such as the Port Authority's and the Railway Company's decisions on their development and investment.

Meetings at political level with these two main players are already being organized in order to work towards a commitment to the realization of the Green Apple District. Once the high level political agreements are made and translated into formal documents, the Municipality will organize a dedicated Working Group including offices working in Transform.

The following players will work in the project at a technical and/or political level:

(1) Municipality

- ★ Urban Planning Department: Project Development and connection with Urban Plan, as well as connection with Port Authority's and RFI's urban projects.
- ★ Smart City Department: smart city strategy and connection to Transform and other existing projects related to Mela Verde
- ★ Energy & Environment Department: following SEAP directions and overall respect of energy goals and strategies
- ★ Planning and Organization Department: including all actions in the Municipality's internal planning ("RPP" **) and facilitating the process
- ★ Mobility Department: respect of Urban mobility Plan and all connected mobility issues.
- ★ Public Works Department: all issues connected to realization and authorizations
- ★ Legal Department and Secretary General: issues involving legal aspects and formal approvals
- ★ Finance Department
- ★ Municipio (District): citizens involvement and participation management

(2) Totally or partially publicly owned companies

- ★ Each company will take part for its own field of competence: AMIU for waste management, AMT for public transport, Aster for maintenance, Iren for water management, GRG for gas.
- ★ Are Liguria for energy planning

(3) Other institutions

- ★ Regione Liguria for authoritative purposes (environmental impact assessment) and overall involvement in the project
- ★ Port Authority
- ★ Architectural and Beaux Arts Approving Institutions

(4) Research

- ★ University of Genoa various departments

(5) Others

- ★ Associazione Genova Smart City for promoting and facilitating the whole process, helping in stakeholder involvement and technical scientific supervision
- ★ Enel for electricity and smart grids

- RFI for railway connections and project
- Local Sports, Fishing, Agricultural Associations
- Local Companies

Most will be based on discussions already held during the Transform process as well as in previous occasions (Urban Plan approval, SEAP, Smart City process) but as the project is still only at a planning level, its eventual realization will certainly require further and thorough discussions and agreements on the matter.

* Municipality: City of Genoa; Municipio: Municipality district.

** RPP Relazione Previsionale Programmatica, Planning Report which translates the Mayor's Strategies and Goals into concrete actions and goals for each director.

Some issues have already been discussed with the Transform team, but more detailed work will start after the Intake Workshop in Fall 2013. Results reached so far include the Municipality's commitment to Transform and to promoting the actual realization of the Green Apple including talks with other players such as RFI and Port Authority, as well as, Municipality Departments and Municipio.

Summary description of the process ongoing or planned

Green Apple project aims at planning a sustainable Mediterranean district in Voltri, the westernmost city quarter, adopting solutions using innovative technologies while respecting lifestyle, environment, local identity and promoting economic development. The area is highly complex as it includes residences, commerce, industrial activities, train station, port activities, sports centers, beaches, agricultural activities, ancient villas and a historic center in a district with a strong identification with fishing and agricultural traditions; it is also Genoa's main gateway to the West which includes touristic, industrial and commercial connection with France and Spain.

Green Apple was the result of a Cat Med project aiming at finding KPIs and characteristics for a Mediterranean smart district, respecting and using local techniques, expertise, traditions, materials. It was started and carried out by the Urban Plan Department working with the International Relations Department. Results can be seen at Cat Med web site.

The framework for the Implementation Plan in terms of energy is given by Genoa's SEAP, whose translation into concrete actions is expected to be decided during the implementation process.

Stakeholders involved in the process

(1) Main responsible institution for the elaboration of the Implementation Plan

The question of coming up with a consistent planning process is very much to be considered as the outcome of Transform and the SUL. At the moment of writing there exists no formal decision on the realization of Green Apple. Questions concerning the organization, responsibilities and financing , as well as time frame of the implementation process are yet to be decided by the joined work of the stakeholders involved.

The Genoa Smart City Office will be in charge of putting together information, data, proposals from all involved municipal offices and the other partners and subcontractors.The Genoa Smart CIty Office is in charge of the smart city transformation process overall, but other departments or players are in charge of the other various parts of the process. Genoa Smart CIty works as facilitator but has no actual power on matters competence of other departments. Assessment of resources and capacities will therefore have to be done in a second phase.

In the Municipality the concerned offices are:

- Genoa Smart City Association
- Energy and Environment
- Urban Planning
- Mobility
- ICT
- Planning & Organization
- ARE
- Enel
- International Relationships

The area has a number of owners including:

- Municipality
- National Railway Company RFI owning the station and surrounding areas, necessary for the conversion of the area
- Port Authority in charge of all matters concerning port activities and areas near the sea or dedicated to maritime activities
- Capitaneria di Porto which is the national Army Department in charge of controlling legal, safety, security, proprietary issues of land included in the State owned coasts
- Local Fishermen's Associations having their boats and buildings in the area
- Local Sports Associations
- Local Naval Repairing Companies
- Commercial activities
- Cultural Associations
- Villas

(2) Main fields of activity in drafting the Implementation Plan, responsible institutions and stakeholders involved

The two main stakeholders (RFI and Port Authority) are very big and powerful and are connected to the urban system in a vast number of issues so the decision on how to develop Green Apple could be influenced by external factors, including also national economic and financial issues.

Major stakeholders relate to the Mayor and Alderpeople; local stakeholders are partly contacted by the Municipio, partly by the Municipality. People's involvement is mainly managed by the Municipio. Genoa Smart City Association will help in the process.

Italian port systems foresee that each of its 27 ports has an Entity, answering directly to the State, called Port Authority. It is responsible for regulation, applying rules and laws, promoting traffic and port development following law 84/1994 which regulated in detail its activity. Among other things it must coordinate its own structural and physical development contained in the so called Piano di Sviluppo Portuale (Port Development Plan) with the city in which it is located, but the coordination and agreement depend also on political issues; the President of the Port Authority is named by the Minster of Transport choosing among three names proposed by Municipality, Chamber of

Commerce and Province and need the Region's President's approval. Also the Port is subject to special laws and maritime law which in some cases influences also land decisions.

The description of the interaction between Port Authority and City Government concerns both legal requirements and political discussions and agreements. A more detailed explanation of the exact matters which involve Port Authority can be included in the actual IP.

RFI is the national railway infrastructure owner, in charge of developing, maintaining all railway infrastructures and consenting, according to European law, all proposed users to use them. It is a major player owning a big portion of the Mela Verde Area and its commitment to the project will influence decisions as well as a very complex negotiation which need to be carried out in order to decide exactly what to do in the concerned area.

Activity	In charge	Role/tasks	Stakeholders
Field of activity 1: Organisational structure, esp. starting phase			
Deciding to realize the project	Municipality, Port Authority, RFI	Take decision on whether to and how and when to start the project Municipality: Makes Urban Plan, Manages relationship with other major stakeholders, Controls actual planning and works Port Authority: Owns part of the Area; makes its own development Plan and Energy Plan; supervises all port activities, including those in the area and near it but influencing it. RFI: Owns part of the Area; will move the station and leave free spaces, major stakeholder in deciding future destination and feasibility	All [role: Helping make the decision] Municipio, RFI (Italian Railways), Port Authority, Local enterprises, Sports centers, Citizens, Waste management, Water management
Commitment of Major Players	Municipality, Port Authority, RFI	Commit Municipality: Makes Urban Plan, Manages relationship with other major stakeholders, Controls actual planning and works Port Authority: Owns part of the Area; makes its own development Plan and Energy Plan; supervises all port activities, including those in the area and near it but influencing it. RFI: Owns part of the Area; will move the station and leave free spaces, major stakeholder in deciding future destination and feasibility	Municipio [role: participates] Municipio, RFI (Italian Railways), Port Authority, Local enterprises, Sports centers, Citizens, Waste management, Water management
Public Participation	Municipality, Municipio, Genoa Smart City Association	Involves citizens, associations, local companies Municipio: Manages local participation and relationship with local stakeholders	Citizens, Associations, Local companies Local Associations, Genoa Smart City Association

Activity	In charge	Role/tasks	Stakeholders
		Genoa Involves 60 stakeholders including Institutions, Research, Business, Civil society	
Finding Funding	Banks and other financial institutions, Regione Liguria, National Government	Find funding Banks: Study business plans Regione Liguria: Environmental Impact Assessment	Municipality and others [role: Permissions, connections, etc.] Genoa Smart City Association
Field of activity 2: Urban planning and integrated development			
Urban Planning and integrated development	Municipality (Urban Planning Department), Port Authority, RFI	Is in charge of urban planning and its translation into a concrete project. Municipality: Makes Urban Plan, Manages relationship with other major stakeholders, Controls actual planning and works Port Authority: Owns part of the Area; makes its own development Plan and Energy Plan; supervises all port activities, including those in the area and near it but influencing it. RFI: Owns part of the Area; will move the station and leave free spaces, major stakeholder in deciding future destination and feasibility	Municipio, Unige Municipio, RFI (Italian Railways), Port Authority, Local enterprises, Sports centers, Citizens, Waste management, Water management, Energy production, Genoa Smart City Association
Waste management	AMIU (Waste company)	Local Waste management company owned by Municipality Plans waste management	Municipal departments
Water management	Mediterranea delle Acque	Water company partly owned by Municipality	Municipal departments
Field of activity 3: Energy planning			
Integrated Energy	Municipality	Decide and plan	Municipio, Citizens, Genoa Smart City

Activity	In charge	Role/tasks	Stakeholders
Planning	(Environment & Energy Department), Are, Enel, Unige	Municipality: Makes Urban Plan, Manages relationship with other major stakeholders, Controls actual planning and works Enel: Develops smart grids and other innovations	Association [role: Participate] Enel, Urban Planning Department, Port Authority, RFI, Genoa Smart City Association, ARE
Analysis of possible smart grids technologies applicable	Enel	Analysis and development	Municipality, Unige and others [role: Permissions, connections, etc.] Urban Planning, Public works, Genoa Smart City Association
Field of activity 4: Mobility	Municipality (Mobility Department), AMT (Local Transport Company), RFI	Competence on mobility and transport Municipality: Makes Urban Plan, Manages relationship with other major stakeholders, Controls actual planning and works RFI: Owns part of the Area; will move the station and leave free spaces, major stakeholder in deciding future destination and feasibility	AMT, Regione Liguria, National Government, Unige, Enel [role: Authorizations, funding, enacting, planning] RFI, Genova Parcheggi
Field of activity 5: Improving Quality of Life[1]	Municipality	Overall management of smart city transformation Municipality: Makes Urban Plan, Manages relationship with other major stakeholders, Controls actual planning and works	All Genoa Smart City Association

[1] Genoa's vision of the smart city has as ultimate goal quality of life which includes many aspects and we want to always keep in mind that this is the reason why the whole smart city transformation process takes place and therefore focus separately on it. Topics from other fields will then be included in this one.

(3) Who will be committing to the Implementation Plan?

At this stage it is too early to know, as too many variables are at stake. Transform and the Implementation plan should be part of the process promoting and supporting the actual realization of the Green Apple. However, the first commitment will have to come from the Municipality, rapidly followed by a joint agreement with RFI and Port Authority and then another one with local stakeholders.

Key challenges for the SUL to be handled in the Implementation Plan

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The process of making an Implementation Plan in Hamburg

Jan Gerbitz, Simona Weisleder, IBA Hamburg GmbH

September 26th, 2013

Process of bringing about the IP document

The area of the International Building Exhibition IBA is made up of the districts Wilhelmsburg, Veddel and the area of the Harburg upriver port.

It is situated in the geographic center of the area of the City of Hamburg, south of the city center.

The area is the largest inhabited river island in Europe with a surface of 35 km² and 55.000 people living there.

It is affected by the harbour areas to the west and industrial areas to the north. Major traffic lines like the main railroad lines to the south, one of the two major highways and one local highway are cutting the area into slices.

The area is characterized by a huge variety of building and landscape typologies from rural areas with agriculture to 1970s high-rise residential areas to commercial areas, from allotment gardens to storage spaces for containers.

The foundation for making the IBA area a more energy efficient and renewable environment is the “Climate Protection Concept Renewable Wilhelmsburg”, which was developed by an international committee of experts in collaboration with IBA in the years 2008 to 2010. The idea behind the resulting “Energy Atlas”, which was published in December 2010, is that we need to utilize the city’s (or district’s) local energy resources to supply renewable energy and at the same time to considerably increase the efficiency of local energy consumption. The IBA Hamburg examines ways in which maximum use can be made of local renewable energy sources “intra muros”, such as energy savings and energy efficiency, and how local economies can be strengthened as a result.

In 2009, a working group – comprising JHJ Bleicherode and the egs Netzwerk Nordhausen – was commissioned to undertake the study “Energetische Optimierung des Modellraums IBA Hamburg” (Energy Optimisation of the IBA Hamburg Model Region). This study used a scenario analyses to compare future energy demand and the potentials for savings, increased efficiency, and the use of renewable energy in the various types of urban environment on the Elbe Islands, and the develop strategic measures for the optimisation of energy supplies.

The study undertook a concrete examination of two different reference scenarios illustration developments in 2013/2020/2050, applying Germany-wide trends in renovation, efficiency and the introduction of renewable energy to the Elbe Islands. Use was made of two reference scenarios in order to demonstrate the possible impact of a district heating network on the Elbe Islands, supplied by the Moorburg coal power plant currently under construction, and, as a district counterbalance, the opportunities that would arise (a) if the focus was no longer on this fossil fuel technology locally, and (b) if the construction of new coal power plants were be stopped elsewhere.

Two so-called excellence scenarios were developed as alternative to the reference scenarios to incorporate concrete IBA projects and also to examine different areas of emphasis in renewable energy supplies. The first scenario is characterized by a strong focus on possible local deep geothermal opportunities, which – if realized – would produce significant yields. The second excellence scenario focuses on the diversification of renewable energy sources. The two scenarios share the fact that they are local and decentralised solutions adapted to the special local ability to achieve autonomy in renewable energy.

The results of the study, undertaken in close cooperation with the IBA's specialist Energy and Climate Advisory Board, form the most important basis for the "Energy-Atlas" of the Elbe Islands, and represent the strategic instruments and projects of the Elbe Islands' future energy supply systems. The aim is the presentation of a spatial energy model for the IBA's demonstration region.

In fact, the results of the study demonstrate that it is possible to supply the Elbe Islands by local renewable energy sources by 2050 even if the population will grow from 55.000 up to 73.000. In detail, a 100% supply by renewable power is possible until 2025, a supply of 85% renewable heat until 2050, to make the Elbe Islands nearly carbon neutral until 2050.

Until the presentation of the International Building Exhibition in 2013, most of the planned projects have been realized. The most important projects within the key theme "Cities and Climate Change" are:

- Energy Hill
- Energy Bunker and its district heating grid
- Integrated District Heating Wilhelmsburg Central

Several single building projects have been realized in high energy efficient standard, most of them in passive house standard:

- IBA DOCK
- VELUX Model Home 2020
- Open House
- Several projects at Central Wilhelmsburg Area with Case Study Houses
- Refurbishment and New Buildings at “Global Neighbourhood” (“Weltquartier”)
- Several Refurbishment projects within the “Prima Klima” Campaign

All other buildings had to meet at least the “IBA Minimum Standard” of 30% better then the national regulation (EnEV 2009). The standard was fixed by “Quality Assurance Contracts” between IBA and the single investors and was for example basis for the purchase agreement of the former city owned properties.

The realized projects can be visited from March 23rd until November 3rd, 2013.

Some projects had to be delayed due to different reasons:

- Deep Geothermal Energy (until 2015)
- Climate Friendly Houses Haulander Weg (until 2018)

Until now, the already realized or already scheduled projects will generate a renewable power production of 54% and a renewable heat production of 14% of the overall demand by 2015.

Several other projects are already included in the “Climate Protection Concept Renewable Wilhelmsburg”.

The Implementation Plan – the second Action Plan 2014-2020

After the realization of the IBA projects, the “Implementation Plan” within Transform will be the second Action Plan until 2020 or 2025. It will:

- continue already started IBA projects
- start the realization of already planned projects
- transfer existing IBA structures, concepts and networks into a “post IBA period”
- develop new projects and
- attend the general German and Hamburg development.

It has to react on the different situation of a development phase without the timeframe, the power and the framework without an IBA.

The Implementation Plan has to be discussed in general with the relevant governmental institutions like Hamburg Ministries and the Districts' Administrations and the Energy Suppliers.

Key-actors and target groups are mentioned directly together with the concrete measures.

Stakeholders involved in the process

(1) Main responsible institution for the elaboration of the Implementation Plan

To organize both "shows", the IBA and the parallel International Garden Show (igs), the Hamburg government founded two city own companies in 2006 linked in terms of structure and management.

"It is a typical feature of an IBA that it is structurally separated from "normal" administrative units and is usually incorporated as a German GmbH, or limited liability company. It thus has a certain amount of independence from classic administrative hierarchies and can act more like a private enterprise. Although an IBA has no sovereign rights and administrative tasks, it does have a remit defined by the parliament (called Bürgerschaft in Hamburg) and is legitimated by democratic process."

Because of the lack of sovereign rights and administrative tasks, the IBA GmbH has to work with several official administrations like the Hamburg Ministry of Urban Development and the Environment (Behörde für Stadtentwicklung und Umwelt, BSU), the Hamburg Ministry of Financial Affairs (owner of the city owned land), the Administrations of Districts of Hamburg Central and Hamburg Harburg and other responsible administrations and city owned companies.

Within the BSU, a special "taskforce" for the whole urban development project "Leap across the Elbe" was established (Projektgruppe "Sprung über die Elbe", PGS).

To coordinate the activities and all relevant administrations, a coordination and decision group with regular meetings was established (Koordinierungskreis "Sprung über die Elbe", KKS).

After the realization of the IBA, a follow-up organization will use the existing competence and network to develop and market several new development areas within the borders of the exhibition area (e.g. central Wilhelmsburg area, “Haulander Weg”) as well as areas outside the former area (“Elbmosaik”, former barrack area “Röttiger-Kaserne”).

The further realization of the ‘Climate Protection Concept Renewable Wilhelmsburg” is mentioned in the Masterplan Climate Protection of the City of Hamburg:

“The experience from the EU projects and projects initiated in the framework of the International Building Exhibition (IBA) Hamburg 2013 will be used in order to advance integrated urban development oriented on climate protection. Among other things, Climate Neutral Urban Districts in Europe (INTERREG CLUE) will supply examples of district/borough-related implementation of climate action (early 2012, Duration: 3 years).

With the Wilhelmsburg renewable climate protection concept, the Wilhelmsburg island on the Elbe is gradually being initiated into having the complete conversion of electricity and heat to be 100% from renewable energy sources. The implementation of projects on the IBA Hamburg 2013 demonstrates in an international framework the implementation of the neighborhood-related climate protection concept for Wilhelmsburg. The continuation of the IBA-concepts and projects are carried out in the research projects TRANSFORM and EnEff:Stadt – IBA Hamburg:

- *With TRANSFORM (Project within the 7th EU Research Framework Program up to 2015), the climate protection and climate change impact adaptation model district of Wilhelmsburg launched with the IBA 2013 should be further developed. The research approaches and results are to be transferred to other neighborhoods and districts.*
- *EnEff:Stadt – IBA Hamburg with the energy monitoring of the IBA Project and the Elbe island Wilhelmsburg until the beginning of 2015 is used for operation optimization of the projects and the analysis of strengths and weaknesses. EnEff:Stadt can be used for the readjustment of the standards and specifications for future projects.*

For the further development of the Wilhelmsburg role model for climate protection and climate change impact adaptation, further projects in the strategic fields of activity of

the IBA will be initiated after 2013, e.g. in the fields of activity of construction and climate-friendly mobility, as well as adaptation to climate change on the basis of the concept "IBA-Deichpark"."

The specific role of the IBA follow-up organization is under ongoing discussions. But the intention is to follow the way and the international reputation IBA has gained and to continue with the KEW.

(2) Main fields of activity in drafting the Implementation Plan, responsible institutions and stakeholders involved

- Extension of District Heating Grid "Energy Bunker"
- Implementation of Deep Geothermal District Heating Grid
- Extension of District Heating Grid "Wilhelmsburg Central"
- Development of new District Heating Grids in Kirchdorf-Süd and Veddel
- Development of new District Heating Grids in Harburg area
- Efficiency of Existing Housing Stock and Newbuild
- Reduction of electricity demand in private households
- Installation of new Wind Turbines in the Harbour area
- Integration of eMobility in Urban Development – Project "e-Quartier Hamburg"
- Strengthening of Biking
- Extension of Public Transport
- Extension of Car Sharing Services
- Demand Side Management Research Project "Smart Power Hamburg"
- Storage of renewable power by "Power-to-Heat"
- Hybrid Grids INFRA PLAN Project
- Trinational project on hybrid grids with Austria and Switzerland

In 2009, a working group – comprising JHJ Bleicherode and the egs Netzwerk Nordhausen – was commissioned to undertake the study "Energetische Optimierung des Modellraums IBA Hamburg" (Energy Optimisation of the IBA Hamburg Model Region).

The results have been the main part of the 'Climate Protection Concepts Renewable Wilhelmsburg' and the 2010 published 'ENERGYATLAS'.

The 'Climate Protection Concepts Renewable Wilhelmsburg' is the connecting link between the specific projects and their development.

The concept was discussed first during a conference in Dec 2010.

In the following period, the specific projects have been discussed with all relevant stakeholders and at so called 'project dialogues' (Projekt-Dialoge) with relevant stakeholders and local residents.

The monitoring of the overall results of the single projects compared to the targets of the concept started in Dec. 2011 in the frame of the project "EnEff:Stadt – IBA Hamburg" of the national program "Energy Efficient City" ("EnEff:Stadt"), conducted by the Technical University Braunschweig, Energy Research Centre Lower Saxony (Energie-Forschungszentrum Niedersachsen, EFZN) and the Hafencity University Hamburg.

(01) Extension of District Heating Grid "Energy Bunker"			
Start of implementation	2006	(Planned) Completion	first stage 2013/14
Description of the measure	To supply the northern "Reiherstieg area", the already existing district heating grid of the "Energy Bunker" will be extended.		
Status Quo	Realized central energy unit "Energy Bunker" with energy storage, solar thermal, PV, connection to waste energy supply		
Next steps	• Negotiations between Hamburg Energie GmbH and several housing companies, public institutions or private owners (SAGA GWG,…) about the connection • Installation of Biogas-CHP • Installation of Wood Chip Boiler		
Key-actors	Hamburg Energie GmbH		
Target group	several housing companies, public institutions or private owners (SAGA GWG,…)		
Financing	• Business model for Hamburg Energie, • lower energy costs for residents, • subsidies by Federal Subsidy Bank KfW?		
Publicity, participation	so far: project dialogues future to be discussed		

(02) Implementation of Deep Geothermal District Heating Grid			
Start of implementation	2006	(Planned) Completion	first stage 2015
Description of the measure	To supply the southern “Reiherstieg area”, a new district heating grid, based on deep geothermal will be installed. The decision on the implementation was made in 06/2013. The district heating grid will supply an industrial company, a hospital and several existing housing stocks.		
Status Quo	Research about the potentials, Decision on implementation made		
Next steps	• Detailed planning • Realization of the drilling and the installations • Negotiations between the energy supply company (cooperation of Hamburg Energie and the industrial company) with further potential users		
Key-actors	Cooperation between Hamburg Energie GmbH and a local industrial company		
Target group	Hospital, several housing companies, public institutions or private owners (SAGA GWG,…)		
Financing	• Business model for the investor, • lower energy costs for customers, • subsidies by Federal Subsidy Bank KfW?		
Publicity, participation	so far: project dialogues future to be discussed		

(03) Extension of District Heating Grid “Wilhelmsburg Central”			
Start of implementation	2006	(Planned) Completion	first stage 2013
Description of the measure	To supply the central Wilhelmsburg area, the already existing district heating grid of the “Integrated Energy Network” will be extended. After the transfer of the highway “Wilhelmsburger Reichsstraße” next to the railway tracks, a new development area with a potential of up to 4.500 units is available.		
Status Quo	Realized grid in the already developed area		
Next steps	• New urban planning of the area • Integration of a binding article in the new Land Use Plan to connect all new developments to the district heating • Negotiations between Hamburg Energie GmbH and several different investors about the connection		
Key-actors	District Hamburg Central, Hamburg Energie GmbH		
Target group	several bigger or smaller investors, existing companies and institutions		
Financing	• Business model for Hamburg Energie, • lower energy costs for customers, • subsidies by Federal Subsidy Bank KfW?		
Publicity, participation	so far: project dialogues future to be discussed		

(04) Development of new District Heating Grids in Kirchdorf-Süd and Veddel			
Start of implementation	2013	(Planned) Completion	ongoing
Description of the measure	To supply both condensed areas with renewable heat, the Climate Protection Concept Renewable Wilhelmsburg proposes two new district heating grids.		
Status Quo	Mentioned in the Climate Protection Concept		
Next steps	• Technical Workshop together with Hamburg Energie within ILS • Negotiations between Hamburg Energie GmbH and several bigger or smaller housing companies (SAGA GWG,…) about the development of a new district heating grid		
Key-actors	District Hamburg Central, Hamburg Ministry, Hamburg Energie GmbH		
Target group	several bigger or smaller housing companies, existing companies and institutions		
Financing	• Business model for Hamburg Energie, • lower energy costs for customers, • subsidies by Federal Subsidy Bank KfW?		
Publicity, participation	to be discussed		

(05) Development of new District Heating Grids in Harburg area			
Start of implementation	2010	(Planned) Completion	ongoing
Description of the measure	To supply the Harburg harbour area, there are ideas to develop a new district heating grid.		
Status Quo	Several decentralized projects or concepts		
Next steps	Feasible Study		
Key-actors	District Hamburg Harburg, Hamburg Ministry		
Target group	several bigger or smaller housing companies, existing companies and institutions		
Financing	• Business model for investor, • lower energy costs for customers, • subsidies by Federal Subsidy Bank KfW?		
Publicity, participation	to be discussed		

(06) Efficiency of Existing Housing Stock and Newbuild			
Start of implementation	ongoing	(Planned) Completion	ongoing
Description of the measure	-		

Status Quo	• Binding Standard for IBA projects EnEV minus 30% → Condition of Tender Processes for Properties
	• Discussions and Consultations:
	  • Congress "Visionen, Handlungsempfehlungen und Bedingungen für das Bauen und Sanieren im Rahmen der Hamburger Klimapolitik" ("Visions, Recommendations and Conditions for Building and Retrofitting in the Frame of the Hamburg Climate Policy"), 20.08.2013
	  • Congress "Wege des Wohnungsbaus" ("Trends of Housing"), 23.08.2013
	  • Passive House Congress, 10.09.2013		

Next Steps	• Discussion of the future of energy efficient and sustainable construction in frame of ILS
	• Consultations with several stakeholders like Chamber of Commerce, Chamber of Crafts, Housing Federation (VNW)
	• Consultations with Financial Administration about the Conditions of future Tender Processes for Properties in new Development Areas
	  • Discussions about Tender Conditions "Röttiger-Kaserne"
	  • Discussions about Tender Conditions "Elbmosaik"
	  • Discussions about Conditions for architecture workshop "Elbmosaik"
	  • Discussions about Tender Conditions "Dratelnstraße"
	• Development of Model Refurbishment Concepts in cooperation with House Owner Associations (Verein Kirchdorfer Eigenheimer – VKW)
	• Energy Consultations in cooperation with public Energy Consultant (EnergiebauZentrum) and House Owner Associations (Verein Kirchdorfer Eigenheimer – VKE)		

Key-actors	Hamburg Ministries		
Target group	everybody		
Financing	• Business model and lower energy costs for customers, • subsidies by Federal Subsidy Bank KfW and local Subsidy Bank IFB		
Publicity, participation	to be discussed		

(07) Reduction of electricity demand in private households			
Start of implementation	ongoing	(Planned) Completion	ongoing
Description of the measure	–		
Status Quo	realized “Energy Partnership” (Energiepartnerschaft) in cooperation with the Hmaburg Universities and House Owner Associations (Verein Kirchdorfer Eigenheimer – VKE)		
Next Steps	• reactivation of “Energy Partnership” (Energiepartnerschaft) • Energy Consultations in cooperation with Consumer Advice Centres (Verbraucherzentrale) and House Owner Associations like Verein Kirchdorfer Eigenheimer – VKE		
Key-actors	Hamburg Ministry		
Target group	everybody		
Financing	• Business model and lower energy costs for customers, • subsidies by Federal Subsidy Bank KfW and local Subsidy Bank IFB		
Publicity, participation	to be discussed		

(08) Installation of new Wind Turbines in the Harbour area			
Start of implementation	ongoing	(Planned) Completion	ongoing
Description of the measure	Main source of renewable power is the installation of new wind turbines in the harbour area. Together with the repowering of existing wind turbines, in total six new installations are planned in frame of the Future Concepts Renewable Wilhelmsburg.		
Status Quo	Realized repowering of Wind Turbine on “Energy Hill”		
Next steps	• Consultations with Hamburg Energie about already planned new wind turbines • Consultations with the Municipal level about potential positions of wind turbines in the harbour area • Consultations with Wind Turbine association about potential positions of wind turbines in the urban area in general		
Key-actors	District Hamburg Central, Hamburg Ministry, Hamburg Energie GmbH, further investors		
Target group	-		
Financing	Business model for investors		
Publicity, participation	to be discussed		

(09) Integration of eMobility in Urban Development – Project "e-Quartier Hamburg"			
Start of implementation	2011/12	(Planned) Completion	2015 and ongoing

Description of the measure	• Integration of eMobility in Urban Development
	• Several projects and concepts realized:
	  • VELUX House
	  • Smart ist Grün
	  • Marina and Binnenhafen Harburg
	  • Several uses of eMobility (BSU, HPA,…)		

Status Quo	Integration of several IBA projects in research project		
Next Steps	• Monitoring • Integration in new development areas • New public charging stations		
Key-actors	several investors		
Target group	inhabitants		
Financing	Funding by national research project		
Publicity, participation	to be discussed		

(10) Strengthening of Biking			
Start of implementation	2009	(Planned) Completion	ongoing
Description of the measure	The Elbe island is predestinated for biking. Lots of activities has been undertaken. • 2010 Wilhelmsburger Radwoche		
Status Quo	• Wilhelmsburg is the first official biking model district in Hamburg • the district has undertaken a study for the next, midterm and longterm measures which have to be realized		
Next Steps	• reset the round Table “Fahrradstadt Wilhelmsburg” • realize the next steps of the infrastructure plan • starting a motivation campaign “Rauf aufs Rad” for school kids and migrants		
Key-actors	• District Hamburg Central • BWVI • Verein Fahrradstadt Wilhelmsburg • ADFC, VCD		
Target group	inhabitants		
Financing	• District Hamburg Central • BWVI • BSU Klimaschutzleitstelle		
Publicity, participation	so far: working group “Fahrradstadt Wilhelmsburg” future: to be discussed – Integration in “Perspektiven! Miteinander planen für die Elbinseln” and “Zukunftsbild Elbinseln 2013+” process of the Bürgerhaus Wilhelmsburg		

(11) Extension of Public Transport			
Start of implementation	ongoing	(Planned) Completion	ongoing
Description of the measure			
Status Quo			
Next Steps			
Key-actors			
Target group			
Financing			
Publicity, participation	to be discussed – Integration in “Perspektiven! Miteinander planen für die Elbinseln” and “Zukunftsbild Elbinseln 2013+” process?		

(12) Extension of Car Sharing Services			
Start of implementation	ongoing	(Planned) Completion	ongoing
Description of the measure			
Status Quo			
Next Steps			
Key-actors			
Target group			
Financing			
Publicity, participation	to be discussed – Integration in “Perspektiven! Miteinander planen für die Elbinseln” and “Zukunftsbild Elbinseln 2013+” process?		

(13) Demand Side Management Research Project “Smart Power Hamburg”			
Start of implementation	2011	(Planned) Completion	2014
Description of the measure	http://www.smartpowerhamburg.de		
Status Quo			
Next Steps			
Key-actors	Hamburg Energie, HAW Hamburg, RWTH Aachen, Hamburg Ministry BSU		
Target group			
Financing	Funding by national research project		
Publicity, participation	to be discussed		

(14) Storage of renewable power by “Power-to-Heat”			
Start of implementation	2011	(Planned) Completion	ongoing
Description of the measure	http://www.smartpowerhamburg.de		
Status Quo			
Next Steps			
Key-actors	local project: Hamburg Energie, HAW Hamburg, RWTH Aachen, Hamburg Ministry BSU		
Target group			
Financing			
Publicity, participation	to be discussed		

(15) Hybrid Grids INFRA PLAN Project			
Start of implementation	1 May 2013	(Planned) Completion	30 April 2015
Description of the measure	Through the holistic and in depth analysis across different energy sources, this project aims to describe existing landmark projects in the most innovative German, Austrian and Swiss Energy Model-districts(Berlin Adlerhof, GRAZ Mitte and Hamburg Wilhelmsburg) from the vantage point of future smart grid scenarios and developments for urban infrastructure planning. Furthermore, in the context of the transnational knowledge exchange of infrastructure operators, development agencies, R&D-, demonstration- and implementation projects in the area of hybrid networks will be initiated and prepared. It is planned to expand the existing project consortium with Austrian and Swiss cities, i.e. infrastructure providers. On the basis of existing questions in the Energy Model-districts, the project aims to satisfy the following goals: • In depth analysis across different energy sources of existing and planned energy infrastructures in the selected Model-districts; quantitative modelling and comparison of contrasting (smart grid) investment scenarios. • Identification and analysis of potential system architectures and preparation of further Demonstration projects for the implementation of hybrid networks , with particular attention to hybrid/functional storage solutions. • Comparative analysis of the respective Model-districts , as well as taking them into account in Energy Masterplans, e.g. communal Energy concepts. • Production of strategic recommendations and solutions in the context of conflicting goals between Model-districts and urban infrastructure planning on the city level.		
Status Quo	Kick Off Meeting in September 2013		
Next Steps	Create the Hamburg project and consortium for an application at the PTJ		
Key-actors	• ENERGY RESEARCH AUSTRIA (Koordination), Energie Steiermark AG, IBA Hamburg GmbH, Technische Universität Graz, Technische Universität Wien, WISTA Management GmbH • Future: Hamburg Energie, Vattenfall, Hamburg Institut		
Target group			
Financing	Funding by national research project		
Publicity, participation	to be discussed		

(16) Storage of renewable power by “Power-to-Gas”			
Start of implementation	2013	(Planned) Completion	ongoing
Description of the measure	http://www.eon-hanse.com/pages/eha_de/Presse/Pressemitteilungen/Aktuelle_Presse/Pressemitteilung.htm?id=1492574		
Status Quo			
Next Steps			
Key-actors	e.g. E.ON Hanse, Hydrogenics, Deutsche Zentrum für Luft- und Raumfahrt (DLR), Fraunhofer-Institut für Solare Energiesysteme (ISE)		
Target group			
Financing	Funding by national research project		
Publicity, participation	to be discussed		

(3) Who will be committing to the Implementation Plan?

There is no official commitment planned but the IP will be developed in close cooperation with the Hamburg Ministry of Urban Development and the Environment. All specific activities will be developed and discussed with the relevant key-actors.

Key challenges for the SUL to be handled in the Implementation Plan

- Higher energy standards being barriers during the development of areas and the tender process to sell the sites which has to be discussed with the financial administration
- Fear of binding connection set in the Land Use Plans which has to be discussed with the districts administration
- Financial situation of house owners which prevents even high economic efficient refurbishments or technical installations
- Risks of investments in district heating grids in existing areas with high number of several house owners

The process of making an Implementation Plan in Lyon

Béatrice Couturier

09/08/2013

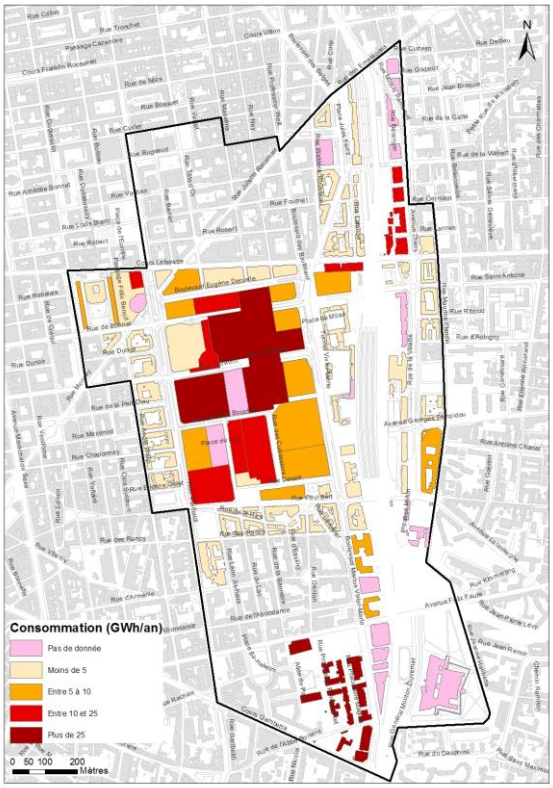
Process of bringing about the IP document

Summary description of the process ongoing or planned

The document will explain the approach organized to make the Part -Dieu project pass from a " simple urban project " to a project aiming at an energy transition. It will describe the organization by which the actors responsible for the urban planning process and the actors involved in energy planning can work together. It will detail the already realized or ongoing actions, in particular:

1. Energy atlas of the area

An energy atlas will be set-up for the project area through the constitution of an IGS database. The IGS database will consolidate data about energy consumption, buildings technical and architectural characteristics, on-going and planned constructions of buildings and equipments, potentials of renewable energy and heat recovery, as well as socio economic data. This database will allow to know the situation of the district in terms of energy energy subject and to estimate future needs with regard to the foreseen programs of construction or rehabilitation. The IGS database will be informed by real data (provided by network operators when possible) about the energy consumption of existing buildings.



Example of the energy atlas

Last but not least, the energy atlas will include information about the networks (electricity, gas, heating and cooling): mapping, technical information, existing and planned capacities, etc. this information will allow to model several scenarios of deployment, their impacts and the interactions between the networks.

2. Energy transition scenario

Based on the scenarios studied with the help of the energy atlas, the implementation plan will propose an energy transition path, that will include energy objectives for future property developers and possibilities for network deployment.

3. Operational action plan

The Implementation plan will propose an operational action plan that will include:

- Guidance to fix environmental and energy objectives for future property developers
- The setting-up of an organisation or scheme to support and advise building owners and property developers regarding the energy performance of buildings, especially to address the challenge of the specific electricity use in offices
- The follow-up of the conception of the new real estate programs, on the questions of energy performance,
- The follow-up of the feasibility studies on the rehabilitation of the existing buildings
- The experiment of a method of " smart "planning of the electricity network, by taking into account possibilities of piloting of the uses and coupling between decentralized production and specific uses,
- A cost-benefit analysis serving as basis for the future techno-economic master plans of electricity and heating and cooling distribution networks.

Stakeholders involved in the process

(1) Main responsible institution for the elaboration of the Implementation Plan

The implementation plan is intended to be implemented on the district of Part Dieu, within the framework of the Part Dieu urban project.

The urban Part Dieu project is piloted by an ad hoc structure created specifically to bring to a successful conclusion the urban project: the mission Part Dieu.
The mission Part Dieu is connected with the urban development department of Grand Lyon. Concretely, that means that the mission Part Dieu uses resources and personnel of Grand Lyon and is financed by different departments of the communauté urbaine.

To lead this urban project, the mission Part Dieu is supported by a team of architects, town planners, landscape designers and environmental engineering consulting firms

specialized on the question of the energy performance of buildings.
The team has been selected through a call for tender process. Besides, a number of departments of Grand Lyon contribute to this urban project: department of the public road network, department of mobility, the department of water supply, the department of ecology, the department of energy. These departments are in charge of supporting the elaboration of the urban project in their respective domains of intervention, and to discuss with engineering consulting firms of the mission Part Dieu on the solutions to be set up. The Part Dieu project was launched before the starting up of the project Transform and worked until 2012 on the basis of the organization known described.

Part-Dieu is developed in an area where 90% of the existing real estate is already built, with ownership structures being mixed between private and public owners. Construction activities are therefore primarily focussed on demolition/reconstruction or densification of already existing city blocks. Grand Lyon and the City of Lyon have ownership only over the land on which public infrastructures, such as a library and a school, are constructed. In contrast to other urban development projects, it is not planned to publicly acquire any new land, and if so only to a very marginal extent to permit the construction of further public and social infrastructures. In the context of the transformation of the area, the Grand Lyon will nevertheless widely invest in the built environment: notably in the streetscape and the public space infrastructure, in the co-financing of a major train station project on the territory and of private developers for dedicated real estate projects.

From the announcement of the results of the call for projects Transform, this organization evolved to integrate the persons in charge of the project Transform and most of all to adapt itself to the expectations of the WP 4, that is to produce an implementation plan. So, the team in charge of the project Transform and the team around the mission Part Dieu defined a method of work and a way of functioning which we can summarize as follows:

- The responsibility of the urban project Part Dieu is the mission Part Dieu (project manager: Nathalie Berthollier),
- The responsibility of the implementation plan is the strategy of urban area department (project manager: Béatrice Couturier). A committee of technical follow-up of the project Transform was set up, which includes the mission Part Dieu and its engineering consulting firms, the partners of Transform project (Grand Lyon, Hespul, ERDF).

Within the wider urban agglomeration, the Communauté urbaine du Grand Lyon is responsible for the elaboration of land use and zoning plans(PLU), housing and social housing policy, shared urban infrastructures and the operation of urban development projects such as Part-Dieu. By 2014, the inter-communal system in France will be legally and structurally reorganized. In the course of this transformation, Grand Lyon will be entitled the special status of “Métropole”, reserved for inter-communal enteritis of more than 500000 inhabitants. In the area of urban planning and development, this statutory change will not lead to any significant alteration of the existing political and legal competences. However, the newly created “Métropole” could be entitled general rights and responsibilities in the area of energy.

Competences in the areas of urban development are shared between the City of Lyon and Grand Lyon. The city of Lyon remains thus a key institutional actor, both in connection to TRANFORM and the Part-Dieu project. Many of the fundamental decisions concerning the development of Part Dieu have to be politically validated in city´s general assembly. In addition, the city detains crucial technical expertise for the completion of the project. As the main responsible actor in matters concerning building permits and green space policy, but also as the owner and managing authority of main social infrastructures (schools,libraies etc), the city of Lyon is a crucial partner. Moreover, the city of Lyon decides on all matters regarding the city´s electricity network, whose distribution is assured by the TRANSFORM Partner organization EDF. As such the city of Lyon participates in the ongoing process of WP2 and WP4 within TRANSFORM.

At the political level, the Part Dieu project being considered as one of the most important projects of the Lyon urban district, it is directly the mayor and President of Grand Lyon who is the political referent of this project. Since the acceptance of the project Transform by the European Commission, two vice-presidents were appointed to follow the realisation of this European project: Karine Dognin Sauze, vice president to the new technologies and Bruno Charles, vice-president in charge of the climate plan and of the sustainable development. A steering committee Transform co-piloted by both vice-presidents was set up and met twice until this day.

(2) Main fields of activity in drafting the Implementation Plan, responsible institutions and stakeholders involved

Main fields of activity during the IP drafting process are:

- The setting-up of a GIS database allowing to characterize the energy situation of the district in the launch of the project (2012) and to measure the evolution of the energy needs throughout the urban project (energy transition scenarios).
- The energy performance of the new buildings and buildings to be retrofitted
- The development of the heating and cooling network present on the district (energy diversification to increase the part of the renewable energies or recovery energy.
- The optimization of the planning and the piloting of networks (electricity and gas)

Besides the institutional actors (departments of Grand Lyon and city of Lyon) and the partners of the project Transform (ERDF, Hespul), the stakeholders in the implementation plan are:

- The operator of the heating and cooling network (delegatee),
- The property developers and buildings owners,
- The shopping mall and more generally all the companies implanted in buildings that must be refurbished,
- The railway station of the Part Dieu.

The crux concerning the question of the performance of buildings will be to produce a charter fixing a high level of requirement for future buildings and the buildings to be retrofitted. The main question will be to make this charter apply and to convince the property developers of the necessity of to comply to a high level of building performance. For that purpose, a strong political will be necessary.
Besides, another important point will be to think, in connection with the future contract – holder, about the evolution of the heating and cooling network. It will be a question of scheduling the future deployment of this network and of building a strategy to favor the connecting of the future buildings even existing buildings. It will also be a question of measuring the conditions of diversification of the supply of this network, by favoring the renewable energies or of recovery). At the moment, the implication of the stakeholders is managed within the framework of an entitled “workgroup of the energy and the urban planning ". All the actors of the urban planning (agency of town planning, association of study and programming of the Lyon urban district, urban planning department of Grand

Lyon) as well as the institutional actors of the energy (ERDF, GRDF, city of Lyon; local agency of the energy and Hespul) are present.

The involvement of the stakeholders is soon going to widen to the club of the companies based in the district of Part Dieu because a meeting is planned in September to present the Transform project and discuss energy challenges with the aforementioned enterprises. This meeting can result in a collaboration process with this club of companies.

Field of activity 1: Set-up of a GIS database to characterize the energy situation of the district in the launch of the project (2012) and to model the evolution of the energy needs throughout the urban project

Responsible institution	Role/tasks
Department for Urban development(groupe " observation,valorizations des données"), Grand Lyon	In charge of the conception and of the realization of the database SIG on the energy
Further stakeholders involved	**Role/tasks**
ERDF	National distributor of the network of electricity. To feed the database on the sector of electricity.
GRDF	National distributor of the network of gas. To feed the database on the sector of gas.
HESPUL	Supporting Grand Lyon in the elaboration of the database GIS.
Elioth (engineering consulting firm)	Modeling the energy transition scenario and 3D energy atlas.
RFR Eléments (engineering consulting firm)	Participate in the elaboration of the database GIS on energy theme.

Field of activity 2: The energy efficiency of the new buildings and to be refurbished

Responsible institution	Role/tasks
Department for Urban Development, Grand Lyon	In charge of the elaboration of the implementation plan. On the building sector, will define the levels of energy requirement for new constructions and refurbishment. Will negotiate with the property developers the objectives of energy performance wished.
Further stakeholders involved	**Role/tasks**
Property developers of buildings	To realize the future real estate programs of the.Part Dieu district. Include energy performance in their objectives.
Owners/administrators of the existing buildings	In charge of the renovation of the existing buildings. Promote energy savings measures especially for specific electricity in the offices

Field of activity 3: The development of the heating and cooling network present on the district (energy diversification to increase the part of the renewable energies or recovery energy)

Responsible institution	Role/tasks
Department for Urban Development, Grand Lyon	Competent authority on heating and cooling network.
Further stakeholders involved	**Role/tasks**
Administrator of the heating and cooling network	Operation, maintenance and deployment of the heating and cooling network

Field of activity 4: The optimization of the planning and the piloting of networks (electricity and gas)

Responsible institution	Role/tasks
ERDF	national company of electricity distribution
Further stakeholders involved	**Role/tasks**
GRDF	national company of gas distribution
Administrator of the heating and cooling network	Management/maintenance of the heating and cooling network

(3) Who will be committing to the Implementation Plan?

The implementation plan must be politically validated by the mayor of Lyon and vice – presidents in charge of the Transform project. In France, the entirety of building constructions and renovations are subject to the “règlementation thermique 2012” which demands minimal building performance level called “ basse consummation”. By 2020, this law will include plus energy buildings. The objective proposed by the partners of the project Transform and by the mission Part Dieu **is to double the building capacity with constant energy balance.** Before being submitted to political validation, the reliability of this objective should be assessed. Besides, all propositions regarding the evolution of the energy mix of the heating and cooling network must be politically validated. The validation will be proposed within the framework of a political steering committee.

Key challenges for the SUL to be handled in the Implementation Plan

During the implementation plan process, we plan to work on the following topics:

- recovering energies (waste water). We would like to discuss with experts or cities which use waste water in their heating network to evaluate the financial investment needed,the technical process to be set up..
- the active involvement of the employees of office buildings in the reduction of energy consumptions
- adapt the methods of energy planning and sizing of networks:
- Study the passage of a method of current planning in the smart " planning " by taking into account possibilities of piloting of the uses and coupling decentralized production and specific uses, ·
- exchange on these stakes and on the methods used with the other administrators of European electricity networks.
- Combining energy data (from networks operators) with urban and socio economic data through GIS database to support energy planning

The process of making an Implementation Plan in Vienna (aspern Seestadt)

Peter Hinterkörner

(supported by OIR – Heidi Collon, Max Kintisch, Ursula Mollay)

September 2013

Summary description of the process ongoing and planned

A new urban quarter "**aspern** Seestadt" (**aspern** Urban Lakeside) will be developed on a greenfield with 240 ha in the north-east of Vienna. This new urban quarter shall provide flats for about 25.000 inhabitants and create 17.000 work places (total area). The development phases considered in the TRANSFORM project are phase 1 (southern part of the project area) and phase 2 (selected northern parts of the project area).

aspern Seestadt will be constructed in several phases over a period of at least two decades.

Phase 1 (map: southern parts, light yellow): **2008-2017:** The project developers Wien 3420 AG will develop the lake park area and infrastructure to kick off the creation of the Urban Lakeside. The first major stage of construction includes some 3,500 residential units over a gross floorspace of 240,000 sqm. In addition, there will be offices, retail and service companies as well as research and development establishments. This large volume safeguards local supply and the intended mixed-use structure right from the beginning. This phase includes the start-up of the Underground stations of aspern Vienna's Urban Lakeside and the first steps in the development of the central "Innovation Quarter". As an impulse generator for research- and technology-oriented enterprises the aspern IQ has been erected by the Vienna Business Agency.

Phase 2 (with three sub stages, map: light to dark orange): **2017-2025** The railway station and two links to S1 motorway will be completed. About 7,000 additional residential units, other mixed-purpose buildings, and office quarters will be developed. The "Innovation Quarter" in the south will be completed.

During the last **phase 3** (map: pink, 2025-2030) the project will be further condensed and developed. A number of plots will be deliberately kept free of construction to optimise the mixed-use concept and attract further high-level enterprises, cultural institutions and leisure options; temporary forms of land use will be replaced.

Important stakeholders of aspern Seestadt related to the elaboration of the Implementation Plan

The “Wien 3420 Aspern Development AG” (subsequently named Wien 3420) was founded to develop and to promote aspern Seestadt as an urban centre within the City of Vienna. Within the scope of the different processes Wien 3420 develops concepts and defines planning guidelines, provides property and offers consultancy for development projects. It is therefore responsible for the development of the area and for the definition of the Implementation Plan and acts as an important player in all planning issues. Urban planning, general concepts as well as the realization of aspern Seestadt are organized and operated by Wien 3420. The owners of Wien 3420 are:

- GELUP GmbH: 73,4% (a limited liability company as a subcontractor of the Vienna Business Agency Group (Wirtschaftsagentur)[1], Vienna Insurance Group and the Bausparkassen der Österreichischen Sparkassen (a specialized bank, dealing mainly with financing of housing projects)
- Federal Real Estate Society „Bundesimmobiliengesellschaft BIG“: 26,6% (institution owning and managing federal buildings and estates) .

Financing and competencies:

- Wien 3420 is a stock corporation (Aktiengesellschaft) which is generating revenue through the sale of property: Wien 3420 buys undeveloped property from the landowners (which are founders of Wien 3420) and sells developed land including necessary technical infrastructure. The margin allows Wien 3420 to finance about 50% of the costs of infrastructure (technical infrastructure, streets, green areas, etc.)
- Wien 3420 started with a budget financed by a mix of owned equity and grants from the founding partners BIG and Wirtschaftsagentur, totalling to a sum of about 26 million Euros. Apart from these initial funds, further revenue could be generated through advance sale of land to the GELUP GmbH (about 26 million Euros, provided until 2013). A further 2.6 million Euros stem from an easement for the new Subway line given to Wiener Linien. This initial budget of about 55 million

[1] The Vienna Business Agency Group is a service point for Vienna’s enterprises, its services are mainly funded by the City of Vienna.

Euros – for the development of phase 1 – was thus entirely financed through private equity, with no further reliance on credit.

- The cost of building public infrastructures such as roads and public spaces, green spaces and water infrastructures are shared between Wien 3420 and the City of Vienna. For this purpose, negotiations are set up between Wien 3420 and the city in each phase of the development. Electricty, gas and district heating are independently built up by the companies of Vienna ‘s main energy infrastructure utility (Wiener Netze); telecommunications by the Telekom; and social infrastructure (schools and kindergardens) is financed by the municipality.
- The city of Vienna is involved in the development of aspern Seestadt through the so-called „coordination unit Seestadt Aspern“ (a project director with a team of several persons), which is directly responsible to the Director General of Urban Planning, Development Construction. It is responsible for the coordination of all tasks within the sphere of competence of the City of Vienna regarding the implementation of aspern Seestadt. in order to ease planning processes and to support the development of the SUL.
- Additionally there has been defined a general agreement between the city and Wien 3420 in terms of cooperation and intended building qualities and – based on this agreements – on the cofinancing of infrastructure.
- Public spaces e.g. are to be taken over by the city in terms of operation and maintenance, which needs planning and construction in close coordination, following the requirements of the city administration.

Besides Wien 3420 the **most important stakeholders** involved in the planning and development of the area are:

- Municipal Department 18 – Urban Development and Planning: responsible for urban development concepts and strategic urban planning
- Municipal Department 21 – District Planning and Land Use: responsible for land use planning in Vienna
- Municipal Department 20 – Energy Planning is responsible for area related, integrated spatial and energy planning in Vienna and is coordinating energy related city concepts, examines energy related projects in the course of governmental procedures and develops pilot projects in order to support the introduction of innovative energy technologies.

- Municipal Department 28 (Road management and construction) , currently intensively involved in final planning activities in the area and commissions the mobility concept together with Wien 3420.
- Municipal Department 42 (Parks and gardens) , responsible for the maintenance of green areas and thus currently also involved in planning processes.
  wohnfonds_wien (responsible for subsidised housing construction and renovation in Vienna): On the basis of contractual agreements between Wien 3420, Business Agency Vienna and wohnfonds_wien, a substantial number of subsidised floor space will be erected in aspern Seestadt.
- "Coordination unit Seestadt Aspern" with its task to govern the cooperation between Wien 3420 and the administration of Vienna (city) as well as project related measures within the administration (municipal departments mentioned above as well as a number of further departments e.g. responsible for transport, water management, green space, waste, etc.).
- Wiener Stadtwerke Group: Infrastructure service provider of Vienna, its commercial activities can be broken down into the segments energy, transport, cemeteries and car parks. Under the Holding Company of Wiener Stadtwerke most important for the SUL development are:
  - Wien Energie, Wiener Netze: The energy segment covers the areas of production, network operation and sales, whereby the main focus is on ensuring reliable supplies of electricity, gas and district heating.
  - Wiener Linien (and Wiener Lokalbahnen) provides a comprehensive range of services in the area of public transport. Aspern Smart City Research is a research institution founded by Siemens, Wien Energie and Wien Energie Stromnetz (Wiener Netze). ASCR shall examine new buildings in terms of technology, environment and energy in aspern Seestadt.

Masterplan

After the designation as a target area for new urban development in Vienna in the urban development plan 2005, an international masterplan competition was conducted, in order to create urban development proposals.

For this purpose, ten teams of regional and urban planners, architects, mobility and landscape planners were identified throughout Europe and invited to submit detailed

proposals. Following a preliminary technical evaluation, the results were presented in November 2005 and reviewed by an international expert panel. In January 2006, the team of Tovatt Architects & Planners together with N+ Objektmanagement was awarded the contract.

In drafting the master plan, the planners were assisted by a project team composed of representatives of both Vienna's urban planning departments and the property owners. The first, preliminary draft of the master plan was presented in May 2006 to an audience of 600 in the respective district of Vienna. This start up was followed by a process involving a board of citizens from the area, whose suggestions were published and integrated. Several workshops served to discuss, detail and fine-tune the plans with these "local experts", while in parallel the municipal planning departments led the dialogue with political decision-makers at the city level. On 25 May 2007, the master plan was adopted by the Vienna City Council.

Implementation phase 1

The planning process for phase 1 has been completed, the construction of about 3.500 housing units has begun in 2012,. In the office and industrial sector, the first office building has already opened in 2012. Further sale of land to industrial enterprises have partly been concluded or are due in short time. This situation allows for using the practical experience from phase 1 planning procedures and technical solutions, drawing conclusions for the elaboration of the Implementation Plan, which will now focus on phase 2 development.

In phase 1, seven main fields of activities have been developed, organised and are being implemented currently:

- A broad "city branding" process that led to the actual project name including a development vision and a set of values and goals
- A quality assurance process that (plot guidelines, project supervision, constitution of an advisory board)
- Environment and Sustainability: Environmental Impact Statement (notification 2010), research key projects (partly funded by national research programs, e.g. integrated energy concept, research on options of energy efficient buildings, production of renewable energy, energy infrastructure, micro climate, monitoring)
- Mobility: construction of new subway-line and a tram line into the area; formulation of a mobility guideline; detailed research and studies on mobility, e-mobility,

vehicle-sharing systems, and e-mobility, and elaboration of a mobility-concept for the area; setup of a “mobility fund” for investments in alternative mobility measures;

- Public space: elaboration of a handbook on public space, planning processes for open and green spaces/parks (partly by staging planning competitions), detailed design of roads and public space with a strong focus on pedestrian and cyclist’s comfort, ;
- Building parameters (urban planning concept, land use plan and built urban form): urban design implementation project, guideline documents, adoption of Municipal Planning Scheme by Vienna city council; these parameters are being used as inputs for developers’ competitions, which are staged for specific lots within the phase 1 area
- Additional management and collaboration modells: to ensure the sought-after urban qualities – like lively ground floors, functional mix, creation of workplaces, participation, coexistence and social interaction – several and different structures of collaboration beyond the usual real estate process were set up:
  - Concept for neighbourhood management – the tender process is under way, the start is due in January 2014, before (!) the first residents move in
  - Creation of a special purpose vehicle for the operation of a public retail street (aspern Einkaufsstraßen GmbH: 49% Wien 3420, 51% SES)
  - Creation of a joint venture with VBA and University of Technology (researchTUb GmbH) to establish a link between research and industrial production by installing a lab on site.
  - Concepts for innovative projects generating development impulses through a number of calls and developer-related procedures for various innovative buildings (e.g. aspern_IQ – a innovation and research quarter, community housing initiatives and competitions for private building societies etc.); there is also a business development branch attracting innovative production and service enterprises into the area

Accompanying these processes a number of participation events called “citylabs” have been conducted, in order to involve citizens and experts into development and planning processes. Citylabs covered topics in all main fields of activities, providing valuable input to further development process steps.

Based on these studies and research activities, decisions were made mainly by Wien 3420, reviewed by its advisory board.

An overall energy concept (research project “Nach Aspern”) was elaborated by the Austrian Institute of Technology (AIT) during phase 1, under the guidance of Wien 3420. During the elaboration of this rather research driven energy concept, however, important stakeholders (e.g. Wien Energie, Wiener Netze) had not been involved intensively yet – this shall be changed in the process of developing the IP for the second phase.

Implementation phases 2 and 3

In phases 2 and 3, approximately 7.000 housing units and a substantial number of work places shall be realised by 2025. The detailed planning period started in 2012, thus the TRANSFORM project is able to participate directly in relevant planning processes almost from the beginning.

Currently preparations for Environmental Impact Statements (EIS) referring to urban planning, transport and energy are being prepared (until April 2014), designed to cover main elements of the proposed IP.

Whereas the EIS for urban planning and road management are handed over to contractors widely in order to elaborate the statement documents, the energy concept will be elaborated by a newly established energy working group including the most important stakeholders, supported through expertise and management from the TRANSFORM project team. The results of this working group will be integrated in the EIS energy concept. The final decision on the content of the energy concept lies with Wien 3420, but includes strong involvement of the municipal partners. The involvement of the most important stakeholders concerning energy planning aims at a stronger commitment of stakeholders for both the Implementation Plan and the EIS-energy concept. Further meetings are scheduled, major results and decision making shall be finalised in spring 2014. The EIS is scheduled to be filed to the EIA (Environmental Impact Assessment) process in autumn 2014, guided by the relevant administrative units of the city of Vienna. A positive closure of the EIA process, including a number of technical standards to be met, is due in autumn 2015 and will be the prerequisite for tenders, competitions and sales procedures .

Stakeholders involved in the process

(1) Main responsible institution for the elaboration of the Implementation Plan

Wien 3420 is responsible for the development of the SUL and thus main responsible institution for the elaboration of contents to be laid down in the IP.

In order to support the elaboration of the IP for aspern Seestadt, a nationally funded mirror project to TRANSFORM was set up, involving all relevant stakeholders in a concrete working process for the SUL (e.g. for the elaboration of the area's energy concept). The project coordinator for the mirror project, named TRANSFORMplus, OIR, is also leading the process of elaboration of the IP (with focus on phase 2) together with the municipal departments 18 (urban development and planning) and 20 (energy planning).

Main fields of activity during the IP drafting process for phase 2 are:

- Urban planning (based on the masterplan, main parts elaborated within the EIS process framework)
- Integrated energy concept
- Mobility concept and guidelines for realisation (based on studies, partly elaborated within the EIS process framework)

Urban planning and mobility concept

Wien 3420 coordinates all activities concerning urban planning and the mobility concept. Analogical to the energy concept the mobility concept is strongly linked with the respective EIS (environmental impact statement on the planned transport and mobility system). The mobility concept for phase 1 is available. For phase 2 the elaboration of the concept has been finished in the end of summer 2013. This concept deepens and completes the planning made in the masterplan and gives basal information to the future road structure and network, the organisation of parking areas and non motorized traffic.

Together with the Municipal Department 28 (Road management and construction) Wien 3420 commissioned a traffic planning office (komobile) and a landscape planning office (D\D) to elaborate the mobility concept. During intensive workshops moderated by the two external experts inputs of different stakeholders could be integrated in the concept. The elaborated mobility concept will be the basis for the EIS.

Elaboration of an energy concept as a part of the Implementation Plan

During this stage of the planning process energy planning has become an important topic and will be one of the main fields of activity within the IP. The process of discussion and elaboration is described above.

Since this kind of discussion and process is still new in Vienna, stakeholders have to deal with this situation, the outcome of this process is not clear until now. Nevertheless, the final content of the IP will be decided by Wien 3420, who will also officially submit the EIS (based on proposals from the energy working group).

The Austrian Institute for Spatial Planning and Regional Studies (OIR) is a partner of the TRANSFORM project and responsible lead partner for the TRANSFORMplus project. Together with municipal departments 18 and 20, OIR supports the process of the IP elaboration by coordination of involved institutions and compilation of results.

Field of activity 1: Urban Planning

Responsible institution	Role/tasks
Wien 3420 Development AG has been founded to develop aspern Seestadt to an urban center.	Wien 3420 is responsible for the planning, general concepts and realization of the area. It has been guiding past and ongoing development phases and will continue to do so in the future development of aspern Seestadt. Regarding its pivotal function it plays the main role in the elaboration of the IP.
Further stakeholders involved	**Role/tasks**
Municipal department 18 (MA 18) is responsible for urban city development issues in Vienna	Due to its function in the Viennese municipality the MA 18 is involved in the urban planning of aspern Seestadt..
Municipal department 21 (MA 21) is responsible for land use planning	Due to its function in the Viennese municipality the MA 21 is involved in the urban planning of aspern Seestadt..
Coordination unit Seestadt Aspern	Role and responsibility: govern the cooperation between Wien 3420 and the administration of Vienna (city) as well as project related measures within the administration (different municipal departments)
External experts, e.g. OIR	Supporting the process in terms of contents and organisation (funded by a national research program)

Field of activity 2: Integrated Energy Concept

Responsible institution	Role/tasks
Wien 3420 Development AG compare description in field of activity 1	Wien 3420 is responsible for the planning, general concepts and realization of the area. It has been guiding past and ongoing development phases and will continue to do so in the future development of aspern Seestadt. Regarding its pivotal function it plays the main role in the elaboration of the IP.
Further stakeholders involved	**Role/tasks**
Municipal Department 20 (MA 20): Energy Planning responsible for the coordination and development of concepts related to energy issues	Due to its function in the municipality of Vienna the MA 20 plays an important role in all energy issues. Therefore it will define the content of the EIS– Energy Concept and the thereby linked IP. It also plays a leading role in the organization of the already mentioned energy working group.
Wien Energie is a municipal energy provider and a company of the Wiener Stadtwerke.	As it operates energy production it is an important stakeholder and will give information as well as an important impulse for the IP.
Wiener Netze is a utility company and a company of the Wiener Stadtwerke.	As it operates the heat and gas networks it is an important stakeholder in the localization of the network in aspern Seestadt and will give information as well as an important impulse for the IP.
Energiecomfort: a company of the Wiener Stadtwerke	Responsible for energy efficiency projects and energy contracting, mainly with enterprises. Supporting the activity with know-how
Aspern Smart City Research: Research institution founded by Siemens, Wien Energie and Wien Energie Stromnetz (Wiener Netze).	ASCR has been founded to do research mainly on smart grids, demand side management and integration of renewable energy production in and between buildings, they will work in an Urban Lab Situation with selected buildings in aspern Seestadt and provide with experiences on the integration of energy systems and buildings in terms of technology, environment and energy.
Transform plus Team (esp. ASCR, ETA, AIT, Wien Energie)	Elaborating the pilot project “smart city assistant” as an information platform for inhabitants in the course of the Transform plus project.
External experts, e.g. ETA, OIR, Freiland	Supporting the process in terms of contents and organisation (funded by a national research program)

Field of activity 3: Mobility Concept

Responsible institution	Role/tasks
Wien 3420 Development AG compare description in field of activity 1	Wien 3420 commissioned the elaboration of the mobility concept together with MA 28 and directs the ongoing process.
Further stakeholders involved	**Role/tasks**
Municipal Department 28 Road Management and Construction is responsible for the planning, construction, maintenance, and general administration of the public road network (roads and traffic areas) in Vienna.	Commissioned together with Wien 3420 the elaboration of the mobility concept
Municipal Department 18 is responsible for urban city development issues in Vienna	Besides others responsible for transport planning in Vienna; Participated in workshops held to concretizes the elaboration of the mobility concept
Municipal Department 19 architecture and urban design	Participated in workshops held to concretizes the elaboration of the mobility concept
Municipal Department 21 urban district and land use planning	Participated in workshops held to concretizes the elaboration of the mobility concept
Municipal Department 42 (urban parks) – maintaining green spaces	Participated in workshops held to concretizes the elaboration of the mobility concept
Municipal Department 46 Traffic organization and technical issues	Participated in workshops held to concretizes the elaboration of the mobility concept
Wiener Linien a company of the Wiener Stadtwerke, it invests in the expansion of the tram and metro network and is responsible for maintenance and operation.	Wiener Linien (and Wiener Lokalbahnen) provides a comprehensive range of services in the area of public transport (subway, tram, busses)
Coordination unit Seestadt Aspern	Governing the cooperation between Wien 3420 and the administration of Vienna (city) as well as project related measures within the administration (different municipal departments)
External experts: Komobile (traffic planning office) **and D\D** (landscape planning office)	Elaborated together the Mobility concept and moderated the workshops with the different stakeholders concerning mobility
External experts: OIR	Supporting the process in terms of contents and organisation (funded by a national research program), elaborating studies or working as contractors

Accompanying measure

Accompanying to the planning process and building activities, a new neighbourhood management (Stadtteilmanagement) is currently being established. This organisation is based on a cooperation between Wien 3420 and MA25 (urban regeneration and certifying body for residential buildings, also responsible for neighbourhood management in Vienna) with a budget of about Euro 400,000 per year.

Starting in 2014 it will be located within the area and will be responsible for a broad spectrum of activities which is comprising communication and participation, socio culture and identification of the new inhabitants with their quarter, landscape and public space, infrastructure and city services, small businesses.

In addition there are special tasks to be tackled: management system for requests and complaints, development of a citizens platform, activation of new inhabitants and employees.

(2) Who will be committing to the Implementation Plan?

Commitment is expected from Wien 3420, the relevant municipal departments and other involved stakeholders. The specific form of such commitment is still open.

Key challenges for the SUL to be handled in the Implementation Plan

- ★ Create mutual understanding between stakeholders
- ★ Win stakeholders as partners
- ★ Dealing with supposed goal conflicts
- ★ Adaptation of basic rules (laws, decrees, standard procedures)
- ★ Shift of paradigm – supporting the function of new urban districts besides producing living space for additional inhabitants
- ★ Definition of clear and ambitioned, but realizable targets

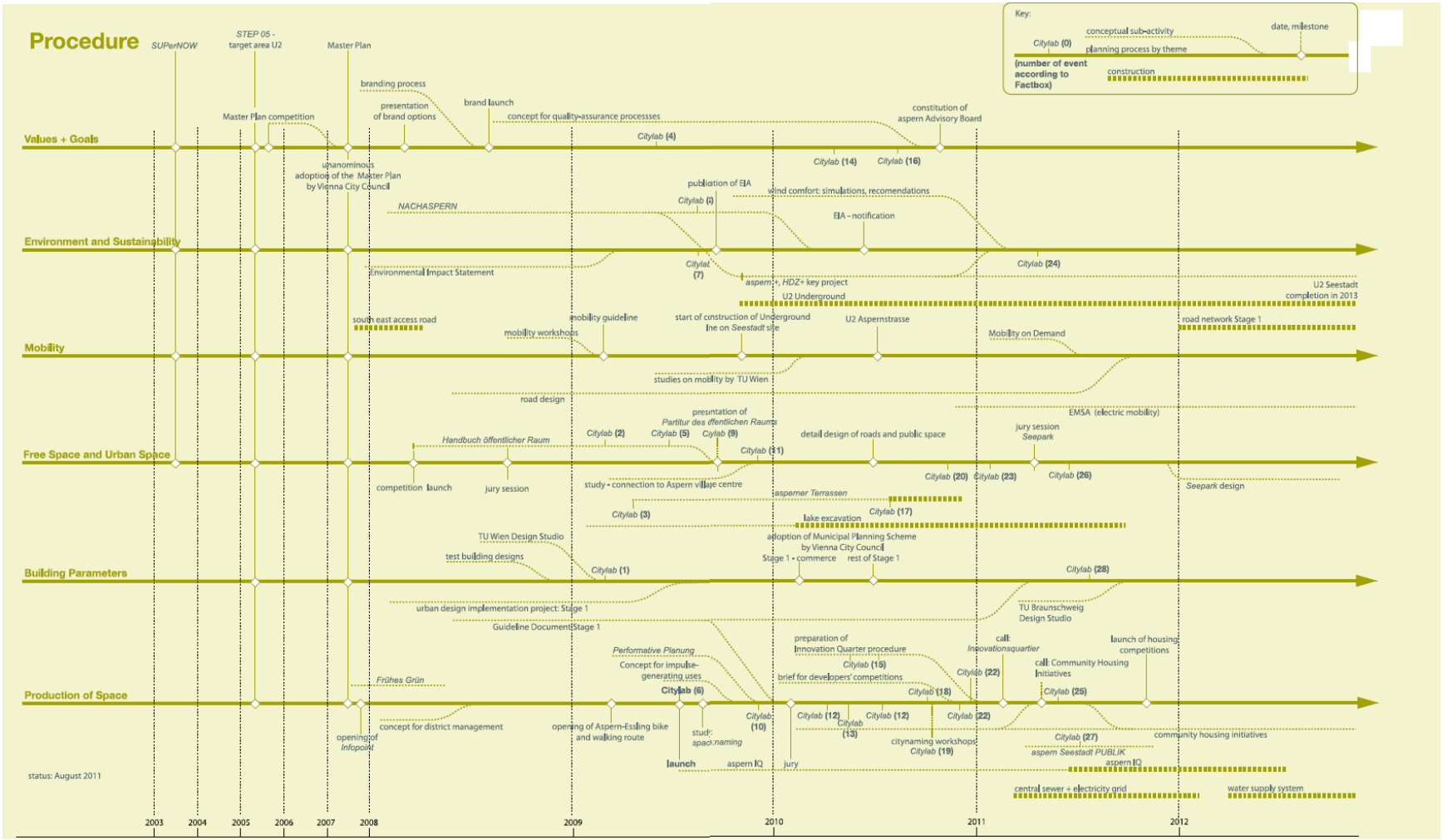


Figure: Planning procedure in the past (2003-2012)

The process of making an Implementation Plan in Liesing, Groß Erlaa, Vienna

Volkmar Pamer

(supported by Pia Hlava and OIR - Max Kintisch, Ursula Mollay)

September 2013

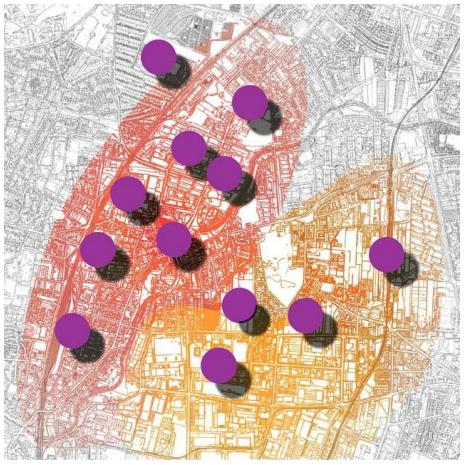
Process of bringing about the IP document

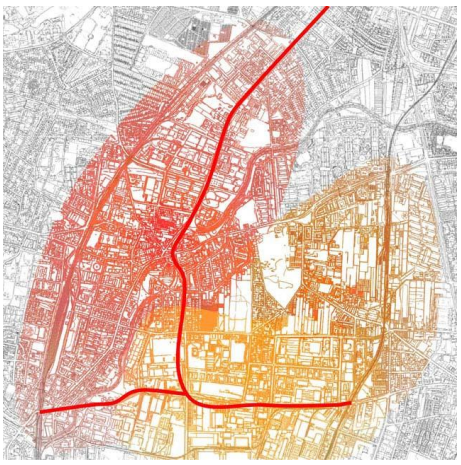
Summary description of the process ongoing or planned

The implementation plan for Liesing Groß Erlaa will explain how to achieve the transition from a functionally fragmented suburban area towards a comprehensive urban development project together with an integrated energy strategy and a comprehensive mobility concept.

So far, a number of concepts have been developed and concrete activities have been set. As the most important steps in the past were:

- Zielgebiet Liesing Mitte: The area is part of an area designated as one of several target areas for further potential urban development in the most recent strategic city-wide development plan (STEP2005). In this process, since 2006 several main topics for the area have been defined, as there are: high quality of living space and green living, development of a functional center and of a school campus (comprising different types of schools) within the area, elaborating solutions for the stimulation of the industrial area and enhancement of the public transport system.





- Industrial area of Liesing: Starting with an EU project URBACT-REDIS development options were discussed together with other cities (2009-2010), subsequently an areal management for the industrial area was established in place (Standpunkt Liesing, two persons) in order to actively support the development (2010-2013, as a project of the city of Vienna and the chamber of commerce funded by structural funds 2007-13, the continuation of this activity is foreseen). The objectives of this areal management are: developing a resource saving industrial area through motivating and giving advise, enhance cooperation

between enterprises and between enterprises and resarch entities, vitalization of the real estate market, etc.

- Smart city Liesing Mitte: In the course of a nationally funded project (smart energy demo-fit4set, Austrian Climate and Energy Funds) recommendations were made in order to develop smart spaces, smart infrastructures and smart social design.
- International workshops debating urban layout options and housing-development competitions are being carried out in order to find good solutions for future living space for selected sections of the area.

Planned activities

The implementation plan will (1) translate existing heterogeneous development ambitions into a new, common urban vision for the area and set up a process by which this vision will be communicated to and shaped by local residents;(2) integrate this vision with a strategy for the achievement of a smart energy transition; and, lastly, (3) supplement this with an integrated mobility concept.

(1) A cohesive urban development vision for Liesing Groß Erlaa

The process of making the implementation plan will draw upon existing planning ambitions for functionally different parts of the SUL to produce an integrated vision for the whole of Groß-Erlaa.

Particularly, this will concern the existing ambitions to vitalize two functionally distinct territories: the „Industriegebiet Liesing“, a major industrial district in the south of Groß Erlaa , and the planned interventions for „In der Wiesen“, a residential area that is to accommodate an expected doubling of residents in Groß-Erlaa (+25.000 inhabitants) through new urban development projects within the time horizon of 2025.

For this purpose the implementation plan will:

- Provide a comprehensive framework to integrate the multiplicity of planned interventions in the area into an ecoholistic vision for a new urban area.
- Set up the conceptual framework and participatory process on the basis of which a vision for Groß Erlaa will be communicated to and shaped by local residents.

(2) A strategy for the achievement of a smart energy transition

The integrated energy concept will primarily be founded on the development of an energy atlas and elaborating promising measures for the implementation of energy and resource saving activities.

The energy atlas will

- Be the instrument to model existing energy systems, energy supply infrastructures, energy efficiency standards and consumption patterns in Groß Erlaa.
- Enable the production of different energy scenarios upon which to base future energy planning ambitions, objectives and action plans; with a particular focus on identifying the potential for renewables and local waste-heat recovery in the supply infrastructure.
- Be the basis upon which to model the cost-benefit analysis of future interventions in the energy infrastructure.

In order to support energy planning in the area, an energy planning group has been established, elaborating main inputs and discussing and defining requirements and solutions for the area.

Since this kind of discussion and process is still new in Vienna, stakeholders have to deal with this new situation, the outcome of this process is not clear until now. Nevertheless, the content of the IP will be decided by MA 21 and MA20.

(3) An integrated mobility concept

Access to public transport and heavy traffic has become a persistent issue in the development process of the suburban transit territory Groß Erlaa.

In the process of the elaboration of an implementation plan there will be the opportunity to test new and alternative models of urban mobility. In this context we will see a mobility concept for the area, a pilot project for the use of carpooling with e-delivery services in Groß Erlaa and further activities within the industrial area.

The implementation plan aims furthermore to become the platform through which existing and future mobility plans for the area can be integrated into a common mobility concept for the entire SUL. There are a number of existing strategies on which such concept could build on, but the precise extent and working plan still needs to be determined.

Stakeholders involved in the process

(1) Main responsible institution for the elaboration of the Implementation Plan:

The implementation plan is designed for an area that has specifically been defined for the purpose of the project, but whose constituent parts have in recent years become the container of a variety of development visions.

As major part of an area, designated for further potential urban development in the most recent strategic city-wide development plan (STEP 2005), the transformation process for the SUL Liesing – Groß Erlaa will take place under the auspices of the municipal department MA21 (municipal department responsible for land use planning and zoning permissions), which is also responsible for the wider target area (Liesing Mitte).

In order to support the elaboration of the IP for Liesing Groß Erlaa, a nationally funded mirror project to TRANSFORM (TRANSFORMplus), was set up, involving all relevant stakeholders in a concrete working process for the SUL (e.g. for the elaboration of the area´s energy concept). The project coordinator for the mirror project, OIR, is also coordinating the process of elaboration of the IP together with the municipal departments 21 (land use planning and zoning permissions), 18 (urban development and planning) and 20 (energy planning).

(2) Main fields of activity in drafting the Implementation Plan, responsible institutions and stakeholders involved

Main fields of activity during the IP drafting process are :

- Integrated urban planning concept
- Participatory planning concept (planned)
- Integrated energy strategy
- Mobility Concept (planned)

Next to the organizations responsible for the conception, drafting and writing of the implementation plan (MA21, MA20, MA18 and OIR as a support), there exist a number of other stakeholders involved in the process:

- Wiener Stadtwerke Group: Infrastructure service provider of Vienna, its commercial activities can be broken down into the segments energy, transport, cemeteries and car parks. Under the Holding Company of Wiener Stadtwerke most important for the SUL development are:

- Wien Energie, Wiener Netze: The energy segment covers the areas of production, network operation and sales, whereby the main focus is on ensuring reliable supplies of electricity, gas and district heating.
- Wiener Linien (and Wiener Lokalbahnen) provides a comprehensive range of services in the area of public transport.

- Wiener Wohnfonds, Viennese organisation responsible for new social housing projects and funding of housing renovation.
- Wiener Wohnen: Municipal social housing provision
- Local community organizations and institutions

All stakeholders meet on a quarterly basis to discuss the working plan and progress in different working areas. So far there have been two meetings and a third one is planned for October 2013. Besides, work is organized in sub-groups to advance the process in certain dedicated subject areas such as energy or the pilot-project in e-delivery.

The key challenge is how to secure public and political commitment towards the planned residential projects in the area. Development visions for In der Wiesen have been challenged both by the local authority and the local community. The aim is to lead a process towards the greater integration of local needs and wants, specifically through the participatory planning framework designed for the TRANSFORM process in the area.

Field of activity 1: Integrated urban planning concept

Responsible institution	Role/tasks
MA21 (municipal department responsible for land use planning and zoning permissions)	Responsible authority for the urban target area (Liesing Mitte, Zielgebietsmanagement)
Further stakeholders involved	**Role/tasks**
MA18 (urban development and planning)	Supporting MA21 in the process of elaborating an IP and producing an integrated urban planning concept
Wiener Wohnfonds	Housing development competitions
Wiener Wohnen	Municipal housing provision (existing buildings), neighbour to new developments, retrofit measures
External partners and experts	
OIR	Supporting MA21 in the process of producing an integrated urban planning concept
Architects	

Field of activity 2: Participatory planning framework for In Der Wiesen (planned)

Responsible institution	Role/tasks
MA21 (municipal department responsible for land use planning and zoning permissions)	Responsible authority for the urban target area (Liesing Mitte, Zielgebietsmanagement)
Further stakeholders involved	**Role/tasks**
MA18 (urban development and planning)	Supporting MA21 in the process of elaborating an IP and producing an integrated urban planning concept In the framework of the European study CLUE, the MA18 plans to produce a communication and participation concept for Liesing Groß Erlaa
Local stakeholders: Bürgerinitiativen, NGOs, LA21, ...	
External partners and experts	
OIR	coordination within TRANSFORM and contribution to participation in the area via another European project CASUAL (in the fields of mobility stiles and energy use)
City psychologist Cornelia Ehmayer	Supports MA18 in the process of producing the communication and participation concept (CLUE project)
Emrich	Overall participation concept (contractor of MA21)

Field of activity 3: Integrated energy concept

Responsible institution	Role/tasks
MA21 (municipal department responsible for land use planning and zoning permissions)	Responsible authority for the urban target area (Liesing Mitte, Zielgebietsmanagement)
MA20 (Municipal department for energy planning)	Due to its function in the municipality of Vienna the MA10 plays an important role in all eeergy issues. Therefore it will – together with MA 21 – support the definition of the energy concepts content and plays a leading role in the organisation fot the energy working group.
Further stakeholders involved	**Role/tasks**
Standpunkt Liesing (areal management as a Business Development Agency for the Industriegebiet)	Contact to enterprises, divers activities in the field of energy and ressource use e.g. cooperation plattform and regular exchange between energy and ressource experts within the enterprises
Wiener Stadtwerke Holding AG	Holding of municipal infrastructure and energy service provider
Wien Energie	Municipal energy service provider
Wiener Netze	Municipal infrastructure service provider

Further stakeholders involved	Role/tasks
External experts	
AIT	Leading research institution, responsible for energy atlas (TRANSFORMplus-partner)
ETA	Specialized consultancy in the energy sector (TRANSFORMplus-partner)
OIR	Coordinating and supporting the energy group as a partner of MA 21, MA18 and MA20
denkstatt	Contractor for advising enterprises in the industrial area in terms of energy and ressource use

Field of activity 4: Mobility Concept

Responsible institution	Role/tasks
MA21 (municipal department responsible for land use planning and zoning permissions)	Responsible authority for the urban target area (Liesing Mitte, Zielgebietsmanagement) Contracting entity for different studies e.g. mobility concept for “In der Wiesen”
Further stakeholders involved	**Role/tasks**
MA18 (urban development and planning)	Supporting MA21 in the process of elaborating an IP and producing an integrated urban planning concept Responsible for transport and mobility planning in the city
Standpunkt Liesing (areal management as a Business Development Agency for the Industriegebiet)	Survey of mobility trends in the Industriegebiet
Wiener Stadtwerke Holding AG	Holding of municipal infrastructure and energy service provider
Wiener Linien	Municipal public transport provider
External experts	
OIR	Organisation support, thematic support
e-delivery Gruppe	Pilot project e-delivery (TRANSFORMplus-partners)
Andreas Käfer, transport planner	Contractor elaborating Mobility vision for Liesing – Groß Erlaa

(3) Who will be committing to the Implementation Plan?

The commitment of public authorities is currently under discussion.

Key challenges for the SUL to be handled in the Implementation Plan

There are several key challenges that will directly or indirectly have to be addressed by the implementation plan:

- Involving local population
- Close the gaps between fragmented developments to form unitary urban development vision of the SUL.
- Public transport and alternative forms of mobility
- Energy performance of buildings
- Energy planning in industrial districts