TRANSFORM

Intensive Lab Session Vienna

9th – 11th September 2014

Smart Urban Lab aspern Seestadt

Smart Urban Lab Liesing-Groß Erlaa

Conclusions Working Group B

Markets and Governance - 'smart' framework conditions

Problem statement

by Wien 3420 aspern development AG – Claudia Nutz (see presentations 04 and 02)

As described in the working group A problem statement, market conditions have changed recently, the city´s budget restrictions have become harder, and the energy/CO_2 reduction targets seem to have become even more difficult to achieve.

While the aspern Seestadt Masterplan is able to define the proposed urban development and the transport system, options for the aspern Seestadt development corporation (named 'Wien 3420') to implement a future smart energy system remain quite limited - vis á vis energy system providers, building developers and new corporations to be settled in. So far, only indirect approaches have been possible to use in order to provide a smart and sustainable energy system, e.g. using the legal framework of the required Environmental Impact Analysis as instrument to set certain standards for the energy system.

Future 'smart' urban development, however, would require instruments directly dealing with the energy systems to be installed, defining in a binding way the contributions from the individual parties: City, energy system providers, building developers, tenants and homeowners in their roles as consumers and (energy) producers. To realize the energy system conceived in the Implementation Plan, a binding arrangement between these parties is needed: A commitment to invest and operate a system designed with respect to reducing fossil fuel inputs and CO_2 emissions, allowing for the feed-in from individual producers and flexible enough to make future adaptations possible.

Guiding questions

- *How to create a binding strategy and agreement between energy system providers, the local government of Vienna, the Wien 3420 and individual building developers, firms/businesses to be settled in?*

- *What processes and legal instruments could be used to guide - in a binding way - the investments of developers, firms and energy system providers to realize 'smart energy' scenarios?*

Assignment

Using the energy system scenarios of working group A as a background, the aim of working group B is to discuss innovative concepts and instruments for smart energy planning and implementation.

In Vienna, a new building code, the Urban Development Plan 2025 and the Smart City Framework Strategy have been passed in June 2014, providing new elements to create such binding solutions. Examples from other countries and Transform partner cities shall be used as creative inputs to design a toolbox for future implementation.

Findings

(1) Overall city targets regarding energy and the Environmental Impact Assessment (EIA) for aspern Urban Lakeside Northern part
(2) Constellation of institutions and existing instruments for an energy system agreement
(3) Challenge of financing - Business models
(4) Comparison of procedures and approaches from TRANSFORM partner cities

1. Overall city targets regarding energy and the Environmental Impact Assessment (EIA) for aspern Urban Lakeside Northern part

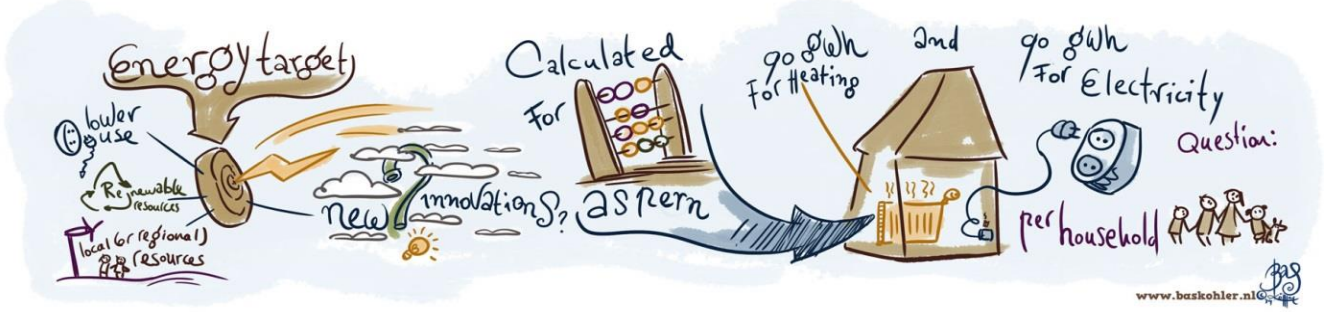
i.a. Local Input by Municipal Department 20 – Energy Planning (see presentation 07)

Starting point of the group B work was with the development of the "minimum scenario" made experience that the method given in phase 1 (EIA with designation of district heating only) will not be applicable in the phase 2 anymore. This has several reasons, above all the procedure itself does not suit to get a process for a Smart city energy system started and to provide continuously innovation and improvement (horizon of implementation: 15 years). Also Wien Energie has expressed the insecurity regarding the planning parameters and has shown with big restraint regarding to the district heating extension.

The overall demand at aspern Urban Lakeside comes to ca. 90 GWh for heating, cooling and district heating. The aim is to realize an ambitious energy demand system with a maximum use of on-site potentials to improve the combined CO_2 benchmark of 150g CO_2 emissions per kWh as city average of sources. So this benchmark is not the goal but maximum level. Components which are not allowed are coal and fossil oil. With a smart energy scenario the overall city targets shall be achieved as well. These are i.a.:

- A maximum of a primary energy input of 2000 watts per capita
- An increase of energy efficiency and decrease of final energy consumption per capita in Vienna by 40% by 2050 (compared to 2005)
- And a share of 20% in 2030, and 50% in 2050 of Vienna's gross energy consumption originates from renewable sources.

In addition to that the building developers need to operate within tight construction cost limits. For aspern Urban Lakeside 80% of "affordable housing" is foreseen which means energy costs shall not exceed existing local price levels for district heating.

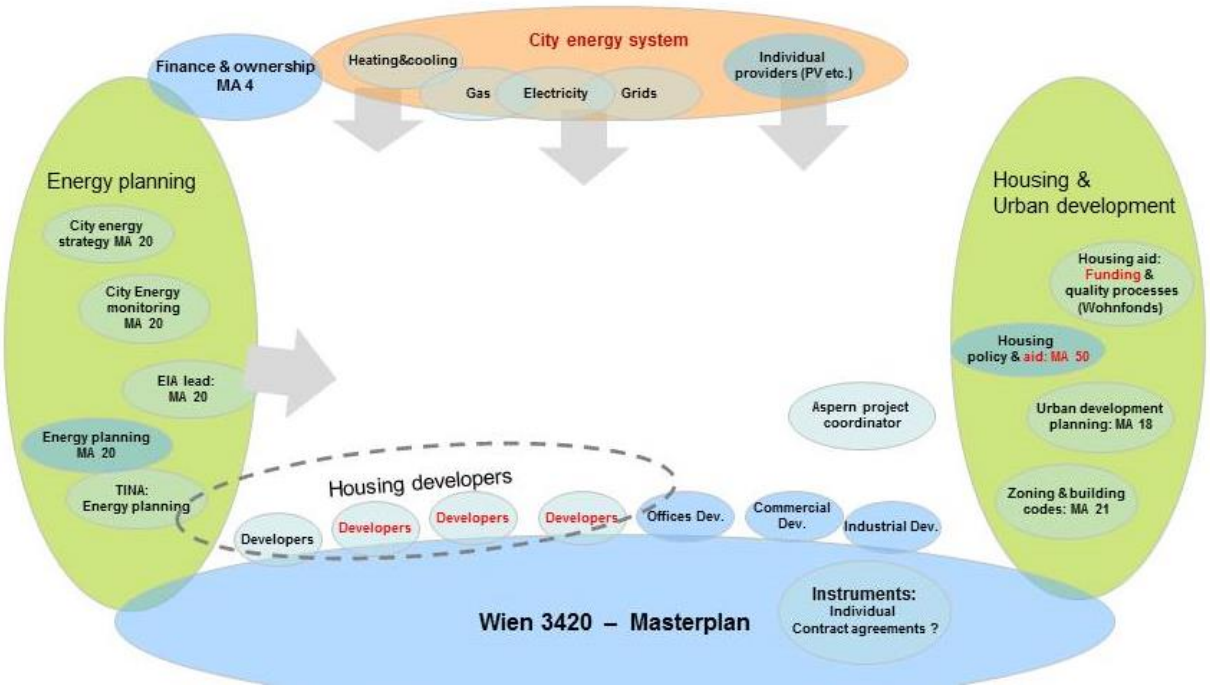


2. Constellation of institutions and existing instruments for an energy system agreement

With Input by Christof Schremmer (see presentation 10)

For the development of aspern Urban Lakeside many measures are fixed in the masterplan (like mobility and collective parking infrastructure, green and public space or rainwater usage) but there is no commitment for an overall binding energy objective in the area yet.

As the following graphic shows various institutions are involved or need to be involved in the development of an energy system agreement at aspern Urban Lakeside. First of all Wien 3420 aspern development AG is in charge of the master planning, the distribution of building plots and the realization of technical infrastructure. Besides them there are different institutions from the Municipality responsible for housing, urban development, energy planning and finance as well as the local energy supplier WienEnergy who is part of the Utility Service Wiener Stadtwerke and of course the housing developers.



Institutional framework for an energy system agreement at aspern Urban Lakeside

Existing and potential instruments

- Building standards for construction
- Energy efficiency directive – Austrian building standards binding: near zero standard for housing from 2018
- Zoning: Building envelope defined
- Housing aid
- Energy standards as set overall, no additional objectives

Options for energy system agreements

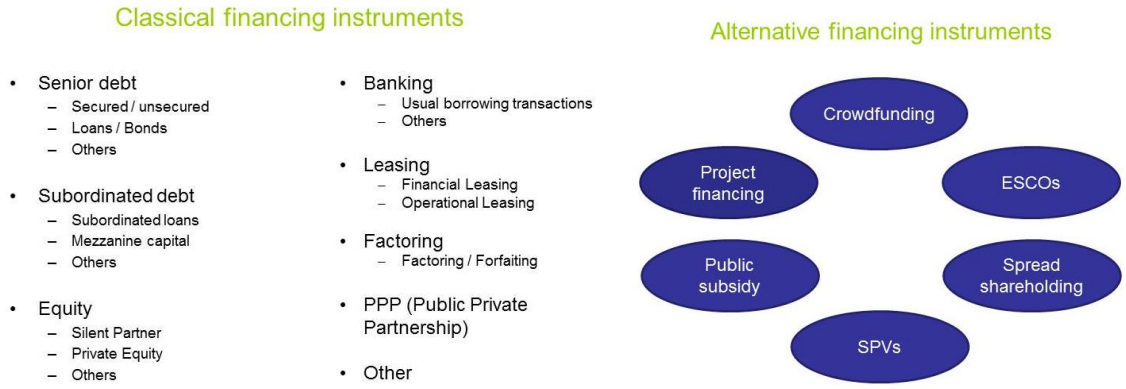
- Building competition: Additional requirements can be set (e.g. design, public spaces etc.) – 80% of all housing in Aspern Urban Lakeside
- New Zoning Law allows for civil law contracts between city and developer (→ to set time frame for construction, e.g., but open for other content)
- Missing link: Agreement Master developer 3420 - Energy system providers

3. Challenge of financing - Business models

With Input by Gerhard Schumacher (see presentation 11)

The main challenge for aspern Urban Lakeside is to decide about an investment strategy in an energy system now, with high uncertainties about future (still unknown) technical options during the 10-12 year implementation phase of the urban development area. Market conditions have changed recently and the city´s budget restrictions have become harder. To implement a future smart energy system vis á vis energy system providers, building developers and new corporations to be settled in. To develop instruments directly dealing with the energy systems to be installed, defining in a binding way the contributions from the individual parties: City, energy system providers, building developers, tenants and homeowners in their roles as consumers and (energy) producers.

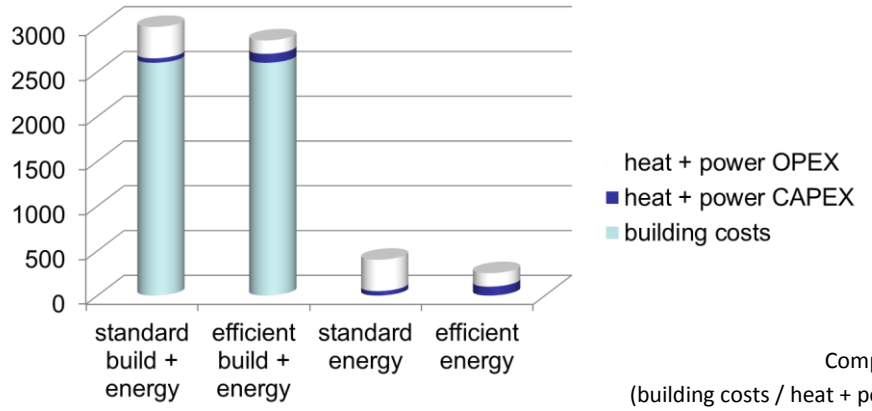
As result a binding arrangement between these parties is needed: An arrangement allowing feed-in from individual energy producers and flexible enough to make future adaptations possible.



Funds can be channeled through specialized funding bodies such as **energy service companies (ESCOs)** who then finance the investments and have the required specialized knowledge and expertise to implement such projects. These companies can organize a large portfolio of projects, thus agglomerating small projects into a large one, spreading the risks and setting up the cost recovery mechanisms. Risk mitigation strategies include Energy Performance Contracting (EPC) where the ESCO takes the responsibility to achieve the agreed savings objectives and is directly or indirectly compensated through the savings achieved.

A **SPV (Special purpose vehicle)** is a legal entity created to fulfill narrow, specific or temporary objectives and may be owned by one or more other entities. Certain jurisdictions may require ownership by certain parties in specific percentages.

Typically a company/investor transfer assets to the SPV for management, or use the SPV to finance a large project without putting the entire firm at risk. SPVs are also commonly used in complex financing transactions to separate different layers of equity infusion. They are an integral part of public private partnerships common throughout Europe which rely on a project finance type structure. SPVs can be used in order to run tailor-made business and financing models for urban development, renewable energies and energy saving projects.



Comparison overall development costs
(building costs / heat + power CAPEX / heat + power OPEX)

- The rough estimate of the overall development costs illustrates:
  - The investment in heat + power system amounts only to a small part of the overall development costs
  - The possible saving in the operating energy expenses (OPEX) over-run the higher capital costs (CAPEX) for the efficient energy system
  - CO_2 abatement cost and other off-balance advantages are not considered

- The best possible financing model for an efficient heat + power system might therefore consist of:
  - Special structure (SPVs or ESCOs)
  - Supported by diverse financing instruments and public subsidy
  - Tenants should have pre-emption right in case a spread shareholding or crowdfunding model will be used

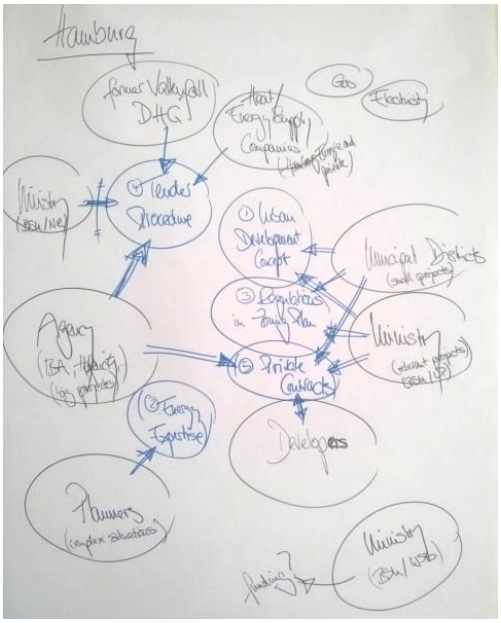
4. Comparison of procedures and approaches from TRANSFORM partner cities

First, the question to the partner cities was to describe the existing and usual procedure of energy planning within urban developments.

- *Who are the players and institutions? What kind of agreement is made? What kind of comprehensive energy planning is realized?*

Hamburg *(see also presentation 08 by Jan Gerbitz)*

- The model depends on the scale of projects:
  - small scale: municipal department
  - more relevant: ministry for urban planning and environment (BSU)
  - huge relevance e.g. HafenCity, Hamburg-Wilhelmsburg etc.: own development agency



- Procedure
  1. Urban Development Concept (energy expertise from external planners to decide what kind of connection to which grid)
  2. Regulation in Zoning Plan
  3. Private Contracts
  4. Tender Procedure

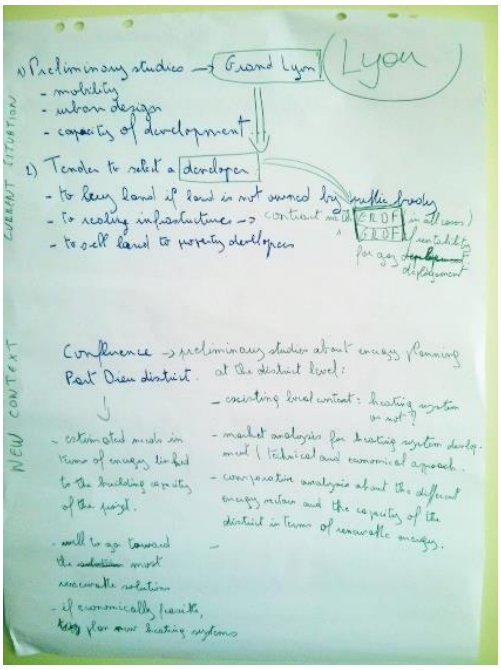
- Outstanding building standards
  - HafenCity Ecolabel: similar to DNGB standard, 30% of all building shall reach the Gold standard
  - IBA Building Standard: Every IBA buildings has to be 30% better than the National standard
  - Quality agreement with investors (IBA excellence criteria) with an external quality assurance management

- Tendering of District Heating Systems: Possibility for feeding-in by producers with fee for storaging

Lyon

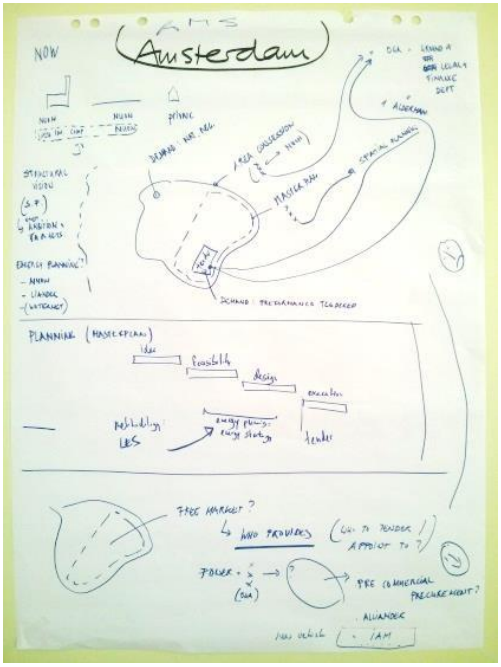
- Current situation
  1. Preliminary studies by Grand Lyon
     - Mobility, Urban Design, Capacity of Development
  2. Tender to select a developer
     - To buy land if it is not owned by the public body
     - To realize technical infrastructure a contract with ERDF (in all cases, is obliged to electricity grid)/ GRDF (for gas grid) is concluded
     - To sell the land to property developer

- New context for La Confluence and La Part Dieu
  - No preliminary energy studies
  - New heating systems
  - Object to supply energy on a district level, heating and cooling system for big urban projects
  - Comprehensive tender for La Part Dieu?



Amsterdam

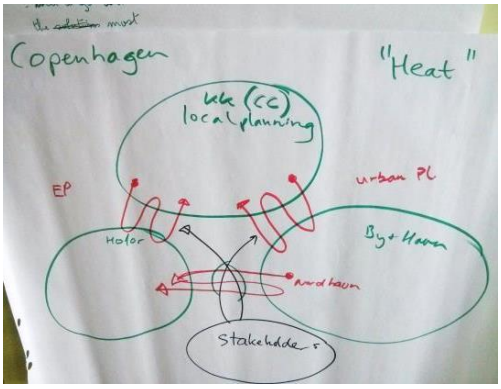
- The Planning process is driven by governmental players
- Missing link between municipal department for planning and energy supplier like Alliander



Copenhagen

- Major players for Heating:
  1. City (does typically do the local planning, dialogue with Hofor for energy planning)
  2. By&Havn (city – By&Havn dialogue for urban planning)
  3. Hofor – energy supplier

- A **Copenhagen Nordhavn** energy agreement with all relevant partners failed because it was not a win-win-win-win situation
  → Lesson to learn for Vienna



For the following step the four TRANSFORM partner cities that were represented at working group B were invited to work an approach for based on the procedures in the other TRANSFORM cities and on their experiences.

- *What kind of procedure would you recommend to the case of aspern urban Lakeside to make an ambitious energy agreement with all involved parties? Which are the most important steps forward? And who are the stakeholders that shall be responsible?*

Approach by Copenhagen

1. City identifies technical solutions (public Workshop)
2. Consultants
   - Socio-economic analysis
   - Financial analysis
   - Impact on consumer prices
3. Public Hearing
4. City decides technical solution
5. City calls Expression of Interest (EOI)
6. Tender documents
7. Tender process
8. City selects winner (with transparent criteria)

Approach by Hamburg

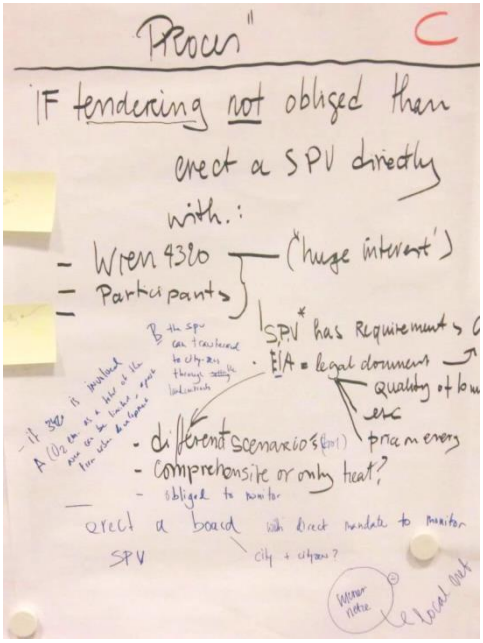
1. Wien 3420 in corporation with MA 20 (Energy Planning) delegates an extended energy analysis
   - Energy demand/ denseness
   - Possible CO2 numbers for potential solutions
   - Without costs
   - Suggestion for a connected area for District Heating
2. MA 21 (District Planning) defines a connection area in Zoning Plan or confirms to contract investors to be connected to the grid
3. Wien 3420, MA 20, Ma 21, MA 50 (City Housing), Wiener Stadtwerke decide about tender criteria and their relevance, e.g. CO2 targets
4. Tender procedure for concession
5. Realization
6. Urban development contracts between MA 21 and investors
   (if there is no regulation in Zoning Plan)

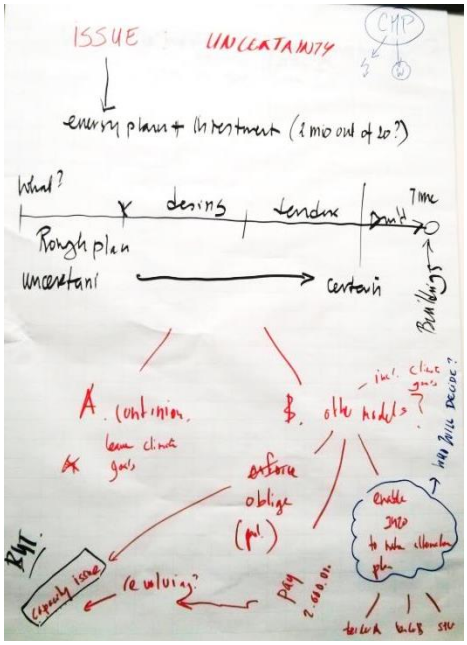
Approach by Amsterdam and Lyon

- If tendering is not obliged then erect a SPV (Special Purpose Vehicle) directly with:
  - Wien 3420
  - Participants

  and a board with the city and citizens with a direct mandate to monitor to guarantee certainty for all parties which is needed for investments.

The Environmental Impact Assessment as a legal document can be linked to the quality of housing, the price of energy etc.





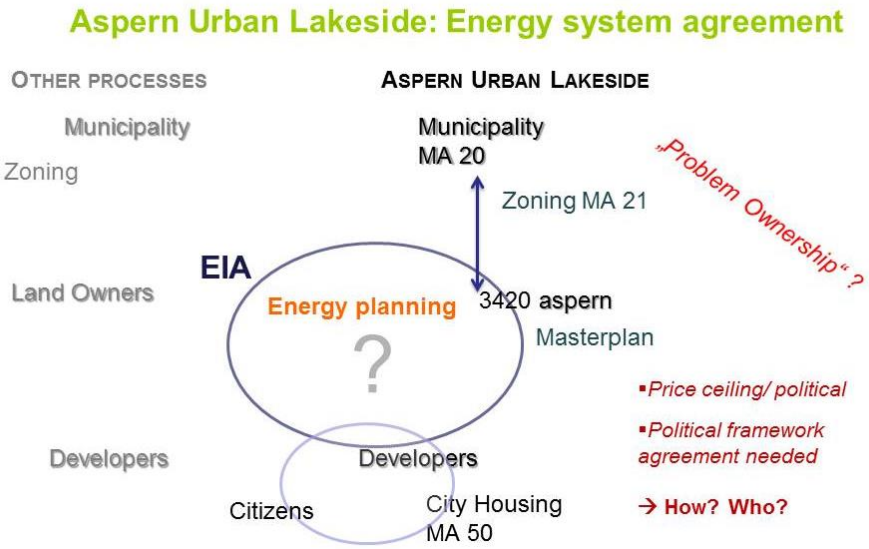
Resume and Synthesis

It is suggested on the part of the group B to start a co-operative process of development and concept process which brings the developed solutions by means of contractual hedge to calculable implementation models. Wien 3420, the Municipality of Vienna and the energy supplier as well as the developers and investors need a calculable frame for their investments.

The procedures applied there in each case were shown with the TRANSFORM partner cities represented in the group and were compared to the Viennese situation.
Besides, there are three key elements:

- Technical concept of alternatives and system choices by the City of Vienna
- Tendering of well-chosen concepts in syndicates of energy providers based on the aim values and concepts of the pre phase
- Juridical security of the implementation by concession awarding, urban planning contracts, connection obligations or other procedures

For the realization in the case to Aspern Urban Lakeside it was suggested that the technical / economic options are plumbed in an own procedure, then with the stakeholders the tendering terms (perhaps also for sub- areas) are defined and the results then obligingly become realized by arrangements or contracts. Also the option of an own society for the energy supply system at Aspern was estimated as relevant.



As a frame for this approach a political agreement which encloses the suggested opening of the process (tender procedure for integrated energy systems) and the juridical security possibilities is required. Besides, it was also recommended to conceive the procedure to the definition of energy price limits under the point of view of the in future substantially lower energy consumptions in smart new building areas anew.

Participants of Working Gorup B

Jørgen Boldt	HOFOR - Copenhagen
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Christof Schremmer	OIR – Austrian Institute for Regional Studies and Spatial Planning
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