

DESCRIPTION OF TOOLBOX ELEMENTS – PLANNING PROCESS

1. Preparatory / exploration phase

Working Group – Energy	
Purpose of the element	Working group on energy supply for urban development areas
Description of the element	<p>This group is composed of different departments, the main energy provider and grid operator – as first step the group tries to clarify potential solutions (especially about grids) for urban development areas before the planning has started. The energy planning department takes the lead.</p> <p>This group will carry out about the feasibility of district heating and gas. Furthermore, they discuss the possibilities to integrate renewables and waste heat.</p> <p>The developed solutions or criteria should be integrated in further processes and negotiations of the urban development area.</p> <p>It is planned to meet four times a year, but the frequency depends on the need, urgency and number of areas.</p>
Key benefits	<ul style="list-style-type: none"> • Find as early as possible a decision between centralised or decentralised solutions – this make it easier to regard it in the further processes and finally design of the buildings • Increasing the planning security for the providers and developers
Status (planned/in-use)	In Use
More info	
City	Vienna

Committee	
Purpose of the element	The governance mainly relies on sharing a common vision and making decision. During the discussions with LWG, partners, stakeholders and inner circle cities, the creation of a dedicated committee to manage energy aspects within urban projects has emerged. This committee could fix early the energy choice for the urban projects and make it more efficient and adaptable.
Description of the element	An energy dedicated committee headed by General Secretary clustering members of the different departments of the city involved in urban development and representative people from deputy mayors' staff. It should examine each urban project regarding energy aspect (supply, demand, renewable production) and fix in early stage the energy choice within the project. This committee could also study specific technologies related to energy efficiency and audition stakeholders like energy suppliers, producers and urban developers to understand their needs, requirements and difficulties. It should also be in charge of the implementation of Energy master plan
Key benefits	Fix energy scenarios to assess during the project (2 scenarios)
Status (planned/in-use)	Planned
More info	
City	Paris



2. Feasibility / planning phase

Contract	
Purpose of the element	The urban planning process is related to some contracts: between the city and the urban developer for the urban project and between the urban developer and a property developer for each building plot. This situation gives an opportunity to fix energy requirements in both urban development concession contract and land sale contract.
Description of the element	<p>URBAN DEVELOPMENT CONTRACT</p> <p>The feasibility studies allow preparing the necessary tasks to make the urban plots suitable for construction. The planning of the plots and the realization of the shared equipment are entrusted to the developer through the concession contract whereby the city transfers the project management competence to a developer. The project manager will be responsible for the design and implementation of the urban project: acquisition or control of land, servicing of the land, building of equipment and networks and marketing of lots. The Planning Act does not specifically provide for specific provisions for the integration of environmental objectives into urban development concessions.</p> <p>The City of Paris outlines the energy objectives that have been defined in the Master plan in the design phase. These objectives will have to be transposed into selection criteria which will be indicated in the consultation and which will have to cover the 3 stages of the development operation:</p> <p>Conception: max energy consumption, renewable energy rate, connection to district heating</p> <p>Implementation: material reuse, waste and site management</p> <p>Life time: performance guarantees of system over time</p> <p>LAND SALES CONTRACT</p> <p>During the implementation phase, the promoters and the landlords commit themselves to respect the objectives fixed in the project for the</p>

	<p>development of each plot. The administrative document that allows to contract with an operator is the specification of land transfer (CCCT). As an annex to the act of sale of the land, the CCCT has a contractual scope. However, the non-respect of the obligations can in no case motivate the refusal of the building permit. At best, it may result in refusal to conclude the sale or result in contractual penalties.</p> <p>In Paris, for each sale a receiver representing 4% of the amount of the sale is generated. The provisional sums will be retained if the objectives set in the environmental specifications are not obtained in particular from the energy point of view.</p>
Key benefits	Energy efficiency, renewable energy production, monitoring.
Status (planned/in-use)	In-use
More info	
City	Paris



Energy Saving Partnership	
Purpose of the element	The aim is to tap into the potential for saving energy in a single or an existing pool of buildings.
Description of the element	<p>The energy saving partnerships, developed by the Berliner Energieagentur and Berlin's Senate Department for Urban Development, is a model for efficient energy contracting.</p> <p>A private energy service provider (ESCO) makes the necessary investment and re-financed through the savings in energy costs. For this, the public client combines a selection of its portfolio of buildings to form a pool.</p>
Key benefits	As project manager, the Berliner Energieagentur has successfully launched and accompanied 25 energy saving partnerships with 1,300 public buildings and more than 500 properties in Berlin since 1996 alone.
Status (planned/in-use)	In use
More info	http://www.berliner-e-agentur.de/en/consulting-information/energy-saving-partnerships-berlin
City	Berlin



Climate Protection Agreements	
Purpose of the element	The so called “Climate Protection Agreement” is a Berlin instrument promoting energy efficiency in housing companies based on voluntary agreements. The agreement between the City of Berlin and the Association of Housing Berlin-Brandenburg has been established from 19971 – 2010. As the partnership proved to be successful it was prolonged from 2011 until 2020.
Description of the element	Conclusion of individual agreements with member companies in Berlin regarding specific CO2 caps Support to the member companies by providing information and consulting services, e.g. regarding the use of climate protection technologies, the use of renewable energies for heat supply and the introduction of an energy management system
Key benefits	Berlin instrument Association of Housing Berlin-Brandenburg includes 350 public and private housing companies (ca. 1.1 m apartments) Since 1991 -50% energy savings and -60% CO2 reduction
Status (planned/in-use)	In-use
More info	http://www.stadtentwicklung.berlin.de/umwelt/klimaschutz/download/Klimaschutz-Broschuere_SenStadtUm2015.pdf (in German)
City	Berlin



Public property development competition	
Purpose of the element	<p>In subsidized housing projects, there is a review process to ensure high qualities in planning. Most of the time, a cooperative planning procedure or urban competition is executed before adapting the Land Use Plan. This procedure provides first results that then constitute the basis for the tender criteria of the later competition. After the adaptation of the Land Use Plan is finished, a public property development competition for each subsidized housing project is started. The submitted projects are assessed according to the four pillars of sustainable development (economy, ecology, social, architecture). The result is a contract between the wohnfonds_wien and the developer who won the competition for each parcel. It is also a basis for the building permit. The implementation (construction) till completion is checked for fulfilling the agreed qualities – approx. monthly check.</p>
Description of the element	<p>The basis for some energy relevant criteria for subsidized buildings are the WWFSG (act for subsidized housing) and the Neubauverordnung (ordinance for new buildings). They define that new buildings must have a higher standard than in the Vienna building code.</p> <p>The maximum heating demand is calculated as follows: $14,67 \times (1+1,82/Lc)$. So, it depends on compactness of the building (Lc - the characteristic length – which is the Building Volume divided by the Surface area of the building). For instance, the maximum heating demand is 28 kWh/m²a for a Lc of 2. Furthermore, the maximum subsidized building costs are € 1800 / m² - base cost € 1350 / m², the rest applies if there are higher standards in ecology or energy. Nevertheless, some heating systems are not subsidized (no fossils except gas with solar energy, no electricity for heating except for low energy standard).</p> <p>One of the four pillars is entitled ecology - energy is in that pillar and assessed by the jury in the competition. Projects with low energy demand as well as an efficient energy system are more likely to win the competition.</p>
Key benefits	<ul style="list-style-type: none"> • Quality assurance process for planning subsidised housing projects in the City of Vienna • Applied and implemented by an external body of the city (wohnfonds_wien) • Four-pillar-model for assessment (energy is part of the pillar ecology)



	<ul style="list-style-type: none"> Higher energy standard than the Building Code Support for energy efficient heating systems
Status (planned/in-use)	In-use
More info	http://www.wohnfonds.wien.at/website/article/nav/103
City	Vienna



3. Formal planning / zoning phase

Balancing of criteria	
Purpose of the element	Each urban project has to combine specific political commitments and specific environmental situation. In some cases, energy is a key item regarding the contest (important local production potential) and the political vision (carbon neutral district, positive energy district), but it is essential to fix a basis of minimum requirements for any urban project. In addition, Energy is generally assessed in the preliminary studies but the results of the assessment are not specific enough to lead to an efficient and comprehensive energy choice for the urban project. It is once again necessary to fix specific and detailed requirements on both the vision and the studies to carry out.
Description of the element	An energy supply study must be carried out in order to identify potential energy sources on the site (energy grids, local production of renewable energy, etc.) and associated potentials. On the basis of these elements, several energy supply scenarios must be proposed. A grid of analysis can then allow comparing the options according to different criteria (cost of investment, cost of works, cost to the end user, renewable energy, GHG emissions ...).
Key benefits	Energy efficiency, renewable energy production, energy grid development
Status (planned/in-use)	Planned
More info	
City	Paris



Binding goals for energy issues - result of urban and energy study	
Purpose of the element	Defining program on energy to implement in urban planning documents
Description of the element	<p>Outputs of Urban and energy study of refurbishment and retrofitting of existing neighbourhood built before 1987. should be based on following analysis:</p> <p>analysis of pre-existing condition in the area: inhabitants, public space, building stock, GHG emissions, mobility, urban green etc.;</p> <p>Identification and mapping of specific type of users in the area – number of inhabitants, number of households, building typology (age, materials, systems),</p> <p>identify specific type of users in the area and benchmark energy demand and energy saving potential, analyse savings and set targeted benchmarks, set minimum binding and additional saving targets, provide info on RES use potential for specific uses, prepare mapping of energy demand intensity and energy saving potential intensity to define most appropriate areas to target activities.</p> <p>possibilities of developing the climate neutral part of the city and use of RES;</p> <p>possibilities of new technology and innovative solutions (grid-district heating and cooling or single solutions, dynamics etc.);</p> <p>different scenarios – models of energy supply and demand with project data of GHG emissions;</p> <p>different mobility scenarios – project data of GHG emissions;</p> <p>inhabitants (motivation for energy efficiency behaviour);</p> <p>financial and dynamic framework conditions (feasibility);</p> <p>monitoring indicators etc.</p>
Key benefits	Urban and energy study can also anticipate urban planning document for new development
Status (planned/in-use)	planned
More info	
City	Zagreb

Stockholm Royal Seaport Overall Programm (including Action Plan for Real Estate)	
<p>Purpose of the element</p>	<p>The Overall Program for the Sustainable urban development (PSUD) is a steering document and the major objectives are to build a sustainable city district according to social, economical and ecological aspects.</p> <p>One of the main objectives when it comes to energy is to become a fossil fuel-free city district by 2030 and has CO2 emissions below 1.5 t/capita and year 2020 by using new environmental techniques and solutions and integrated planning and development approaches. The objectives are mainly focusing on mitigating climate impact by minimizing the use of fossil fuels and effectiveness measures for transport and energy usage for buildings and infrastructure. Other crucial objectives are to adapt to climate change by supportive green structure and managing storm water, a low usage of resources with increased (eco-cycle) and a limited impact on health and environment.</p> <p>The objectives of the PSUD are broken down into different requirements which are binding for developers and the city's building of infrastructure such as streets, public places, etc. Requirements are specific for the different stages and compiled in so called action plans. The requirements in the action plans are part of the development agreements and have to be fulfilled. Measurement and monitoring are obliged and controlled by the city at different times.</p>
<p>Description of the element</p>	<p>Within the Stockholm Royal Seaport, the City continuously tries to set new standards for new and existing buildings' energy performance. This raised ambition will in the long run pave the way for the implementation of a level of energy use equalling energy-plus-house standards.</p> <p>Since the city owns the land in the SRS it is possible to set stringent requirements on developers and ensure monitoring. The following objective are right now binding for developers (2016):</p> <ul style="list-style-type: none"> • Energy efficient buildings close to passive house standard: less than 50 kWh/m2 (netto-energy - used energy) - including hot water, heating and building electricity. (That translates into less than 55 % of the national building codes.)



	<ul style="list-style-type: none"> • Electricity used for buildings and construction need to meet the requirements for eco-labelling. (voluntary: household and commercial electricity) • Local production of renewables on buildings: either 2 kWh/m² for electricity or 6 kWh/m² for heating. • The existing buildings will be made energy efficient in connection with major renovations which means a 50 % reduction of bought energy after refurbishing <p>The PSUD is since 2010 integrated into the City's system of governance and follow-up of operations and economy, ILS.</p> <p>Right now, the PSUD is revised and improved and the update is expected to get decided upon by the city council by 2016/2017.</p>
<p>Key benefits</p>	<p>Dynamic steering document commissioned by the city council in 2010</p> <p>Common vision between the city administrations and utilities by cross departmental collaboration</p> <p>5 different expert groups setting requirements for developers and contractors (around 10 focus areas and 45 requirements, whereas 9 are focusing on energy)</p> <p>City, as a land owner, sets requirements in development agreements and tendering documents</p> <p>Continuous monitoring and feed-back is part of the contract and ensures that vision and targets are to be met</p> <p>Results are published in each stage</p> <p>Capacity building programmes for developers</p> <p>Stringent requirements are set on around 50 developers, around 3000 apartments.</p>
<p>Status (planned/in-use)</p>	<p>In-use</p>
<p>More info</p>	<p>www.stockholmroyalseaort.com/en/</p>
<p>City</p>	<p>Stockholm</p>



4. Design and implementation phase

Environmental Impact Assessment – Energy Criteria	
Purpose of the element	The Environmental Impact Assessment (EIA) for urban development projects covers all environmental topics. Energy relevant topics are emissions, mobility, land use and energy concept. It is mandatory for urban development projects with a surface of at least 15 ha and a gross floor area of more than 150.000 m ² . It is based on a national law according to the European Directive for EIAs. This instrument was selected as a tool because of its usefulness to assess energy issues.
Description of the element	Energy relevance: The developer has to provide an energy concept for the area to ensure an energy supply for heating according to the state-of-the-art in Vienna. Therefore, the emissions for heating are limited to 140 g CO ₂ /kWh (final energy consumption for heating as technical state-of-the-art) as well as 75% of the heating demand should be covered by renewables (regarding the technical and economic feasibility). This threshold avoids the use of gas! The defined criteria could be changed for other areas in the perspective of the state-of-the-art. For the energy part of an EIA the Department for energy planning (MA20) is the public authority for defining the state-of-the-art of the energy supply and checking the developer's energy concept.
Key benefits	
Status (planned/in-use)	
More info	Applying the CO ₂ -threshold for heating as state-of-the-art technology for energy in an EIA is technology-neutral and enables different kinds of solutions. This kind of threshold approach could be used in other instruments such as urban contracts as well.
City	Vienna



5. Operational phase

Operational phase includes inspectio and monitoring, as detailed in section **Fehler!**
Verweisquelle konnte nicht gefunden werden.

Stockholm Royal Seaport model for monitoring	
Purpose of the element	<p>The Stockholm Royal Seaport (SRS) model for monitoring (so called "the Sustainability portal") is a web based database used for performance reporting and monitoring with regard to the sustainability requirements in the development agreements in the Stockholm Royal Seaport. The main objective of the database is to enable a more systematic, structured and fair follow-up process and to provide a tool to gather and store all information related to that process in one single place. The tool also provides the opportunity to withdraw results from registered data to different kinds of reports that can either give a quick overview or more in-depth results of the performance on a number of sustainability indicators.</p>
Description of the element	<p>Every developer is given access to the database and fills out one digital form for each follow-up occasion, in total five forms (distinct stages) during the whole development and building process, from the early program document to the finished building that has been in use for two years.</p> <p>Each answer (with belonging documents such as calculations, drawings and key performance indicators) is reviewed and assessed by an expert who concludes if the requirements are met or if supplements are needed. When all requirements are fulfilled, the form is approved and the information is registered in the database.</p> <p>There are also functions in the database which requires the developer to report deviations from the requirements. The system allows a good control of the developers' performance. It also gives a continuous feedback to the development administration (responsible for the performance) which can readjust its decisions and formulate new goals, instruct to find better indicators and give direct commands to</p>

	<p>administrations and companies where goals and objectives are not fulfilled.</p> <p>In terms of energy and planning there are so far good experiences with this system. The SRS model for monitoring is continuously developed and in the future, different calculations might be done, e.g. CO2-calculations, to assess environmental performance for the city district but also to benchmark against other city districts. F</p> <p>urthermore, all calculations, drawings, key-performance indicators, that are uploaded in the model can be subject for further research in the future. The city is right now investigating in which extent the SRS model for monitoring could be used in even other development projects within the city.</p>
Key benefits	<p>web-based IT-tool (no real-time)</p> <p>coordinated and developed by the city in close cooperation with the system owner</p> <p>5 focus areas and 45 requirements, whereas 9 requirements for energy (e.g. performance indicators)</p> <p>self-declaration by developers during five different stages</p> <p>deviation system included in the system in order to predict and prevent deviations</p> <p>feedback-processes to developers and city representatives</p> <p>continious evalutaion of requirements and results by expert groups within the city</p> <p>publication of results in each stage</p>
Status (planned/in-use)	In-use
More info	http://bygg.stockholm.se/Alla-projekt/norra-djurgardsstaden/In-English/
City	Stockholm

