Vienna urban development - seestadt aspern as urban future lab

PERMACULTURE DESIGN COURSE
* 2012 * ASPERN SEESTADT

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Spatial features
Urban structure  Austria

- only 1 metropolis (Vienna) in decentral location
- few other major urban centers
- large rural areas with low population density
- high share of mountain areas
- all major urban centres within 60 km from national borders
“New” drivers for economic and urban development: Dynamic cross-border regions

C. Schremmer, Austrian Institute for Regional Studies and Spatial Planning, Vienna

Cartography: Informationsdienste GmbH
Average annual ERDF & CF commitment 2004-06 in % of GDP 2003
Population development projection 2009 – 2030:
+ 215,000 Vienna  + 200,000 ViennaRegion
(= 61% of total growth)
Main challenges for Austria
Spatial planning & regional development system in Austria - what has to be done?

- Compact urban agglomeration development, resource- and energy-efficient spatial structures for future mobility systems
- Active re-structuring of existing, inadequate spatial structures – in terms of location and in terms of building qualities
- Renewable energy production & distribution – minding natural resources, landscape and rural-urban interface qualities
- Re-grouping economic activities and residential functions – competitive locations for business, excellent public transport links, a better mix of economic, service and residential functions
- Maintain good public service provision in rural areas vs. ageing population, rising service needs and shrinking public finance revenue
Climate change agenda: Vienna summer temperatures 1970 - 2008
Austria and the Kyoto-process

**CO₂ emissions 1990 – 2006+: Off the Kyoto-target**

The Gap

- Emissions 2005: 93.2 Mio. Tonnen
- JI/CDM Programm: 77.8 Mio. Tonnen
- Kyoto Ziel incl. JI/CDM Programm: 9 Mio. Tonnen
- Kyoto-Ziel 2008-2012: -13 %, 68.8 Mio. Tonnen
Main challenges for Austria
Spatial planning & regional development - how can the challenges be tackled?

- Agglomeration development: planning, (public) real estate policy, housing policy and mobility/transport policy act focused and synergetic

- Energy & space: Thermal re-structuring of existing building is coordinated with strategies of improving local/urban spatial structures (1960ies → 2020ies !)

- Rural development: Renewable energy production strategies are being linked with agricultural policies, landscape and local development strategies

- The turnover in economic activities is directed strategically, attracting businesses to prime locations and creating modern mixed-use centres of activities (residential, economic, service functions)

- Re-organizing public service provision, esp. in rural areas: multi-purpose regional service provision instead of individual provision by small municipalities
Vienna region

Urban development approaches
Urban development plan Vienna 2005: Twin city vision of regional development
STEP´05: Priority Development Zones - Phase 1

Für die Stadtentwicklung vorrangige Gebiete - Phase 1 (bis 2010)

Abb. 40: Für die Stadtentwicklung vorrangige Gebiete - Phase 1 (bis 2010)
Quelle: Stadt Wien, MA 18, Entwurf: ÖIR, Stand: März 2005

Vorrangige Gebiete
- Bis 2010 prioritär zu entwickelnde Stadtteile

Maßnahmen bis 2010
- Straßenbau oder -neubau (Asfinag-Netz/Hauptstraßen B)
- Neubau U-Bahn
- Neubau Straßenbahn

IV-Bestand
- Anschlussstellen e-Knoten

ÖV-Bestand
- Asfinag-Netz
- Hauptstraße B
- S-Bahn
- U-Bahn

Potenzialflächen unterschiedlicher Nutzung
STEP ’05: Priority Development Zones - Phase 2

Für die Stadtentwicklung vorrangige Gebiete – Phase 2 (ab 2011)

Abb. 41: Für die Stadtentwicklung vorrangige Gebiete – Phase 2 (ab 2011)
Quelle: Stadt Wien, MA 18, Entwurf: ÖIR, Stand: März 2005

Vorrangige Gebiete
- Ab 2011 prioritär zu entwickelnde Stadtteile
- optional zu entwickelnde Stadtteile

Maßnahmen ab 2011
- Straßenausbau oder -neubau (Asfinag-Netz/Hauptstraßen B)
- Tunnellein-/ausfahrten
- Neubau U-Bahn
- Neubau Straßenbahn
- Realisierung abhängig von Gebietsentwicklung
- Bahnhof Wien – Europa Mitte

Maßnahmen bis 2010
- Straßenausbau oder -neubau (Asfinag-Netz/Hauptstraßen B)
- Neubau U-Bahn
- Neubau Straßenbahn
Vienna Urban Development Plan STEP´05: Economic development, business locations

Main economic development areas, new connectivity, new mix of functions
Vienna STEP’05: 13 Target Areas

1. City
   - Firmensitze, Wohnen
   - Tourismus
   - Weltkulturerbe

2. Prater – Messe – Krieau – Stadion
   - Event City
   - Kultur, Unterhaltung, Erholung
   - Landschaftspflege

3. U2 Donaustadt/Flugfeld Aspern
   - Stadlau/Mühlgrund, Hausfeld, Flugfeld Aspern
   - Forschung, Gewerbe, Wohnen
   - Regionorientiertes Zentrum

4. Floridsdorf – Achse Brünner Straße
   - Zentrum Floridsdorf
   - Entwicklung entlang hochrangigem OV
   - Regionale Funktion, Abstimmung mit NO

5. Siemens-Allisen
   - Nutzungsmischung
   - Forschung und Entwicklung

6. Donaufeld
   - Wohnen und Arbeiten
   - Sicherung Grünkeil, OV
   - Verbindungsbach

7. Waterfront
   - Donaukanal, Donau, Alte Donau
   - Nordbahnhof, DonauCity
   - Stadt mit Anschluss und Aussicht
   - Ökologische Bedeutung der Ufer

8. Rothneusiedl
   - Kompakte, begrenzte Entwicklung
   - Logistik, GVZ

9. Wiental
   - Westliches Tor zu Wien
   - Tourismus
   - Klimatische Bedeutung
   - Flussraumgestaltung

10. Westgürtel
    - Stadtneuerung, Freiraumgestaltung
    - Geschäftstraßenstabilisierung
    - Erhaltung von kleinem Gewerbe
    - Imageaufwertung

11. Donaukanal
    - Inszenierung der Stadt am Wasser (Wohnen, Freizeit)
    - Unternehmenszentralen
    - Ökologische Bedeutung der Ufer

12. Liesing Mitte
    - Entwicklung von Wohnbaureserven „In der Wiesen"
    - Restrukturierung großflächiger Betriebs- und Industriegebiete

13. Bahnhof Wien-Europa Mitte Erdberger Mais
    - Arsenal
    - Asparagusgründe
    - Erdberger Mais – Zweite Cityfunktion: „Central Business District“
Vienna region

Urban development scenarios
UMZ
Urban Morphological Zones

UN Habitat Definition, implemented by EEA:

Corine Landcover, max. 200m between buildings = urbanized zone
3D representation of the spatial distribution of population in 7 metropolises represented at the same scale.

Source: A. Bertaud
Background: Social Metabolism

- Social systems as thermodynamically open
- Energy and material flows into socio-economic system
- Internal energy and material flows
- Energy and material flows back to nature
- Main operationalizations
  - Material and energy flows
  - Life cycle analysis LCA
  - Stocks and flows dynamics
Vienna

- 1.8 Mio. population
- → 2050: + 35 %
- Pop.+jobs/km² in urban fabric: 7.251
BASE scenario 2050:
urban fabric + 55%
SUME scenario 2050: urban fabric + 14%
Key development strategies up to 2050:

- Inner-city, densify fringe areas, focus on main transport axes
Density 2001
Density BASE 2050
Density SUME 2050
Scenarios BASE and SUME: Growth of “urbanized zones” 2000 – 2050

- Vienna: BASE 55%, SUME 14%
- Stockholm: BASE 47%, SUME 20%
- Oporto: BASE 0%, SUME 0%
- Newcastle: BASE 7%, SUME 0%
- Athens: BASE 24%, SUME 0%
- Marseille: BASE 30%, SUME 0%
- Munich: BASE 41%, SUME 13%
Spatial development – impact on urban form

• BASE scenarios 2050 show urban spatial expansion faster than population dynamics, also in stagnant urban agglomerations

• Fast growing cities will show massive growth of their urban fabric, but they also have the greatest potential to re-focus their development (reducing land consumption) – Vienna, Stockholm

• Cities with low densities and high fragmentation need an approach focusing on attractive public transport and creating good access to centers of activities (sub-centers at transport nodes with offices, services and shops)

• Stagnant or shrinking cities have much less options for spatially relevant re-development (Newcastle, Oporto)
Vienna: Per capita energy consumption for housing and transport 2050
Final energy per capita heating & transport

Vienna

Stockholm

Newcastle

Oporto
Strategies & Policies
Key-strategies for urban development

- Re-development of existing urbanized areas with excellent public transport is the key to reduce large-scale future expansion and energy consumption

- A new policy-set beyond green-field and brown-field development is needed:
  - **Attractiveness**: better green area and open space quality in inner-city neighborhoods
  - **Densification strategies** and mobilizing building land in areas with lower densities and good access to public transport → node development
  - Building and energy-oriented renovation and reconstruction strategies

- Large scale development-projects can give an impulse to form new centers to improve the overall urban diversity pattern

- Major efforts in coupling of policies for transport infrastructure and spatially focused housing, residential and economic development is needed → links between sectoral policies and between municipalities in agglomerations
Integrative policy packages
Integrative, smart policy packages

- All new and re-development within existing urbanized areas is an opportunity to improve the status quo
- An urban agglomeration perspective (e.g. UMZ) should form the basis for coordinated policy development and implementation, using comparative, long-term metabolic scenarios for information, coordination and action
- **Agglomeration-wide governance** and decision-making is needed for implementation
- **Cross-sectoral policy coherence** is essential for impact: Integrating land-use planning with transport, legal structures and incentive patterns, energy planning, public awareness and other policy areas
Vienna
Smart city/region approach
Aspern Seestadt
Smart city&region approach

• EU Smart cities&communities initiative to raise R&D efforts, also in FP7 and Horizon, JPI Urban Europe etc.

• Part of the Europe 2020 strategy: 20/20/20% targets: Reduction of CO$_2$, share of renewable energies, increased efficiency by 2020; but: -80-90% by 2050!

• Smart City key elements:
  - low to zero energy housing
  - (decentralized) renewable energy production
  - smart grids, buffers and energy storage systems
  - smart, comprehensive energy services, interactive between system providers and users
  - integrated development of energy and transport systems
    $\rightarrow$ e-mobility, public transport, infrastructure and grids

• Urban agglomeration policy perspectives are needed to provide clear framework conditions for investments in individual properties and infrastructures
Vienna: Inner-city re-development and new “growth core”
Smart development case study areas

**Hamburg – IBA / Wilhelmsburg**

*Development Type:* Urban transformation and expansion, combining housing, industry, port, water, green and open space; one of 19 Excellent Climate neighborhoods; stepwise growth from 55,000 to 75,000 inhabitants;

*Expected Outcome:* Guided process with 100 stakeholders; 100% renewable electricity by 2025, 100% renewables for heating & cooling by 2050

**Vienna – (1) Seestadt, (2) Liesing**

*Development Type:* (1) Greenfield & Brownfield development, incl. 20k apartments, 20k work places; new public transport, social & smart technical infrastructure (2) Urban transformation in residential, industrial & service district Liesing. Close coop. between city, energy & trans. Supplier & district management

*Expected Outcome:* (1) State-of-the-art passive house & office space, energy production (geo-thermic, photovoltaic, bio-mass), smart grid, e-mobility & reduced car dependency (2) Integrated mobility concept based assessed needs incl. Car sharing, e-car, (e-)bike services and public transport.

- **Hamburg – Wilhelmsburg**: transformation of 55,000 people neighborhood to 75,000 city with 100% renewables for heating & cooling in 2050

- **Vienna**: Greenfield development area for 30,000 people and 20,000 jobs, and transformation of existing large mixed-use area
Vienna case study area
Inner-city densification/new subway lines

- Extension of floor space in cells near the new station
- Scattered development of densification, structural change and some population losses
- Concentration of structural change (office – residential)
- Extensive increase of population and floor space, some structural changes

‘Old’ urban quarters, densely built up urban stock

Partly new urban quarters, space for new developments

May 23, 2012
C. Schremmer – Austrian Institute for Regional Studies and Spatial Planning (ÖIR)
Inner-city densification/
old railway station I
Urban re-densification in areas of good transport service
Main challenges for urban development:

How can ‘urban lab’ Aspern Seestradt contribute?

- Agglomeration development: housing policy and mobility/transport policy provide coherent set of drivers for the area’s development

- Energy & space: High thermal and material quality of new buildings, for housing, offices, research schools etc. – at reasonable cost, providing for a good social mix

- Integrated production of renewable energy, esp. photovoltaic, geothermal, solar thermal

- Urban farming, gardening, landscape development as special quality feature - attractive to urban population

- Mix of housing with research and economic activities essential for the area and the districts north of the river Danube

- creating modern mixed-use centres of activities (residential, economic, service functions)