Vulnerability of
Polar URban centres:
the case study of Western Siberia

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Abstract:
The rapid growth of the Arctic population in urban settlements raises the question of the urban sustainability at the margins of the ecumene. Since mid-1960s, with the development of oil and gas industries, Western Siberia has unfolded as an appealing and new urban territory leading to a new regional identity. Nowadays, fifty years latter, out of about thirty towns, 23 were created ex-nihilo; this region constitutes an interesting case study to discuss Arctic urban sustainability.

Applied to this region, the concept of vulnerability allows approaching the question of sustainability at multi-level and in different and complementary fields like: demographic dynamism, economic diversification, integration to urban systems, and at local scale: transformations of urban landscapes and social integration of residents. Using GIS and remotely sensed data, as well as interviews of residents as research tools, the regional case with several towns in different situations will be introduced and discussed.

First of all, sustainable settlement implies a certain demographic dynamism, it is important to distinguish shrinking and flourishing centers by migrations or natural balances or both. Secondly, many western Siberian towns like many Arctic towns in general, are often mono-activity related, if not even single-enterprise. Therefore, they present a great economic vulnerability that influences in return its demographic dynamism. So, the ability of diversification of its economy remains a key to its sustainability. Thirdly, these urban settlements are often viewed as a periphery of the national center, which is out of the boreal zone. In terms of integration to networks and urban systems, these peripheral towns may be viewed as vulnerable because of isolation, with connections mainly oriented towards the national center, revealing a tunnel effect. Their level of integration to urban systems, especially their very limited connection to other regional sub- and supra-centers assesses another dimension of their vulnerability. Fourthly, at local scale, transformations of urban landscapes evoke the center dynamism. However, the new exposure to potential ecological risks like flooding, express a major component of their vulnerability. Finally, the social integration of the newcomers and the identity of polar center are an important aspect of social sustainability.