

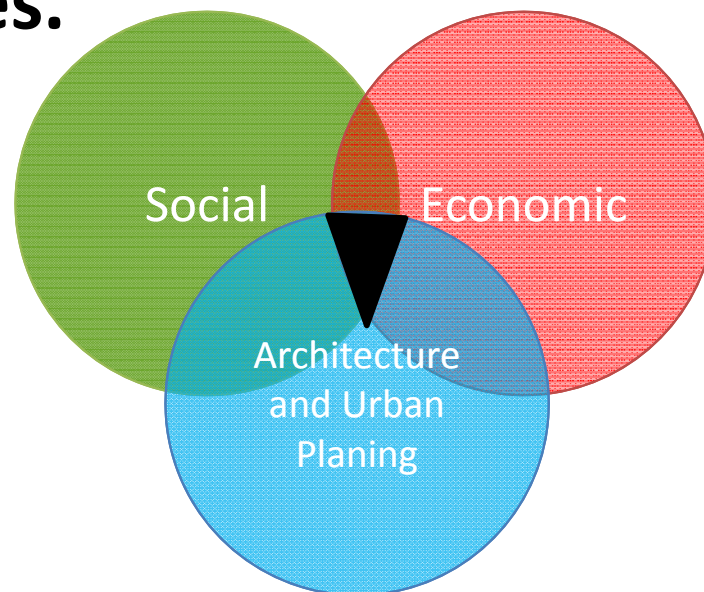
**KRIVOROTKO**  
**Margarita.**  
**Final presentation**

**Pacific National University**  
**Khabarovsk**  
**Russia**

# Introduction in Research Thesis

# Theme:

**Efficient architectural, social and economical reconstruction and modernization of urban structures with typical apartment housing district on the principle of Pareto efficiency 20/80. Multifunctional residential complexes.**



# Introduction: the problem

1. A large number of physically and morally obsolete neighborhoods of typical apartment housing district.
2. Lack of an accomplishment
3. Underdevelopment service functions outside of the central part most of Far Eastern cities
4. The absence or unsubstantial funding



*The relevance of a comprehensive reconstruction of the existing urban areas is due to a number of social, urban planning and economic factors. It is not always possible to fully conduct it.*

*Complex reconstruction of the residential areas will be the basis of urban planning government policy in the near future.*

Russian experience

Before reconstruction



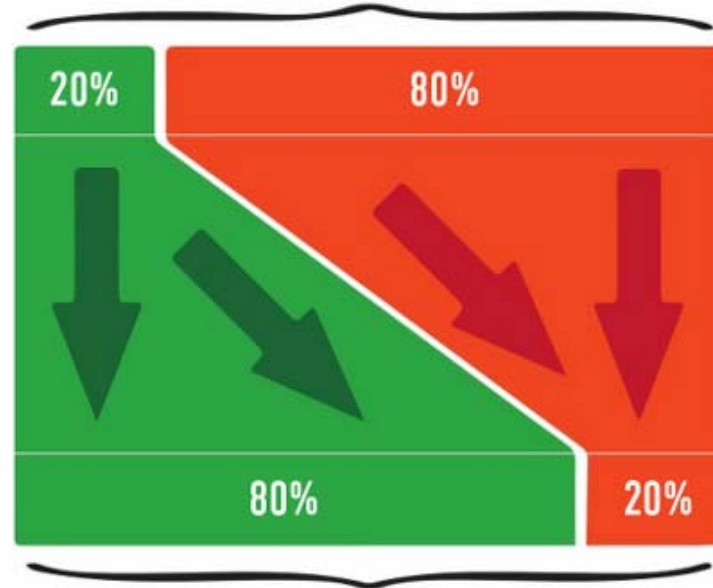
After reconstruction



## Background:

**The Pareto Principle, or the 20/80 principle** – the mnemonic rule, in the most general form, is formulated as a "**20%** of efforts provide **80%** of the results, while the remaining 80% of the effort - only 20% of the results".

## Efforts



## Results

*It can be used as a basic setup in the analysis of efficiency factors in any activity and optimize its results: selecting the most important action you can quickly get a significant portion of planned result, while further improvements can be ineffective and unjustified.*



## Hypothesis :

- For effective strategies for renovation and reconstruction of cities it is enough approximately **~20 %** of investment in infrastructure , which will bring **~80%** of the expected results (depending on the set conditions expected outcomes could be : renewal of obsolete areas (to include indirect indicators: economic development of territories , increase birth rate, employment, improving comfort etc.) in immediate prospect.

**20%** of the modernization efforts will make the street or district "work" and start developing.

- Check the opportunity of application the theory of Pareto efficiency in district renovation and reconstruction.
- Step (phased) reconstruction.



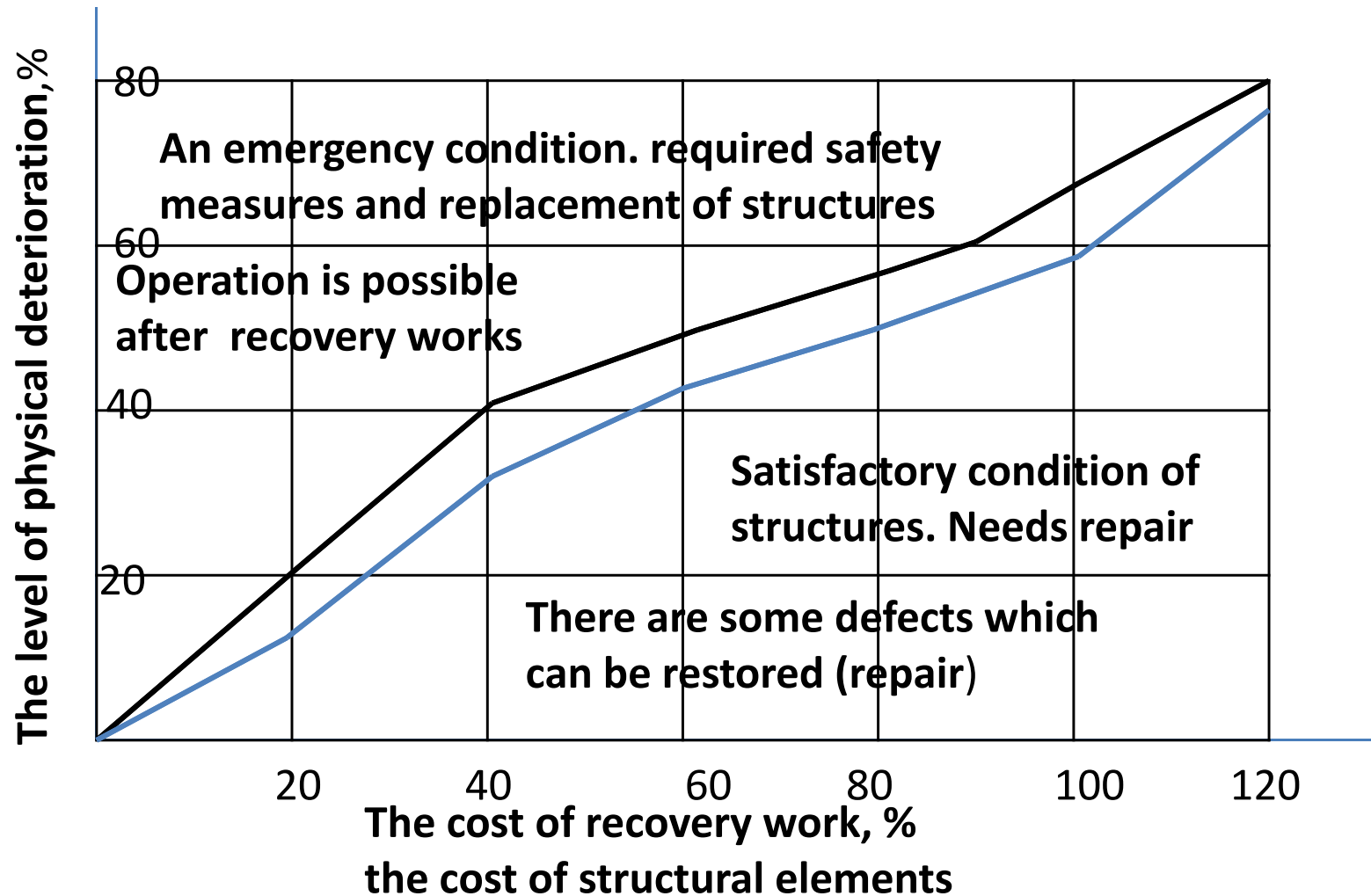
# The purpose of the research:

- Improving urban situation by identifying confirm or refute the possible using of sociological and economic theory of Pareto in the reconstruction of urban planning units.



- Creating an effective model for analysis and optimization results, evaluation of the "importance" (prospects), identifying the location of the actual potential of the object. Integration of "sleeping area" in the structure of the city. Monitoring of urban areas and the creation of conditions "accreted urbanism" without division into residential districts.

The ratio of the level physical deterioration of structural elements of the building as a whole and the cost of recovery work



\*Source: A.A Afanasiev, E.P Matveev, Reconstruction of residential buildings

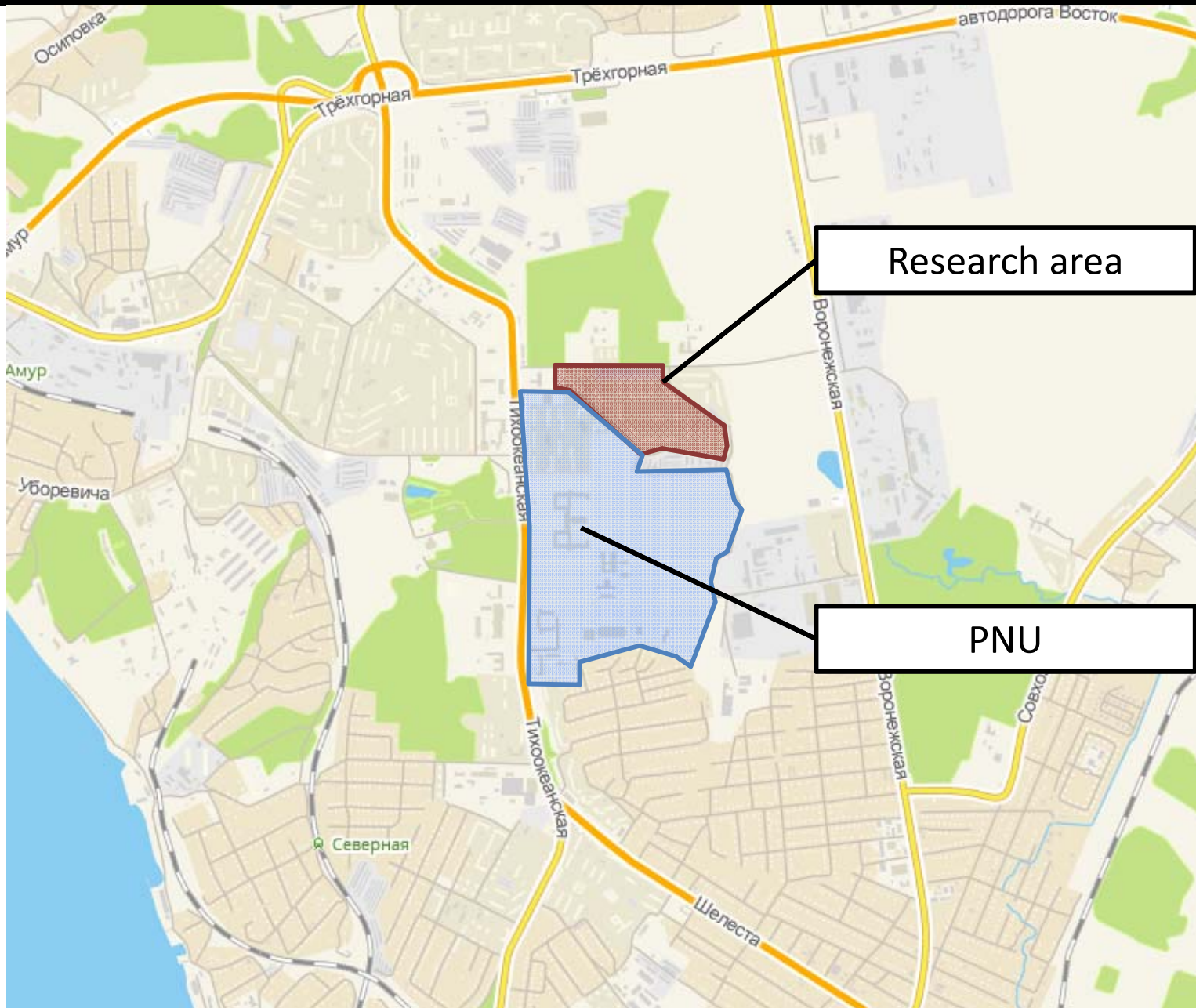


Tasks:

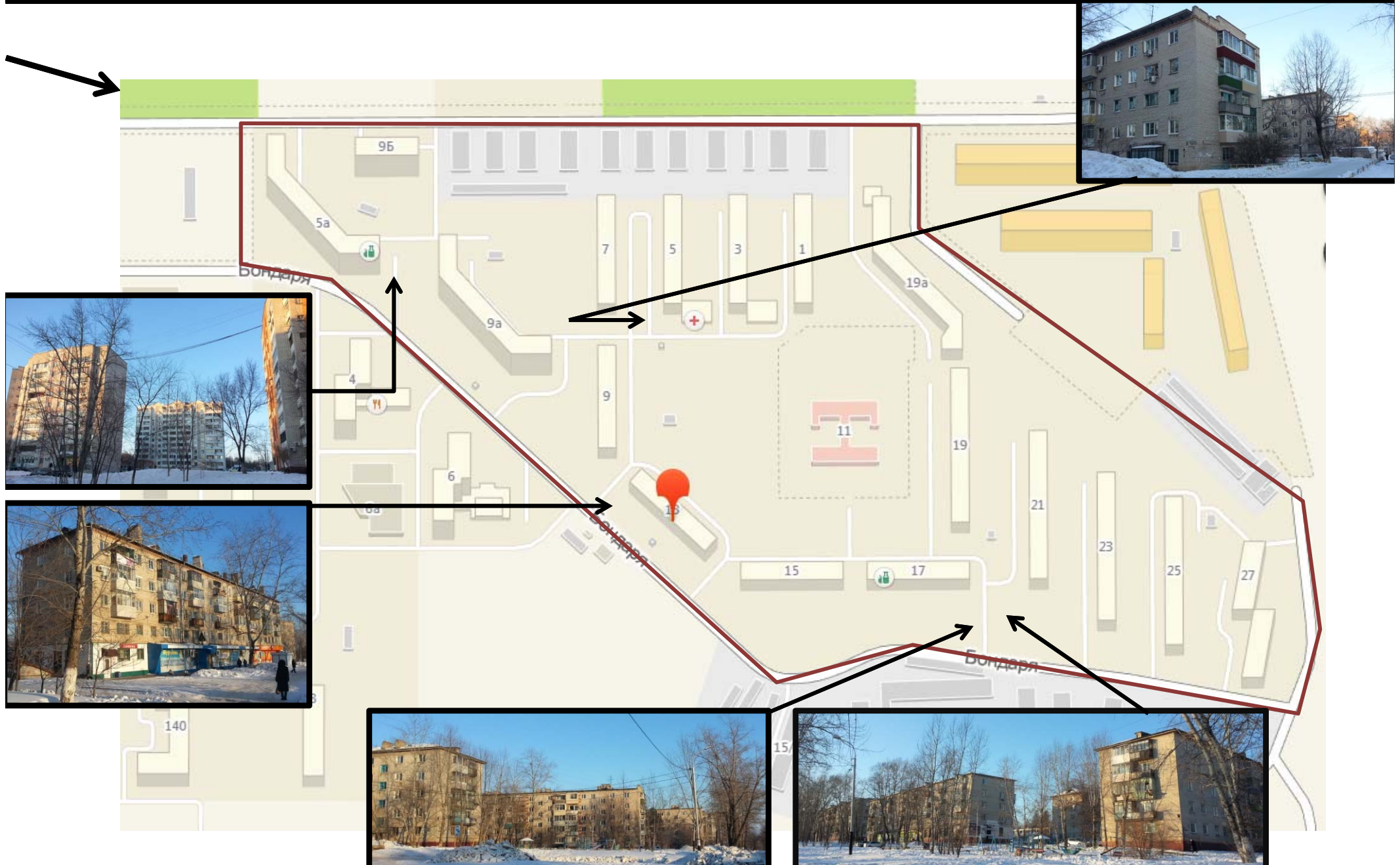
- ✓ Creating a detailed project proposal for reconstruction of the district in Khabarovsk. The reorientation of development to the multifunctional residential complex.
- ✓ Create a 2-stage architectural and planning model (the project proposal for the two period of development ) and an comprehensive model for organization of reconstruction and renovation
- ✓ Monitoring of pedestrian activity on the territory of the selected district
- ✓ Creation of an effective reconstruction and renovation of the most important objects and areas.
- ✓ Involving residents in the process of renovation and reconstruction of neighborhoods by creating community centers. Using interdisciplinary approaches.
- ✓ Creating prediction model of development of chosen district (with old buildings) and neighborhood with under construction (improved type) district.







# RJE3 Program, Hokkaido University



Sapporo 2016

## Expected results of research:

1. Creating a system of attractive places distribution within the boundaries of the selected district.
2. Creating a detailed project proposal for reconstruction of the district in Khabarovsk. (including organizational and economic models). Development of methods for efficient design and reconstruction of the transformation from a model of 1960 to MRC (multifunctional residential complexes). Project of Spot reconstruction, that 20% will stimulate the process of development of whole district.
3. Confirmation of Pareto method for application in urban planning.
4. Redistribution of stream of people, adduction in particular points (place).
5. and others...

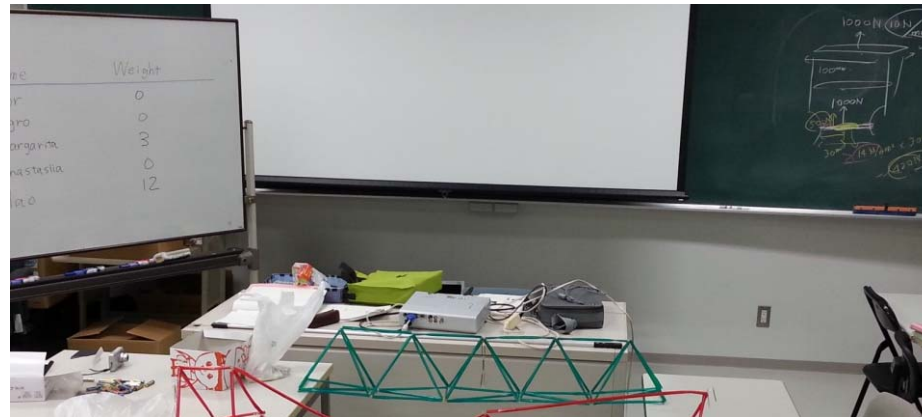
*The algorithm of approach would plan to apply for the reconstruction of the other district of apartment buildings.*



# Studying at Hokkaido University

## 1 – Subjects:

- ✓ Advanced Architectural Design and Theory
- ✓ **Advanced Studio on Architectural and Urban Design II**
- ✓ Structural Design





1. **Collecting Data for research** (about methods and types of reconstruction and renovation / modernization of apartment houses in public and private property on Hokkaido)

- Analysis of situation, which create the needs for reconstruction/ renovation of apartment buildings
- Study of legislation in the field of reconstruction and renovation apartment buildings

2. **Meeting with 3 architectural company (including Research Institute in Asahikawa)**

- Search samples and information for the reconstruction/renovation apartment buildings in Hokkaido
- Search the detailed process of reconstruction/renovation implementation

The percentage of public housing among the number of households:

Japan	
Prefecture	%
Hokkaido	6.9%
Nagasaki	6.2%
Kagoshima	6.2%
Osaka	6.0%

Mie	1.6%
Chiba	1.3%
Saitama	1.1%

Hokkaido prefecture	
City	%
Utasinai	54.4%
Kamisunagawa	50.0%
Yubari	48.8%
Nishiokoppe	43.8%

Kusiro	4.0%
Asahikawa	3.9%
Sapporo	3.7%

\*Hokkaido Construction Department

\*Hokkaido Construction Department

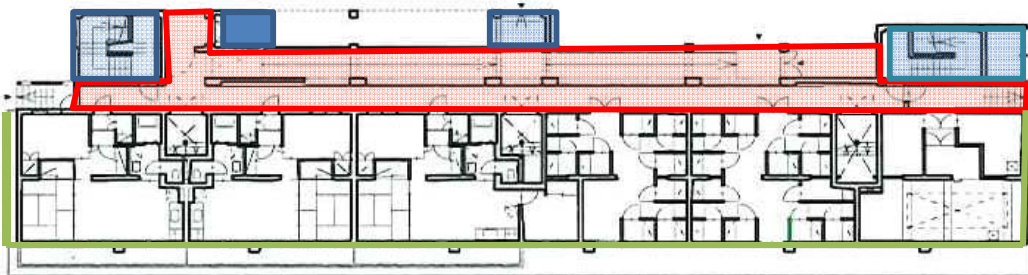
Public apartment houses



*Rumoi city. Building No.29 before and after renovation*



*Rumoi city. Building No.30 before and after renovation*





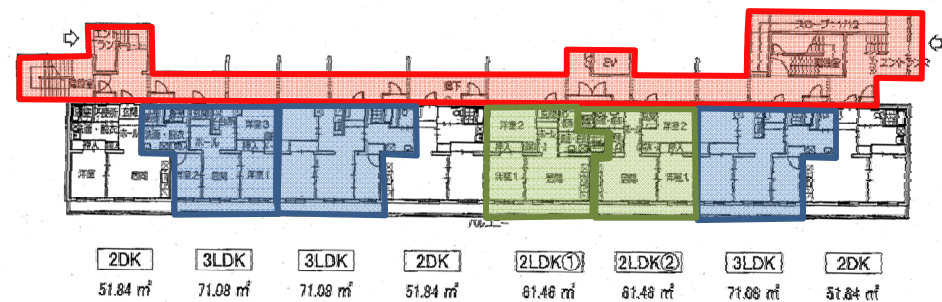
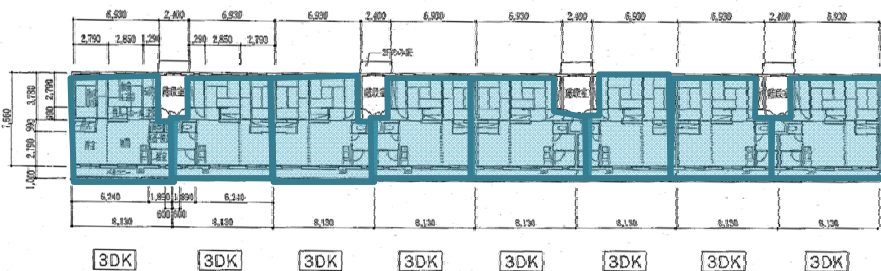
# RJE3 Program, Hokkaido University

Examples of common renovation features. Asahikawa city.

Before renovation



After renovation



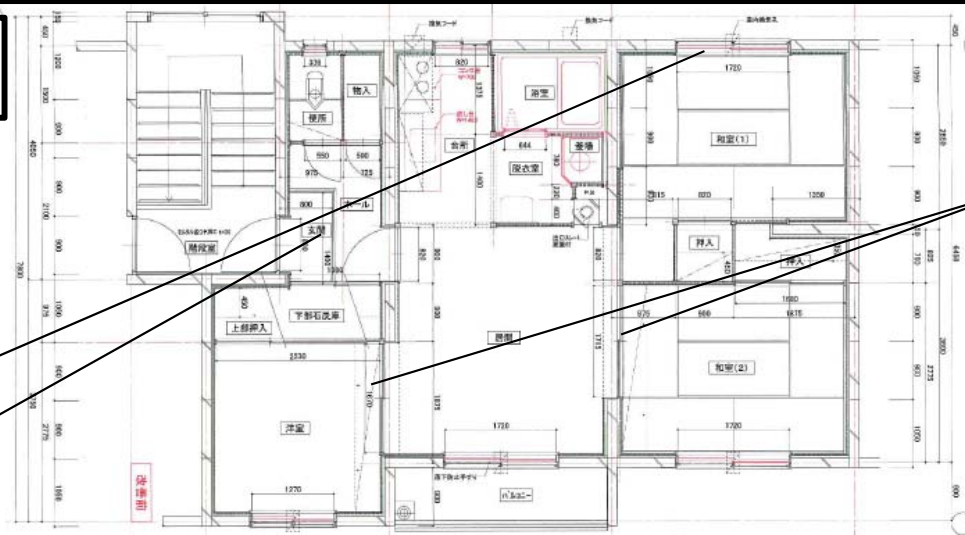
Basis on numerous studied examples , the basic laws and characteristics of the reconstruction and renovation of apartment housing on Hokkaido were identified.

## Examples of common renovation features. Central park in Niseko-cho 4 Building. Detail plan.

### Before renovation

Problems due to aging buildings:

1. Low thermal insulation of window frame
2. Equipment aging



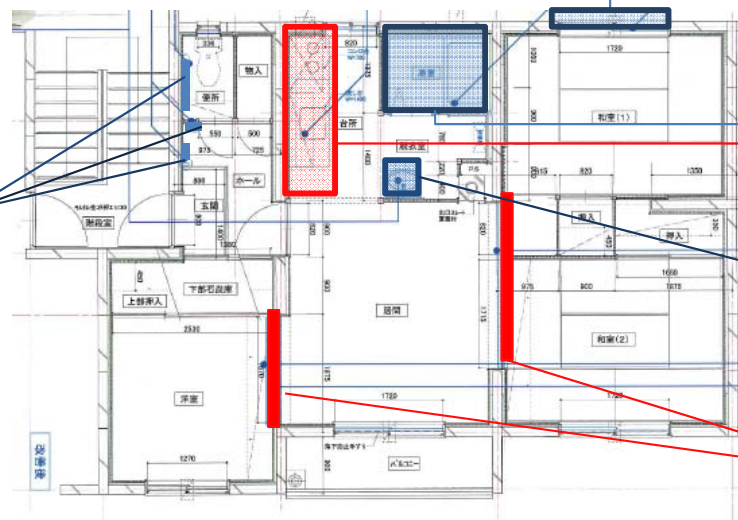
Inconveniences for elderly people :

1. The absence of barrier-free environment
2. difficulties with the house cleaning

### Solution

### After renovation











1. Inner additional plastic window frame
2. Replacement with a new bath
3. Removal of doorstep
4. Handrail in bathroom
5. Special recess for wheelchair





# RJE3 Program, Hokkaido University

Summary. Comparison of basic principles of municipal and private apartment houses reconstruction and renovation in Hokkaido

	Municipal apartment house	Private property apartment houses
Government financial support of Reconstruction/ Renovation	~45% 	
<i>In case of earthquake protection measures for the building (Shin-Taishin)</i>		
Reconstruction / renovation planning of the building		
Universal design( free-barrier)		
Distribution of the structure of a typical "northern house" on Hokkaido	well insulated, with enhanced efficiency	well insulated, with enhanced efficiency
Cost of implementation	Ren  Rec ~15-18 million yen/1unit	Ren  Rec
Limitations of the surrounding area (Floor area ratio)	Square reserve	Lack of opportunity to expand building area

# **USING THE RESULT OF THE STUDY AT HOKKAIDO UNIVERSITY**

1. Use the collected information as a theoretical background for future research
2. Wrote paper “**RECONSTRUCTION AND MODERNIZATION OF APARTMENT HOUSES IN HOKKAIDO ISLAND**” for Scientific conference in Khabarovsk, February 2016.

**Thank you for attention!**