Transboundary contexts in the Arctic cities: case of Nadym

Environmental governance systems in transboundary contexts, PSKOV, RUSSIA JULY 26-27, 2021

Vera Kuklina (The George Washington University, Washington, DC, USA; V.B. Sochava Institute of Geography SB RAS, Irkutsk, Russia), Oleg Sizov (Oil and Gas Research Institute RAS, Moscow, Russia), Roman Fedorov (Earth Cryosphere Institute, Tyumen Scientific Center SB RAS, Tyumen, Russia)
Transboundary context of Nadym

Scales:
Global
Russia - other Arctic countries
Regional
forest – tundra
reindeer herding Nentsy – settler population

Local
urban – rural
artificial – natural
public – private

Individual
formal – informal
nature – home
“rooted” – temporary
Global scale:

- Large temperature anomalies,
- Frequent wildfires,
- One of the world’s biggest reserves of all terrestrial carbon (Sheng et al. 2004).

Regional scale

- Shifting boundaries between forest and tundra with “greening” and “browning” of tundra

Regional scale

Reindeer herding Nenets migration routes

City under Dome project of Nadym

Reindeer Herder's Day in Nadym (photo by A. Pechkin)

11th microrayon
Local scale

Urban – rural (heat island effects)
Local scale

Urban – rural (heat island effects)

**Local scale**

Land cover changes on co-registered Corona (1968, left) and WorldView-2 (2012, right) imageries.


<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nadym</td>
<td>ha</td>
<td>%</td>
<td>ha</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>835.9</td>
<td>100</td>
<td>835.9</td>
<td>100</td>
</tr>
<tr>
<td>Green</td>
<td>463.542</td>
<td>55.50%</td>
<td>273.652</td>
<td>32.70</td>
</tr>
<tr>
<td>Buildings</td>
<td>5.525</td>
<td>0.70%</td>
<td>127.049</td>
<td>15.20</td>
</tr>
<tr>
<td>Roads</td>
<td>24.369</td>
<td>2.90%</td>
<td>72.432</td>
<td>8.70</td>
</tr>
<tr>
<td>Blue</td>
<td>84.653</td>
<td>10.10%</td>
<td>28.532</td>
<td>3.41</td>
</tr>
<tr>
<td>Other*</td>
<td>257.790</td>
<td>30.80%</td>
<td>334.213</td>
<td>39.98</td>
</tr>
</tbody>
</table>
A bathymetric survey (depth) of the largest natural and artificial bodies of water (lakes and dugouts) and lake recreational areas. The organized recreational area has been developed by the municipality; the spontaneous recreational area lacks municipal funding and has been developed by urban residents.

Local scale:

Green spaces

Accessibility of public spaces of common use and vegetation cover in the city of Nadym.

<table>
<thead>
<tr>
<th>Residential housing</th>
<th>Area (ha)</th>
<th>% of population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beyond buffer zone</td>
<td>Within buffer zone</td>
</tr>
<tr>
<td>Low-rise housing</td>
<td>20.87</td>
<td>8.27</td>
</tr>
<tr>
<td>Mid-rise housing</td>
<td>5.24</td>
<td>9.63</td>
</tr>
<tr>
<td>High-rise housing</td>
<td>39.73</td>
<td>90.54</td>
</tr>
<tr>
<td>Total</td>
<td>65.84</td>
<td>108.44</td>
</tr>
</tbody>
</table>

Individual scale:

Green spaces

Public

Private
Individual scale:

Blue spaces

Public

Private
Marginal green spaces

Corporate public spaces

Public courtyards
Marginal spaces

Public private spaces (garages & chum)
Future directions of research:

- Public & private spaces
- Mobilities
- White spaces
- Comparison with Apatity (more evident transboundary context materialized in construction, maintenance and use of local green spaces)
Acknowledgements:

We thank our local partners and informants.

Work was done within the Building Socio-Ecological Resilience through Urban Green, Blue and White Space (SERUS) project funded by Belmont Forum project №1729 SERUS (NRC no. 311986), National Science Foundation # 2024166, and RFBR project No. 20-55-71004.