

Smart Energy Supply Conception for the urban development area of aspern Seestadt

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TRANSFORM+ as a national support project for the *EU-project (FP7)*

*TRANSFORM*ation agenda for low carbon cities

FP7 project TRANSFORM

Transformation agenda (TA) for 6 European cities – Vienna ... and Amsterdam (Leadpartner), Copenhagen, Genoa, Hamburg, Lyon

Framework of Implementation Plans for Smart Urban Labs in the 6 EU cities

Decision Support Model:
Definition of needs and development of the model



Support
Coordination
Impulse



Elaboration of documents for Vienna

national project TRANSFORMplus

Smart City Framework-Strategy
Transformation Agenda for Vienna

Implementation Plan (IP) for aspern Seestadt (and Liesing)

Input for Decision Support Model: local support and data collection/analysis

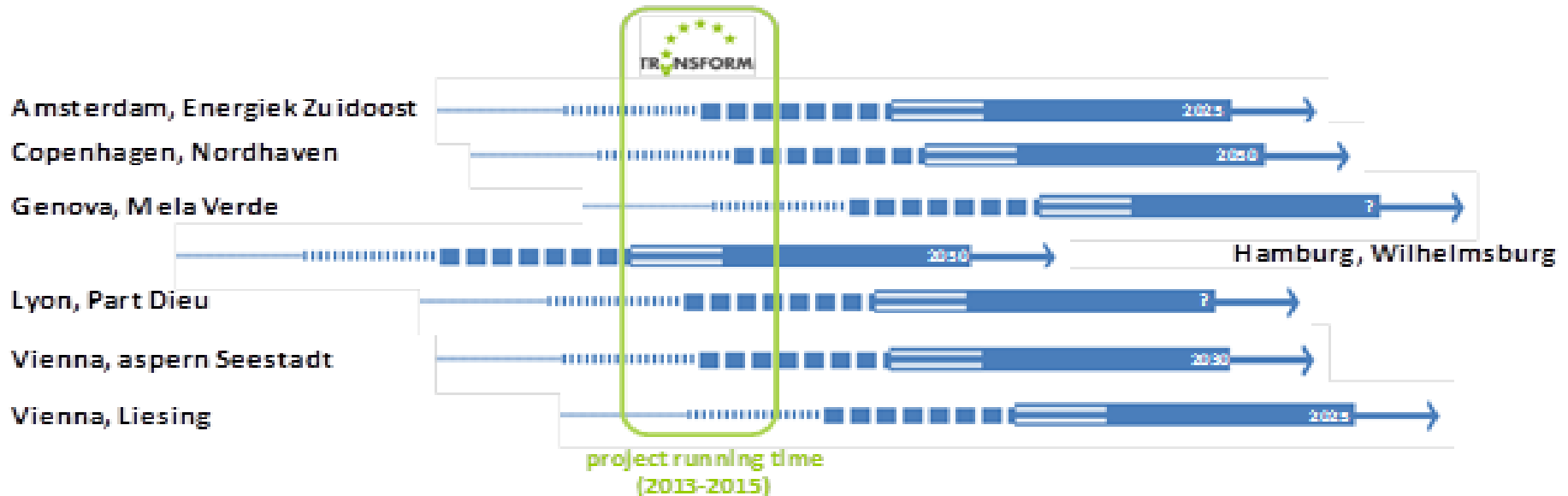


Our Definition of smartcities



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Smart Urban Labs – realization phases



Scope of Implementation Plans

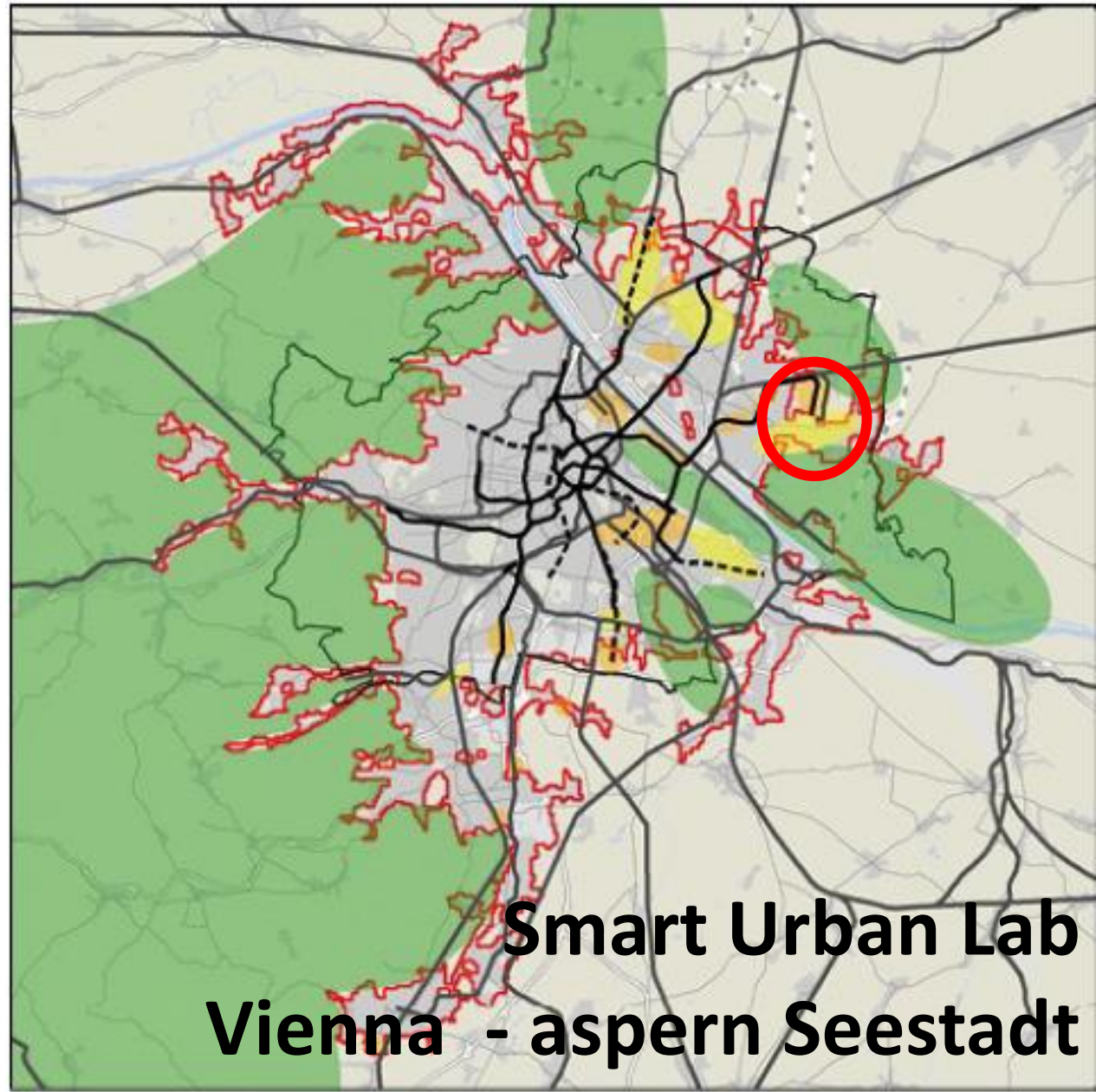
- Status quo and development stages (10 -15 year perspective)
- Process, institutional framework and actors, political commitment
- Implementation strategies and measures
- Social impacts of new developments
- Investment and running costs, public contribution and business models
- KPIs at beginning and end-state, total and per capita (population, jobs)

Smart Urban Lab aspern Seestadt 2016



**Urban development
area:
+ 26.000 inhabitants
+ 23.000 jobs**

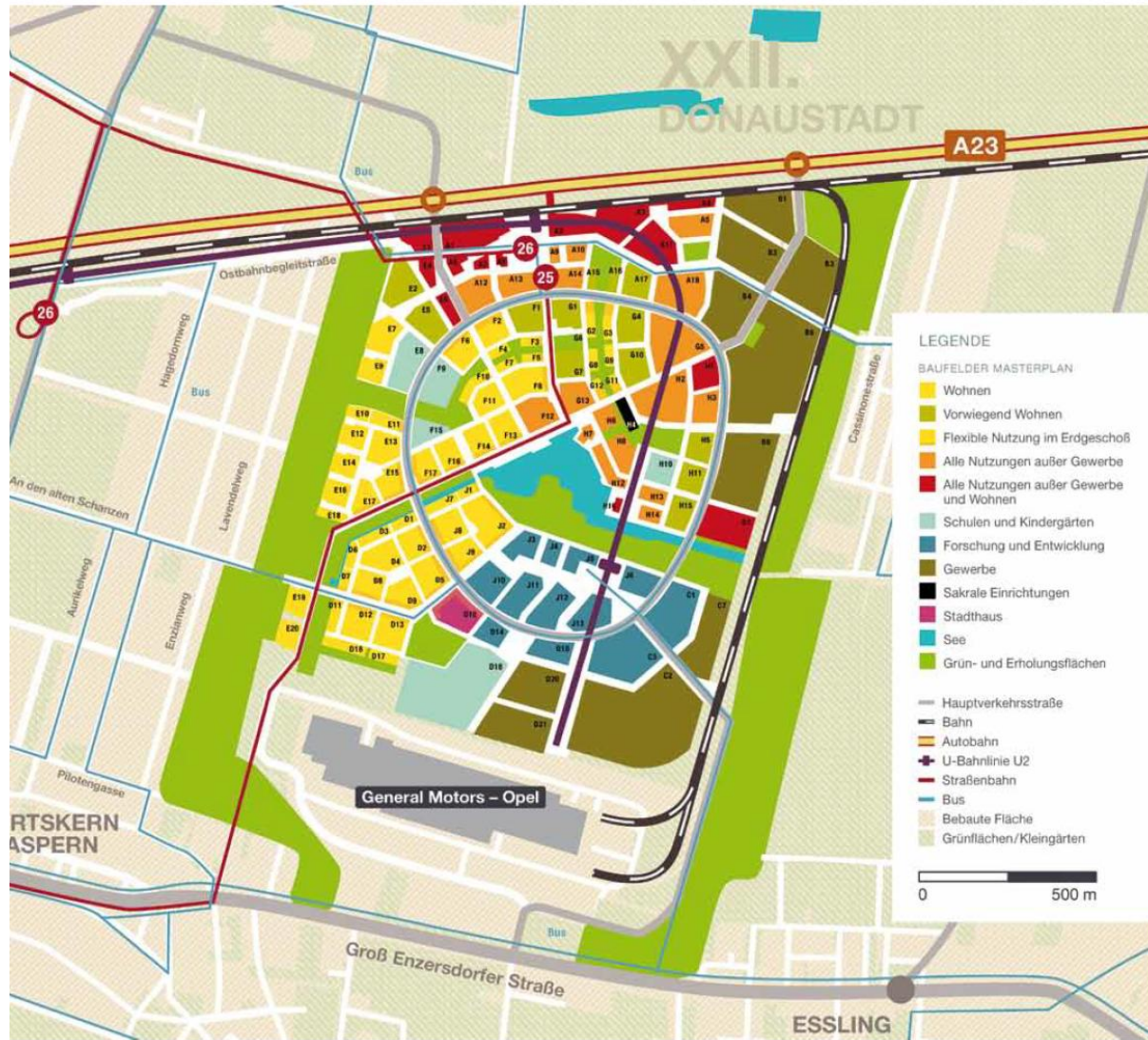
**2013:
Plans and
approaches for
mobility, public
space, neighbour-
hood management**



Masterplan → Implementation Plan

2013:
Plans and approaches for mobility, public space, neighbourhood management

Energy planning?



Smart Urban Lab aspern Seestadt project partners – „energy group“

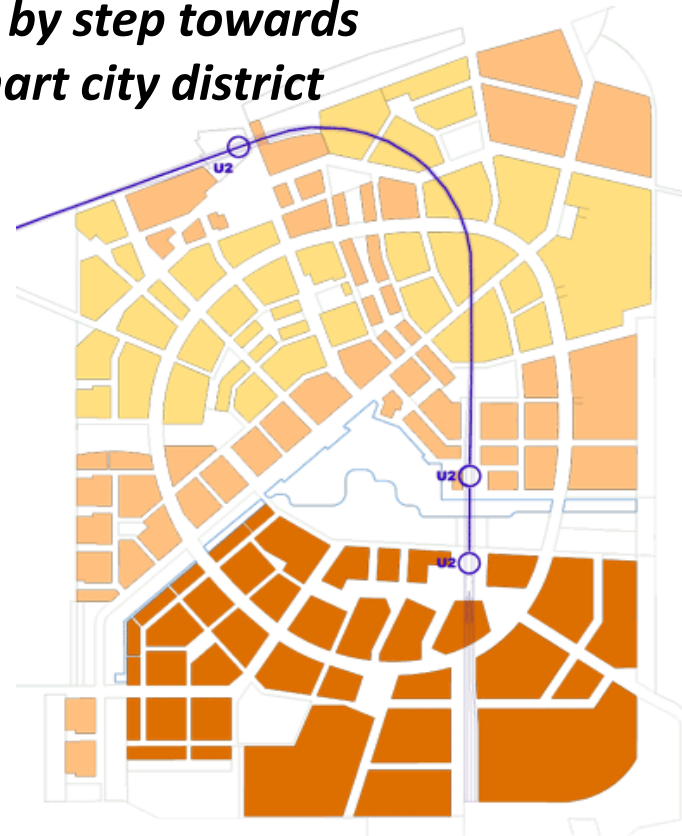
- **Project Co-ordinator: OIR** - Österreichisches Institut für Raumplanung (ÖIR GmbH)
- **City of Vienna:** Departments for urban development and urban planning (MA 18), energy planning (MA20), land use planning (MA21)
- **Development company:** Wien 3420 Aspern Development AG
- **Energy utilities of Vienna:** Wien Energie GmbH, Wien Energie Stromnetz GmbH, ENERGIE-COMFORT Energie- und Gebäudemanagement GmbH
- **Researchers and consultants:** AIT Austrian Institute of Technology GmbH (Energy Department), ETA Umweltmanagement GmbH

Smart Urban Lab aspern Seestadt – energy planning

Overall objectives

- Contribution to the quantitative targets of the Smart City Framework Strategy
 - low energy consumption, high share of RES (local), low CO₂ emissions
- Contribution to the environmental impact assessment (EIA)
 - “reality check”

Step by step towards a smart city district



- P1: 2009 -2017 > **Adaption- flagship project**
- P2: 2017 -2022 > **Transformation**
- P3: 2022 -2030 > **Full Integration**

Energy Supply Conception for aspern Seestadt

Challenges for energy planning in the area

- different interests and conflicting targets: housing companies, the city of Vienna and the development company, energy utilities, etc.
- local RES potential: limited usability of groundwater and near surface geothermal potential (down to 300m)
- water rights: no easy option for a common perspective for the use of groundwater and geothermal potential (first come first serve principle)
- waste heat potential: high uncertainties due to lacking knowledge on future industrial branches / companies in the area
- changing energy markets and legal frameworks (⇒ cost structures, funds, legal instruments and restrictions, etc.)
- ***at the same time: need for determining an energy concept for the area (for the energy impact assessment)***

Szenarios of energy supply (focus heat)

- Basic scenario: low temperature district heating networks (gas driven in the East and connected to Viennas large DH in the West)

Smart City scenarios (adding to the basic scenario)

Priorities: use of local RES – flexibility – allowing for stepwise development

- Lower heat demand level in all SC scenarios (-21%)
- SC scenario 1 (-29% CO2)
plus groundwater-network (offices)
plus geothermal loops (supporting hot water provision)
- SC scenario 2 (-47% CO2)
plus solar thermal energy (industry),
plus PV for heat pumps (loops, groundwater)
- SC scenario 3 (-74% CO2)
plus biomass for base load (instead of gas)



Conclusions and experiences

Need for an integrated, area based energy planning for Vienna

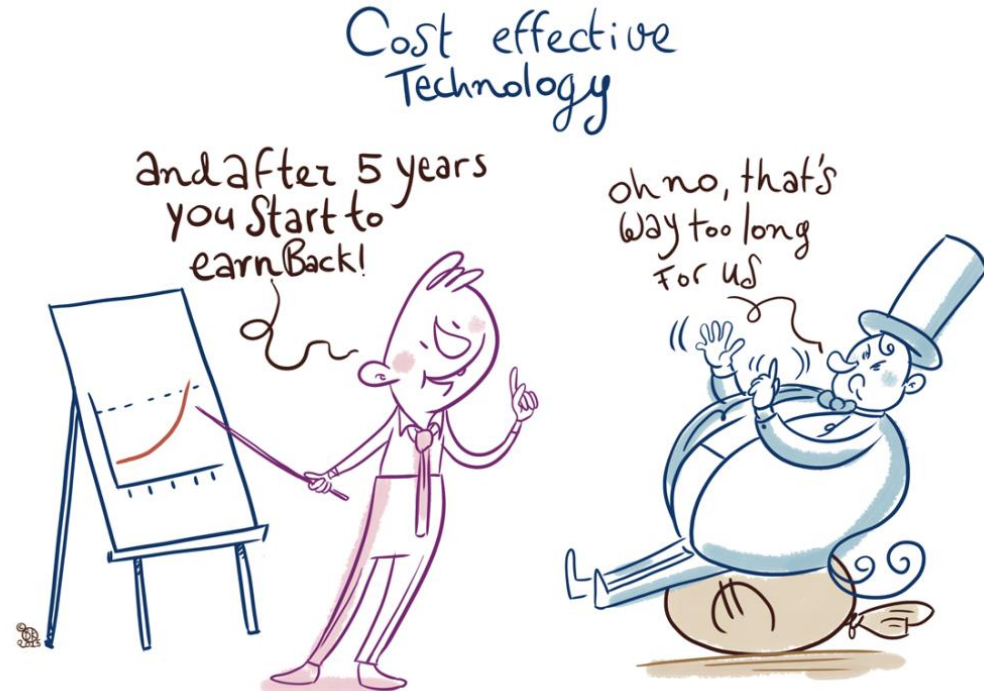
- Co-ordination of energy planning of single actors/stakeholders within an area.
- The definition of a quantitative target for urban areas would help to go for the overall objectives.
- It needs a decision on overall prerequisites for planning → specifications and guidelines for an area



Conclusions and experiences

Need for an area based energy planning for Vienna

- Finance, legal requirements and reliability of planning are key issues for the implementation (for all stakeholders).
- New approaches for financing and the question of short term investment costs versus (long term) live cycle costs are needed.



Conclusions and experiences

Contribution to the Smart City Framework Strategy of Vienna of aspern Seestadt

- For large urban quarters with high densities (as e.g. aspern Seestadt) the total energy demand is much higher than the local renewable energy potential.
- Local renewable energy potential in the city is complex to gain (geothermal heat, waste heat, etc.) and needs a lot of co-ordination.
- Therefore, the long term quantitative objectives of Vienna still form a mayor challenge in the actual implementation - also in new development areas – even more in existing areas.
- It's not only about technology and building standards – the future behaviour of inhabitants and working population in the quarter in terms of energy use will decide if we will be able to reach our goals.

TRANSFORM (FP7)

www.urbantransform.eu

Virtual handbook - www.transformyourcity.eu

Transform+ (Vienna)

www.transform-plus.at

