Workshop
Strengthening National Capacities for Urban Planning, Housing, Energy Efficiency and Disaster Risk Reduction

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Alena Kasyanenka
Head of Sustainable Urban Development Department
Institute for Regional and Urban Planning of Belarus
Energy efficient planning in Belarus.
New residential module development

Presented by Alena Kasyanenka
Institute for Regional and Urban Planning, Belarus
Compact build-up (European inner-city)

Typical micro-district in post-soviet city

Density: 75 units/ hectare,
Characterized as:
One high-rise dwelling, low build-up square

Density: 75 units/ hectare,
Characterized as:
Low-storied, high build-up square

Density: 75 units/ hectare,
Characterized as:
Middle-storied, middle build-up square

SHOWED IN SIMILAR SCALE
Key points of energy-efficient planning:

1. intensity of land use
2. multi-functionality and compactness of buildings
3. local and renewable energy sources
4. energy-efficient zones in residential areas

Direction 2

Improvement of urban and rural settlements’ spatial organization according to the new principles of urban planning: safety, comfort and efficiency

Urban planning policy defines goals towards efficient human settlements development.
Problems of existing micro-districts (microraions)

- Lack of social infrastructure meanwhile huge volumes of housing put-in-place;
- Non-efficient land use and low density;
- Residential yards covered with cars;
- Unreasonable scale of build-up;
- Complicity of maintenance of big territories, including landscape accomplishment, arrangement of green spaces and cleaning;
- Air pollution and lack of trees;
- Lots of empty spaces;
- Lack of social communication;
- High load on city public transport and traffic-jams;
- Dependence of centralized engineering infrastructure;
- Low accessibility of territory;
- Absence of public spaces and places for going-out;
- Shortage of kindergartens, sport facilities, places for adult and elderly residents
**What is the module?**

**Multifunctional module** of residential district is planning element of 15-20 hectares. Its territory is limited by main roads outside, and is divided by local streets inside. Module has compact build-up of mixed-storied buildings (3-5 floors).

**Yard** – half-closed green territory of residential building created by mixed-storied buildings (at architect's discretion).

**Neighborhood** is group of yards. Its not divided with roads and streets and it has common public space and green facilities. Neighborhood stresses on social cohesion of planning element.
Scheme of the module

Main advantages of the module

- Compact build-op of high density
- Reduction of expenses during the construction
- Use of underground and vertical space for parking
- Free-of-cars neighbourhoods
- Creation of jobs in the district
- Reduction of in-city migration “job-home”
- Improvement of living standards
- Dense road grid
- Facilities for all ages
- Use of first floors for social, cultural and educational infrastructure
- Poli-functionality and diversity
- Rise of investment attractiveness of territory
Territory of the pilot-project

УСЛОВНЫЕ ОБОЗНАЧЕНИЯ территории:

- жилая многоквартирная: 21.3 га
- ландшафтно рекреационная: 17 га
- административно-деловая, торговая: 12.3 га
- коммунально-складская: 2.8 га
- санитарно-защитная: 4.1 га
- производственная: 16.5 га
Comparison of planning organization of module and micro-district

- Fractional planning structure (cellular)
- Residential area - polyfunctional
- Transport Territory - underground level
- Industrial territory - Availability
- Landscape and recreation - integrated
- Border of land users - Modular (Neighborhood boundaries)

- Enlargement of the planning structure
- Residential area - monofunctional
- Transport territory - taken out separately, yard space
- Industrial territory - no
- Landscape and recreational - isolated
- Border of land users - noun. total area
Criteria & principles

**Safety**
- No need to pass the roads with intensive traffic, in particular for children and elderly people;
- Reduction of noise pollution, improvement of insolation and aeration of territory;
- Free-of staircase and barriers territory;
- Adequate maintenance and cleaning;
- Night lightening;
- Social cohesion;
- Non-stop service of territory.

**Comfort**
- Human size build-up of low- and middle-storied buildings with active first floors;
- Green spaces and good accomplishment and greening;
- Recreational facilities for the residents of all ages;
- “Step” accessibility of services;
- Public spaces, and cultural-entertaining facilities;
- Pedestrian lanes, bicycle infrastructure and free-of-barriers sidewalks.

**Efficiency**
- Compactness;
- Adequate transportation system;
- Certain number of jobs at “step” accessibility;
- Active use of non-traditional energy sources;
- Prioritized use of buildings of class A+, A и B by indicators of energy-efficiency;
- Energy saving while create architectural units;
- Recycling.
Visualization of the proposed module
## Key indicators for the territory

<table>
<thead>
<tr>
<th>№</th>
<th>Qualification</th>
<th>Indicator</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Territory</td>
<td>50 he</td>
</tr>
<tr>
<td>2</td>
<td>Population</td>
<td>6190 inh.</td>
</tr>
<tr>
<td>3</td>
<td>Housing stock density</td>
<td>3714 sq.m/he</td>
</tr>
<tr>
<td>4</td>
<td>Number of floors in dwellings</td>
<td>3-7</td>
</tr>
<tr>
<td>5</td>
<td>Density of population</td>
<td>124 inh/he</td>
</tr>
<tr>
<td>6</td>
<td>Share of jobs in number of population</td>
<td>22-40%</td>
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<tr>
<td>7</td>
<td>Share of dwellings provided with parking places</td>
<td>70%</td>
</tr>
<tr>
<td>8</td>
<td>Share of green spaces</td>
<td>60%</td>
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<tr>
<td>9</td>
<td>Capacity of school</td>
<td>1100-1200 pupils</td>
</tr>
<tr>
<td>10</td>
<td>Capacity of kindergarten</td>
<td>320 children</td>
</tr>
<tr>
<td>11</td>
<td>Density of roads</td>
<td>3 275 sq.m/he</td>
</tr>
<tr>
<td>12</td>
<td>Density of build-up</td>
<td>5 970 sq.m/he</td>
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Visualization of the design
Thank you!