SUSTAINABLE HOUSING AND URBAN DEVELOPMENT

Dr Oleg Golubchikov
Outline

• Sustainable housing and cities
• A narrower focus: energy
• Policy dimensions
Why sustainable housing?

• Different understandings of “housing”

• Lowest common denominator: housing output (e.g. next slide)

• SH: more holistic approach: housing is deeply connected with the economy, social development, urban fabric

• Housing is more than building buildings
Sustainable Housing Policy

**Environment**
Housing system to use resources prudently and efficiently, limiting ecological footprint

**Equity**
Housing system to ensure everyone has access to a decent, safe, and affordable home in a desirable place

**Economy**
Housing system to support a strong, responsive and competitive economy

Policy delivery

Multi-level, multi-stakeholder governance, cross-sectoral cooperation

Tools: action plans, housing strategies, building regulations, spatial planning, land provision, funding, capacity building
Egan Wheel: sustainable communities

Source: Office of Deputy PM, UK
Sustainable Communities

Well Run
When decisions are made about a community, local people are included in the decision-making process. The community enjoys a sense of civic values, responsibility and pride.

Well Connected
The transport facilities help people gain transport access and encourage walkability and cycling.

Well Served
High quality services for families and children (including early years, youth and older people’s services) are accessible and responsive to the needs of the whole community.

Well Designed
A sense of place is an integral part of the community, for people and local life. The transport facilities and local public transport services help people to get around easily.

Active, Inclusive & Safe
A community spirit is created; people are engaged, involved and have a sense of belonging. Active, inclusive and safe communities help people gain transport access and encourage walkability and cycling.

Social & Cultural
The community spirit is created; people are engaged, involved and have a sense of belonging. Active, inclusive and safe communities help people gain transport access and encourage walkability and cycling.

Governance
When decisions are made about a community, local people are included in the decision-making process. The community enjoys a sense of civic values, responsibility and pride.

Transport & Connectivity
The transport facilities help people gain transport access and encourage walkability and cycling.

Services
High quality services for families and children (including early years, youth and older people’s services) are accessible and responsive to the needs of the whole community.

Environment
People of all ages, races, cultures, sexes and abilities are given access to services, jobs and education in the community. This fairness is not a luxury, it is normal to everyone. This fairness lasts to provide opportunities for future generations.

Equity
People of all ages, races, cultures, sexes and abilities are given access to services, jobs and education in the community. This fairness is not a luxury, it is normal to everyone. This fairness lasts to provide opportunities for future generations.

Economy
Local people have the opportunity to create and have control over their lives, in a way that is environmentally sustainable. The community is an active participant in the local economy, and community benefit is maximised through local businesses and services.

Housing & Built Environment
People of all ages, races, cultures, sexes and abilities are given access to services, jobs and education in the community. This fairness is not a luxury, it is normal to everyone. This fairness lasts to provide opportunities for future generations.

Source: ASC (2006)
## Multi-scale framework for sustainable housing policy

<table>
<thead>
<tr>
<th>Nation (regulation and oversight)</th>
<th>City (planning and implementation)</th>
<th>Neighbourhood (building and living)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environmental</strong></td>
<td></td>
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<tr>
<td>• Planning and building regs</td>
<td>• Appropriate location, density</td>
<td>• Ensuring resource efficiency</td>
</tr>
<tr>
<td>• Climate and energy policies</td>
<td>• Ecosystem protection</td>
<td>• Green design, greening</td>
</tr>
<tr>
<td>• Resource efficiency standards</td>
<td>• Low-carbon infrastructure</td>
<td>• Preventing hazardous materials</td>
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<tr>
<td>• Hazards prevention</td>
<td>• Transport infrastructure</td>
<td>• Climate/disaster protection of buildings</td>
</tr>
<tr>
<td>• Mainstreaming green building</td>
<td>• Waste management</td>
<td>• Recycling provision</td>
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<tr>
<td><strong>Social</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Participation laws</td>
<td>• Integrated communities</td>
<td>• Health, safety, well-being</td>
</tr>
<tr>
<td>• Right to (adequate) housing</td>
<td>• Urban facilities, public spaces</td>
<td>• Access to social and hard infrastructure</td>
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<tr>
<td>• Affordable decent homes</td>
<td>• Integrating housing in urban areas</td>
<td>• Sense of community</td>
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<tr>
<td>• Social housing frameworks</td>
<td>• Slum upgrade</td>
<td>• Accessible/inclusive buildings</td>
</tr>
<tr>
<td><strong>Cultural</strong></td>
<td></td>
<td></td>
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<tr>
<td>• Education and information</td>
<td>• Urban creativity, diversity</td>
<td>• Aesthetics of the built environment</td>
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<tr>
<td>• Heritage protection</td>
<td>• Shaping values and norms</td>
<td>• Culturally-responsive design</td>
</tr>
<tr>
<td>• Links with cultural economies</td>
<td>• Protecting housing heritage</td>
<td>• Helping community creativity</td>
</tr>
<tr>
<td>• Indigenous, local knowledge</td>
<td>• Traditional building techniques</td>
<td>• Assisting migrant transition</td>
</tr>
<tr>
<td><strong>Economic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Budget and fiscal capacities</td>
<td>• Infrastructure, land supply</td>
<td>• Housing management/maintenance</td>
</tr>
<tr>
<td>• National spatial planning</td>
<td>• Development control</td>
<td>• Supporting domestic activities</td>
</tr>
<tr>
<td>• National infrastructure</td>
<td>• Local building industry</td>
<td>• Promoting self-help housing</td>
</tr>
<tr>
<td>• Housing management regs.</td>
<td>• Regional and urban regeneration</td>
<td>• Resilience and future-proofing</td>
</tr>
<tr>
<td>• Mortgage regulations</td>
<td>• Integrating housing and jobs</td>
<td></td>
</tr>
</tbody>
</table>

Source: adapted from Golubchikov and Badyina (2012) *Sustainable Housing for Sustainable Cities*. UN-Habitat
FIGURE 4: PROVISION OF AFFORDABLE HOUSING OPTIONS FROM THE POLICY PERSPECTIVE.

MODELS

- Group homes; crisis services
- Public community housing; Supported tenancies
- Public/community housing; Non-supported tenancies
- Low-cost rental delivery (boarding houses, not for profit providers)
- Below market rental
- Market rental
- Assisted home ownership and shared home ownership
- Unassisted home ownership

Increasing government assistance

- Very low income; homeless; high support needs
- Nominated places for people needing support linked to housing
- Low/income families and aged

Reducing government assistance

- Work-ready clients; singles; low-paid workers; students
- Key workers; low and moderate income families

TARGET GROUPS

Roles cities play today

- Implementation sites of national policies
- Administrative entities responsible for planning, procurement, management
- Actors in inter-urban networks and multi-level governance arrangements
- Cities as sites of experimentations and innovations

... Narrowing the focus: energy
<table>
<thead>
<tr>
<th>City</th>
<th>Reduction targets</th>
<th>Base year</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copenhagen</td>
<td>20%, 2015 \textit{carbon neutral, 2025}</td>
<td>2005</td>
<td>Climate Plan, 2009</td>
</tr>
<tr>
<td>Rotterdam</td>
<td>50%, 2025</td>
<td>1990</td>
<td>Climate Initiative, 2007</td>
</tr>
<tr>
<td>Vancouver</td>
<td>33%, 2020 80%, 2050</td>
<td>1990</td>
<td>A Community Climate Change Action Plan for the City, 2005; Climate Leadership, 2009</td>
</tr>
</tbody>
</table>
Priority sectors for urban energy

<table>
<thead>
<tr>
<th>Sector</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy infrastructure</td>
<td>Efficiency + RE supply + smart energy grids</td>
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<tr>
<td>Urban form and mobility</td>
<td>Non-motorised and public transport + a mixed-use urban forms + polycentric developments</td>
</tr>
<tr>
<td>Buildings</td>
<td>Performance standards, retrofit, management</td>
</tr>
<tr>
<td>Green areas</td>
<td>Green/compact city fusion, green and water areas</td>
</tr>
<tr>
<td>Waste</td>
<td>Recycling and waste-to-energy technologies</td>
</tr>
</tbody>
</table>

The importance of the integrative role of urban planning!
100% renewable cities?

Focusing on electricity

But how about heating, transport, waste, energy embedded in buildings?
Most primary energy we use is... unused

Source: https://flowcharts.llnl.gov/
District Heating’s Share of the Residential Heating Market


Note: Not all countries collect compatible and regular data on their district heating markets. For the most part, data are shown for 2001, but for some countries only earlier data were available. Sources: Euroheat and Power (2003 and 2001); Gochenour (2001).
Urban form and transportation

- Reducing travel distances - land use planning
- Modal shift and demand management - walking, cycling, public transport
- Electrification of transports

La Paz in Bolivia
The role of urban planning

- Limit urban sprawl: density and mixed-use development
- Transit-oriented development
- Prevent social segregation
- Closed-loop cities?

Source: Kick the Habit: A UN Guide to Climate Neutrality
Sustainability in the socialist city

- Strong planning, resource efficiency
- Public transit orientation
- Integration of social infra/housing/work
- District heating
- Generous public and green spaces
- Social equality, socio-spatial mix
- Affordable housing
- Strong security of tenure
- Yet: uniformity, housing shortages, lack of disability support, construction quality
“Hammarby model”: energy, waste, water

Video: http://www.time.com/time/magazine/article/0,9171,1917732,00.html
Buildings sector: the case of Brussels

New-builds in the Brussels Region from 1 January 2015:

• a net heating requirement of \( \leq 15 \text{kWh/m}^2 \text{ per year} \);

• an over-heating risk (inside temperature of more than 25°C) of < 5% of the time;

• a primary energy consumption of \( \leq 45 \text{ kWh/m}^2 \text{ per year} \);

• an air density of \( n50 \leq 0.6 \) volumes/u (transitional system until 2018)
Retrofitting buildings

• New builds add 1% or less of the total building stock each year

• The importance of energy retrofit of the existing stock

• Important for resolving fuel/energy poverty

• All sorts of challenges – financial, technical, ownership consensus

Energy retrofit of 16-storey high-rise building in Freiburg to the passive house standard
UNECE Action plan for energy efficient housing

**Governance**
1. Leadership, planning, monitoring
2. Financial incentives
3. Housing management & maintenance
4. Utility services, energy pricing

**Technology**
5. Energy performance requirement
6. Low-energy and zero-carbon technology
7. Spatial planning, district heat
8. Research, innovations

**Equity**
9. Public/social housing
10. Energy affordability and social integration
11. Awareness-raising and capacity building
12. Geographical context, cooperation

- Capacities to close energy efficiency gap
- Low carbon homes
- Inclusive energy
Conclusion

- Sustainability offers a holistic cross-sectoral perspective
- National action plans: seeking transformative results
- Political commitment and stakeholders support
- Multi-level perspectives
- Fostering urban experiments
- Capacity to learn
Thank you!

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