

NATIONAL STUDY OF SHRINKING PATTERNS IN ESTONIA

Majandus- ja Kommunikatsiooni-ministeerium

SPIN UNIT

TAL TECH

Euroopa Liit
Euroopa Regionaalarengu Fond

Eesti tuleviku heaks

What we talk about when we talk about shrinkage?



THE RISE OF VOLUNTARY RESTITUTIONS

In 2018 the Ministry of Finance received dozens of apartments from Ida-Virumaa after the municipality of Kohtla-Järve informed citizens and apartment associations that they could give unwanted apartments to the state.

Shrinkage has long been discussed and studied in Estonia from a demographic, economic and social perspective - starting with the periodical prognoses by Statistics Estonia to the most recent report "Shrinking Smartly in Estonia" by the OECD.

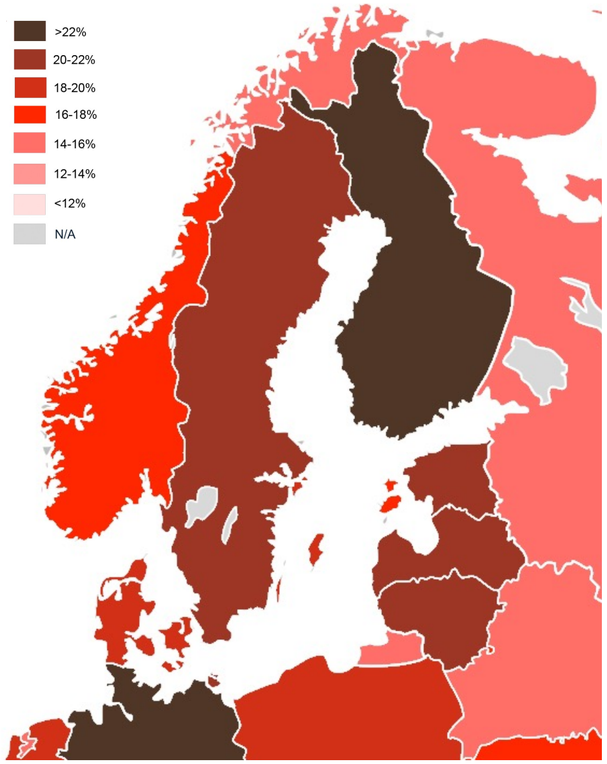
Amid these discussions, the gifting of unwanted apartments was a turning point and a surprise, particularly given that at the time, interest rates were low or negative, and housing prices were on a steady rise - the year-on-year cost of houses increased by 4,9% in 2017, 5,7% in 2018 and 8,2%.

The rise of voluntary restitutions spun a new branch of investigation in Estonia, focusing on the relationships between demographic change and the built environment.



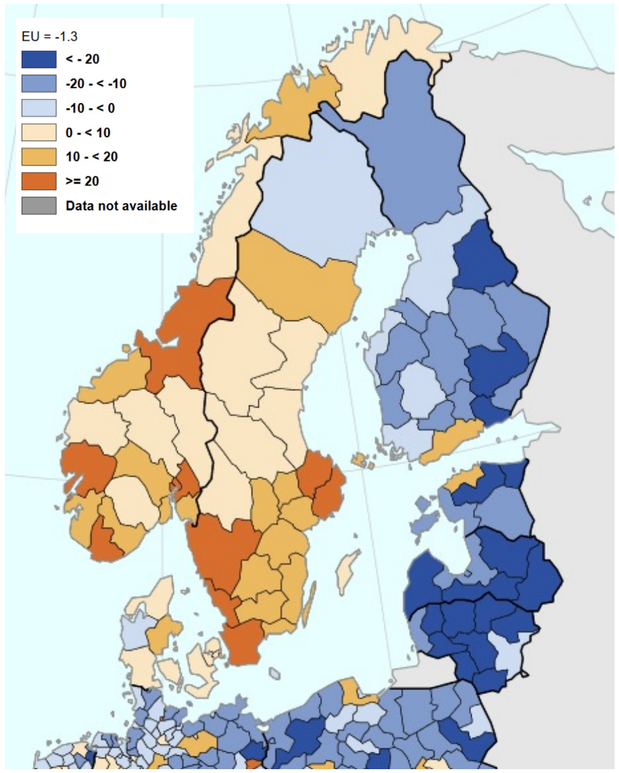
TRENDS

Ageing population - Finland and the Baltics have a relatively high percentage of people over the age of 65.



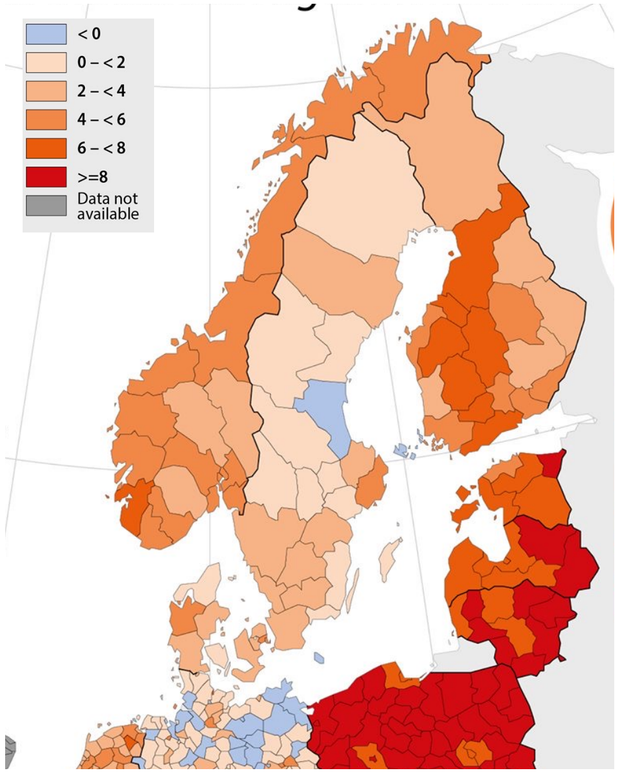
Percentage of the population over 65 in Europe in 2020
EUROSTAT

Population will decrease - By 2050, areas outside the capital regions of Finland and Estonia are expected to lose as much as 20% of their population. Total EU -1,3%



Projected percentage change of the population, by NUTS 3 regions, 2019–50 . *EUROSTAT*

Abd become even older - By 2050. Eastern and Northern European populations are projected to become considerably older in 2050 than today.



Project change in media age between 2019-50. *EUROSTAT*

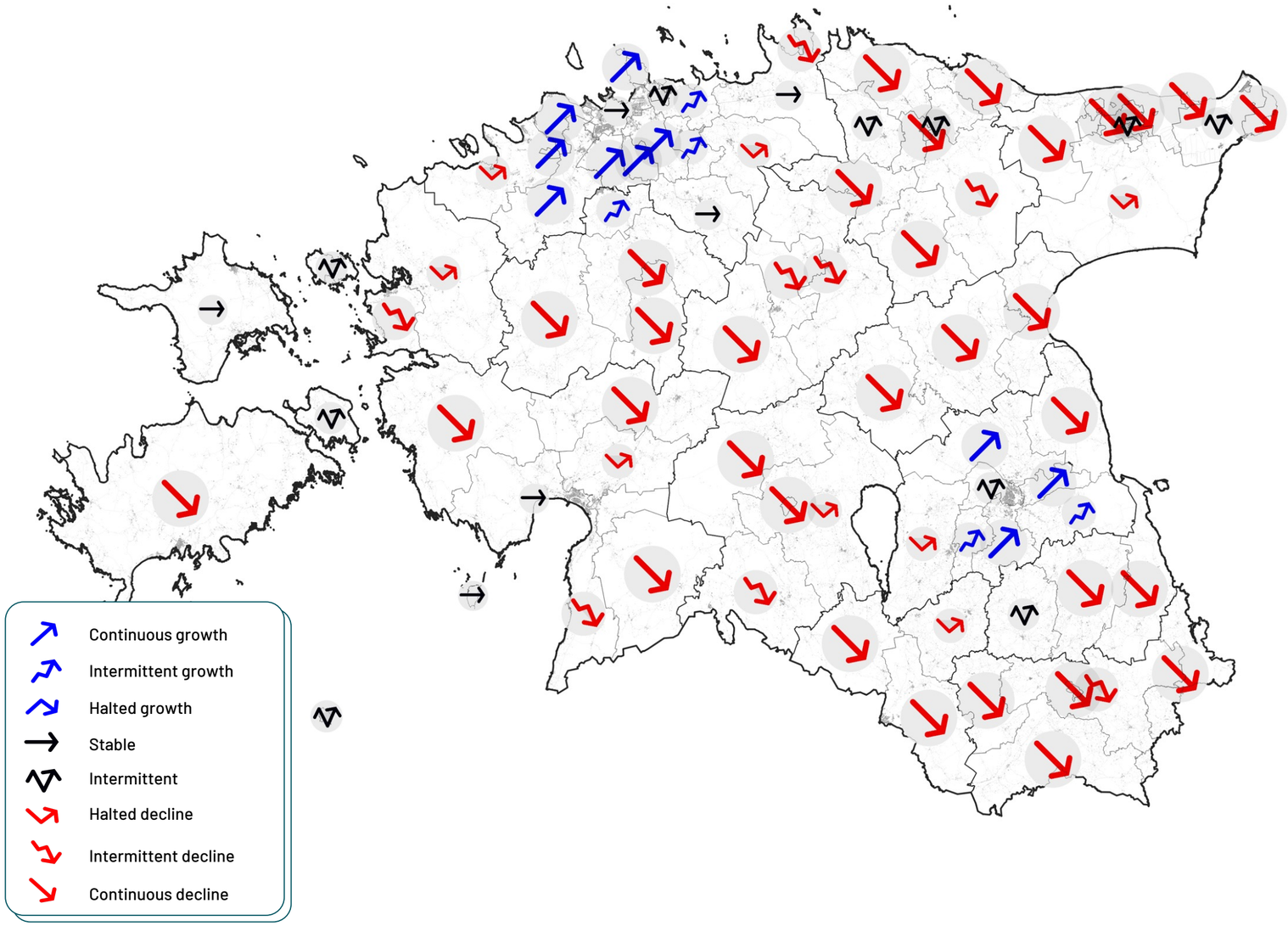
DEMOGRAPHIC CHANGE
RELATIVE TO THE NATIONAL 2015-2021

Estonian population size has reached a plateau, and it is expected to start declining rapidly. Elaborated from Statistics Estonia datasets.

Estonian population size has been rather stable since 2015

Population growth relative to the national trend is experienced in the commuter belts of the major urban centres of Tallinn and Tartu.

Multilocality is becoming a predominant phenomenon.



Establishing a new methodology to study shrinkage



TIMELINE

2018 →

VOLUNTARY RESTITUTIONS

A few years ago, the Ministry of Finance received dozens of apartments from Ida-Virumaa, after the municipality of Kohtla-Järve informed citizens and apartment associations that they could give unwanted apartments to the state.

Even if the phenomenon of shrinkage has long been discussed in Estonia, these discussions have largely been driven by general statistics and gut-feeling. In the midst of these discussions, the gifting of unwanted apartments was a turning point and a surprise, particularly given the context: skyrocketing housing prices, and cheap mortgages.

2019 → 2020

PILOT PROJECT

Ministry of Finance

In 2019 we ran study in East Estonia for the Ministry of Finance to see if vacancy data could help us understand shrinkage more fully.

In this study we validated the use of electricity consumption data to map vacancy rates of apartment buildings.

The study revealed that vacancy was reaching the alarming rates of 25%, and that highly vacant buildings tended to cluster.

2021 → 2022

NATIONAL STUDY

Ministry of Economy

In 2021 The Ministry of Economy commissioned a study to scale up the methodology developed during the pilot nationally.

The novelty of the national study was the use of aggregated vacancy rates for single family houses and apartment buildings through time.

2021 →

REGIONAL IMPACT

Ida Viru Region

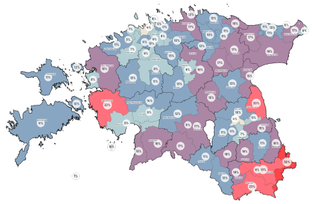
In 2021, when the national study was near ending, our team started working with Ida Viru (East Estonia) and its eight municipalities to further the research shrinkage at the building scale and start making an impact.

This project aimed to generate a tangible positive impact on local communities and the decision-makers and specialists in Ida Viru.

Our team designed a charette format comprehensive of site visits, seminars and workshops to share the results of our municipal profiles, initiate a local debate and kick-start new local strategies for shrinkage.

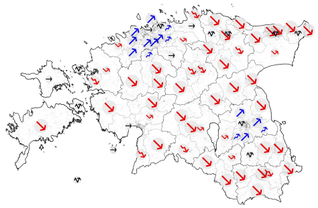
*The pilot project, the national study and the Regional impact project were carried out in consortium with TalTech and with the cooperation and experience of Linnalabor.

THE 5 RESEARCH AREAS OF THE NATIONAL STUDY



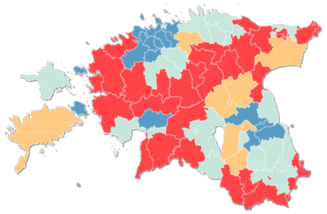
VACANCY

What are the vacancy rates today?



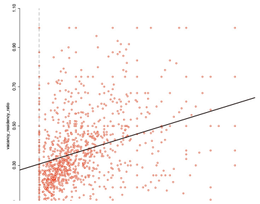
TRAJECTORIES

What are the vacancy rates over time?



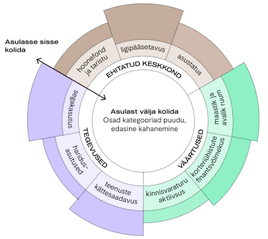
VULNERABILITY

What are the most vulnerable municipalities, settlements and buildings?



POSITIVE DEVIANCE

What can we learn from the outliers?



SCENARIOS

What are the viable scenarios for policymakers?

CORE DATASETS AND AGGREGATION

RR

Population registry data have the most extended history and are a valuable source for estimating housing occupancy.

2013, 2016, 2020

EL

Electricity consumption data is utilized to mark a dwelling as empty when its annual consumption is less than 100kw.

2019



Buildings

H3 grid

Settlements

Municipalities

Regions

DATASET - ESTONIAN BUILDING REGISTRY

2013-2022

Half of the building stock in Estonia is made of single family houses.

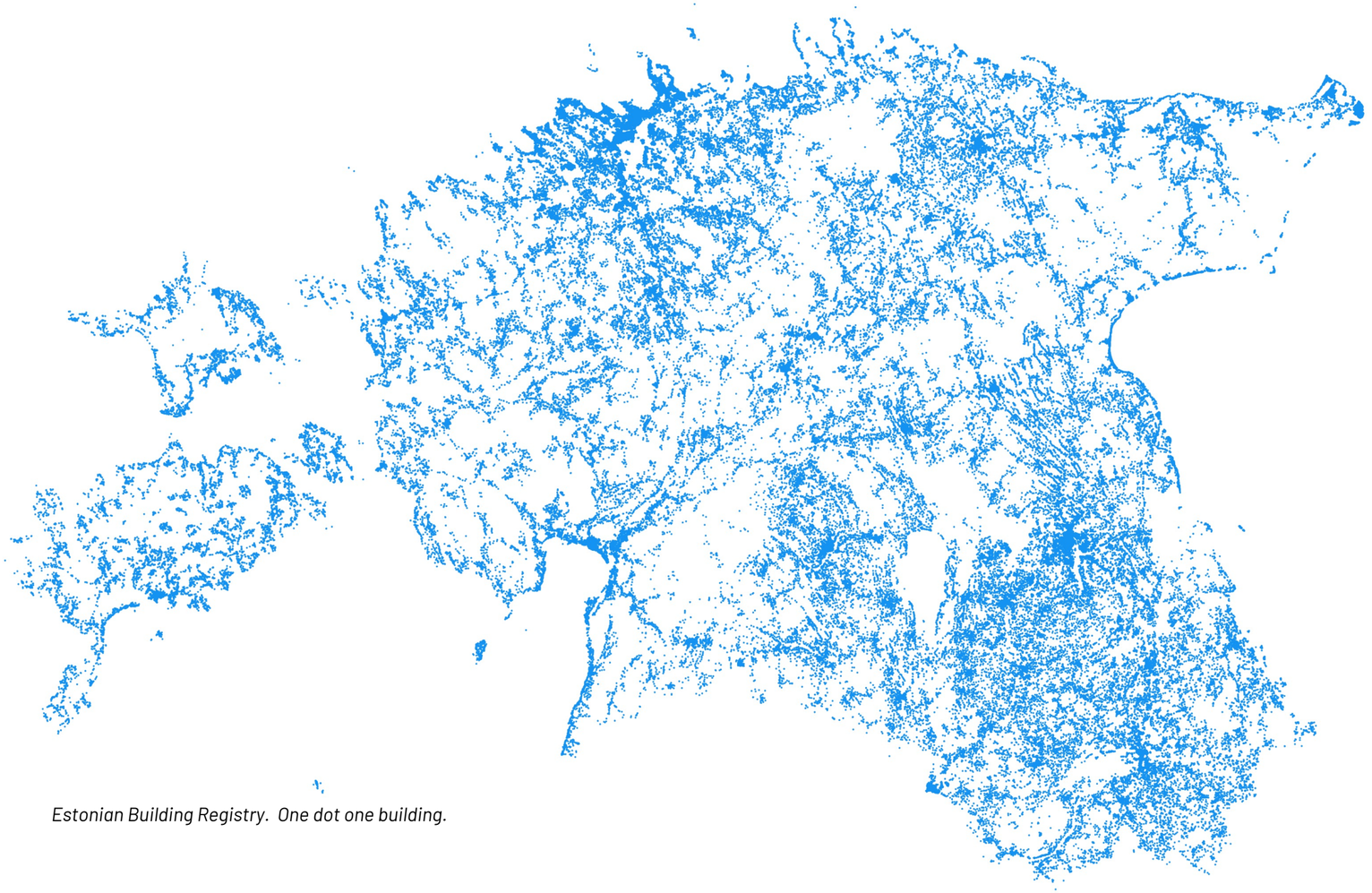
••••••

As of 1 January 2020, in Estonia, there were **749,439 dwellings in 268,496 buildings.**

Apartment buildings have an average of **19 dwellings** (26,688 in a total of 501,437 dwellings).

Detached and semi-detached houses had an average of **1.03 dwellings** (241,808 in a total of 248,002 dwellings). There are only about 6000 dwellings in semi-detached houses.

Half of the building stock in Estonia is made of single-family houses.



Estonian Building Registry. One dot one building.

What are the vacancy rates across Estonia?



VACANCY RATES
AGGREGATED BY MUNICIPALITY

Electricity data accounts for about 80% of all the dwellings in Estonia

9%
National vacancy rate

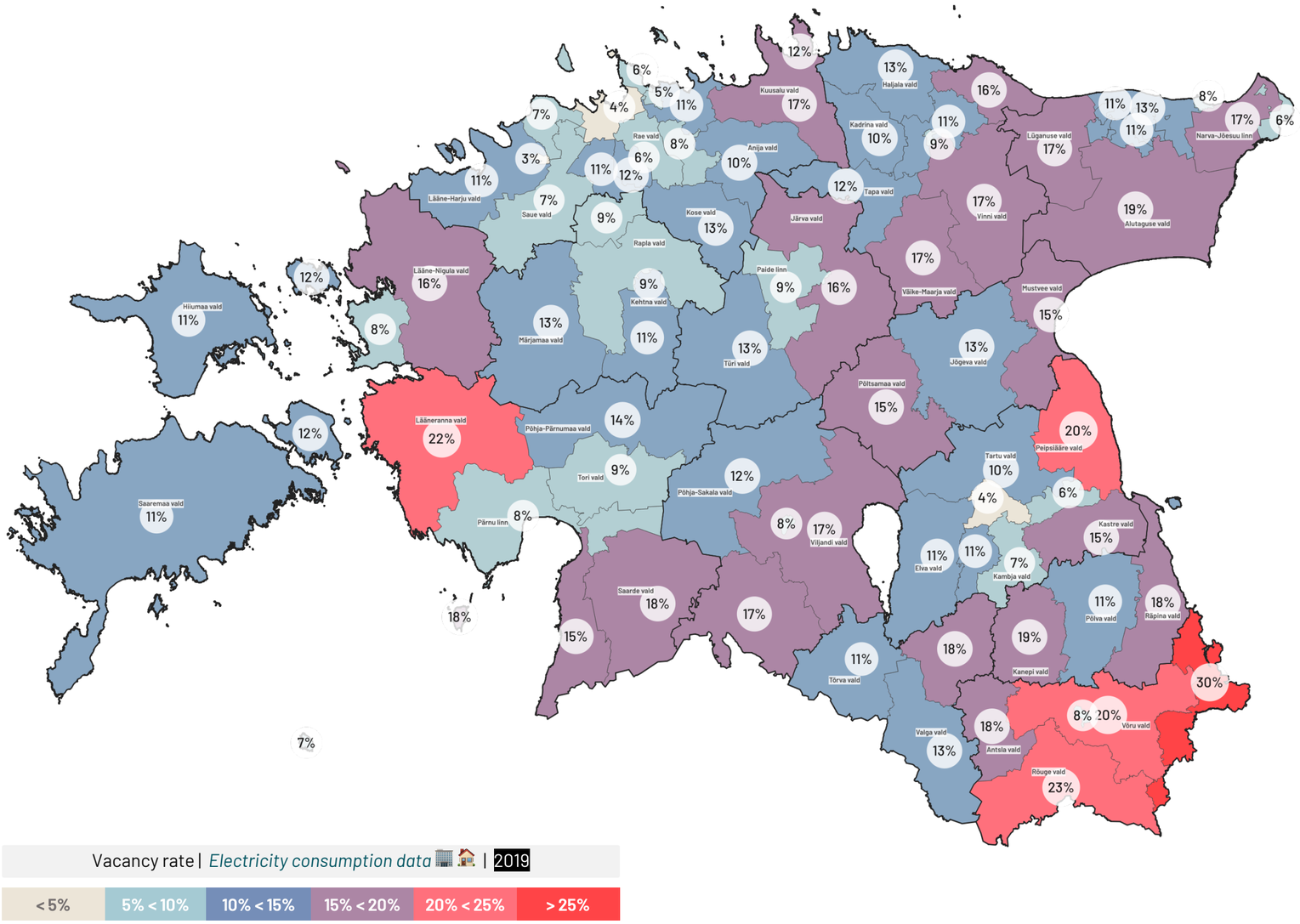
7,7%
Apartment buildings

12,2%
Single family houses

25 Municipalities have a vacancy rate of at least 15% - 1 empty flat every 6.

Those rates are significantly high because for a dwelling to be considered empty according to electricity data meant that during the entire year of 2019, it consumed less than 100Kwh - nearly three times what a fridge alone consumes.

N.B. In this version of our analysis, we removed areas with the prevalence of summer houses from this subset. With those included, the vacancy rates would be even higher.



Vacancy rate | *Electricity consumption data* | 2019

< 5%	5% < 10%	10% < 15%	15% < 20%	20% < 25%	> 25%

VACANCY RATES
AGGREGATED BY SETTLEMENT

By changing scale we can reveal the complexity of the phenomenon

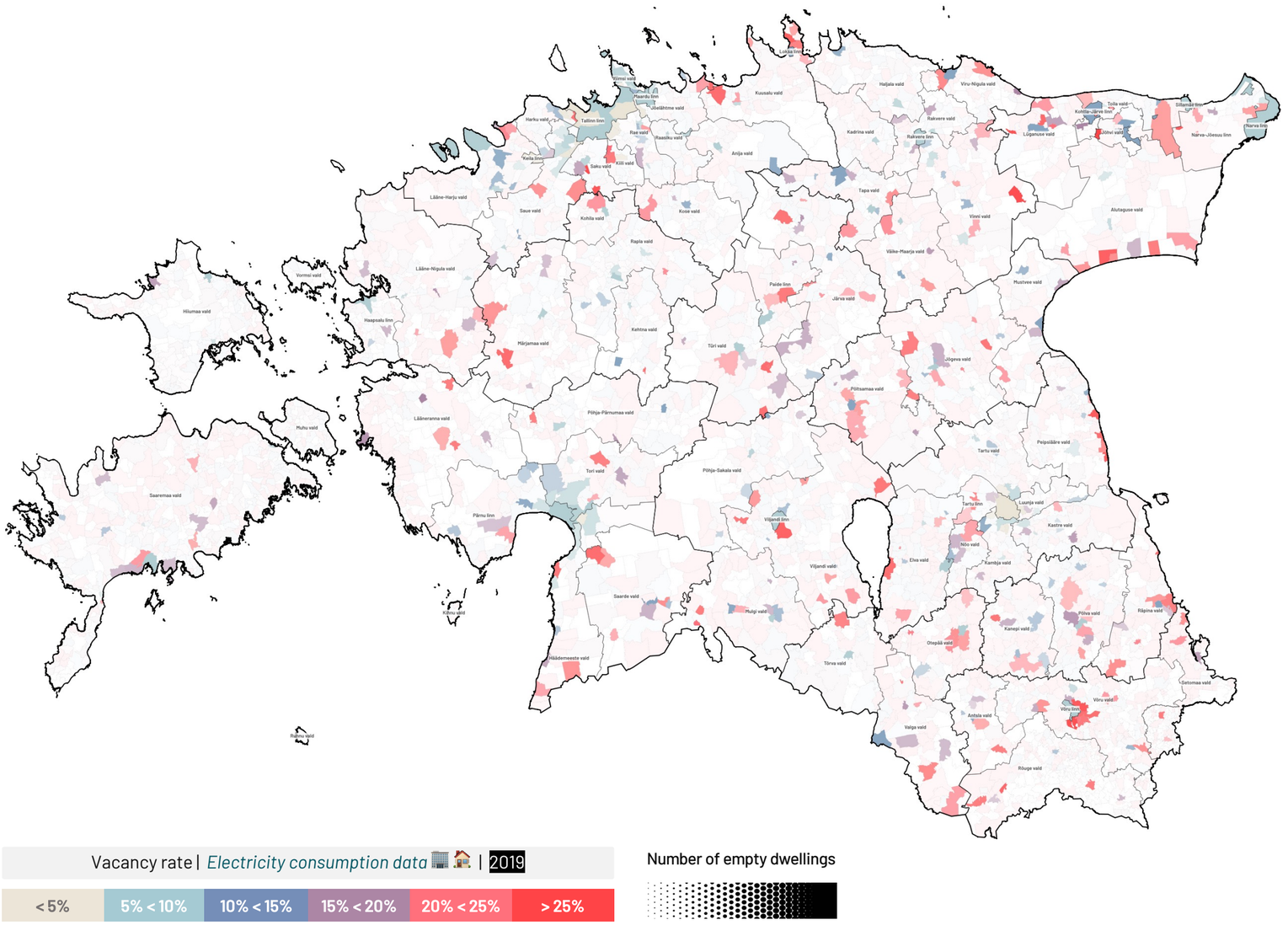
••••••

There are at least multiple shrinking settlements in every region, regardless of socioeconomic conditions.

Shrinkage is a splintered phenomenon, and it can occur in regions with both positive and negative population change.

Vacancy rates are considerably high in settlements further from the metropolitan regions.

NB: in some cases, settlements unites have high vacancy rate because they are former summer houses districts undergoing transformation from home to residences.



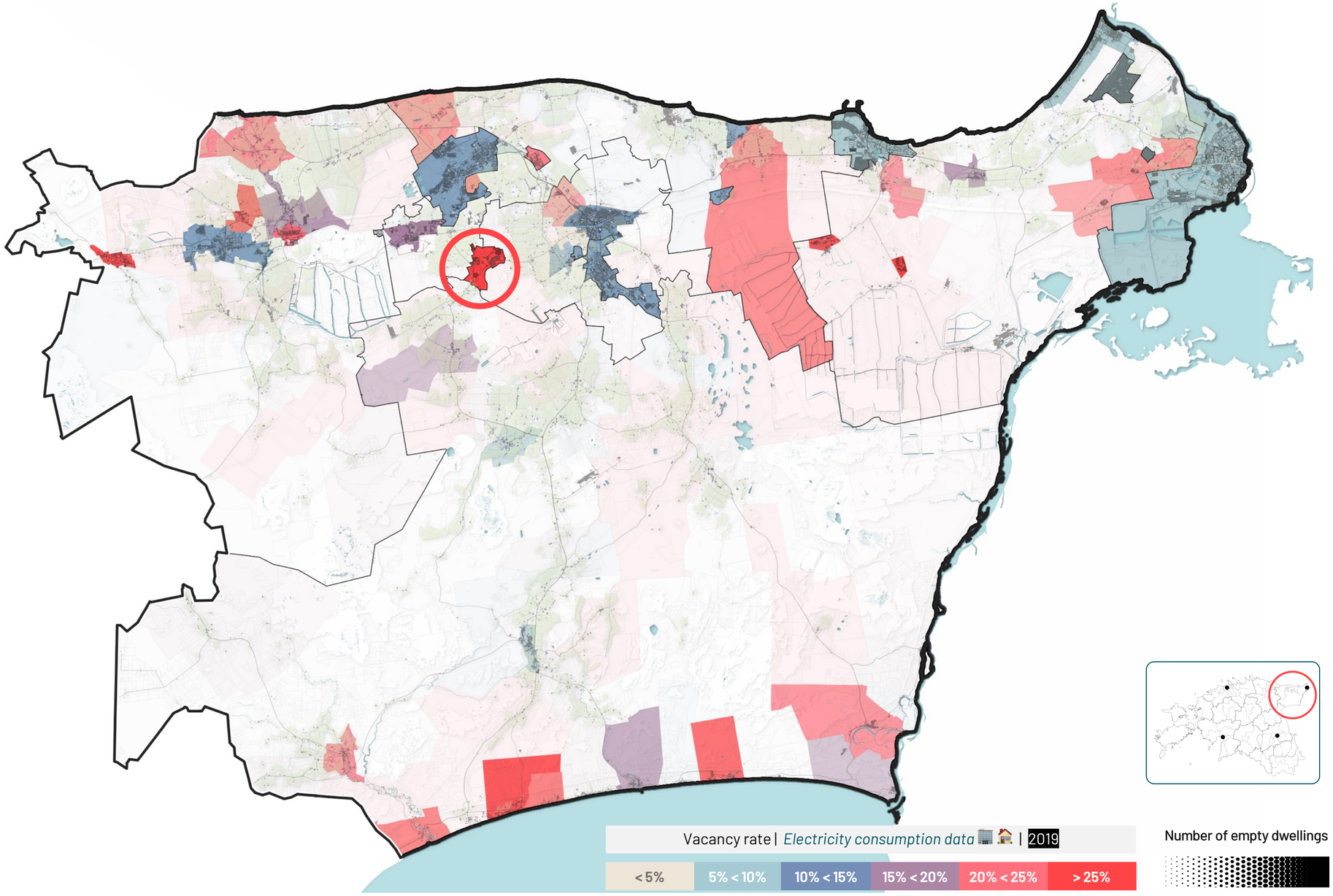
VACANCY RATES
AGGREGATED BY SETTLEMENT

A zoom-in into Ida Virumaa (East Estonia)

When we started mapping vacancy data, it became clear that the phenomenon looked different at different scales.

For instance, Kohtla-Järve is generally perceived as a shrinking city. However, its vacancy rate at the municipal scale is a relatively low 11% - about one in ten dwellings is empty.

We see a new picture at the district scale, with Sompa Linnaosa's vacancy rate of 27% driving the Kohtla-Järve's vacancy rate up. With this level of detail, we could dispel the myth that mainly East Estonia is suffering from shrinkage, when in fact, there are clusters of vacant buildings even in fast-growing regions.



SOMPA

EXAMPLES OF HIGH VACANCY CLUSTERS

A zoom-in into Ida Virumaa (East Estonia)

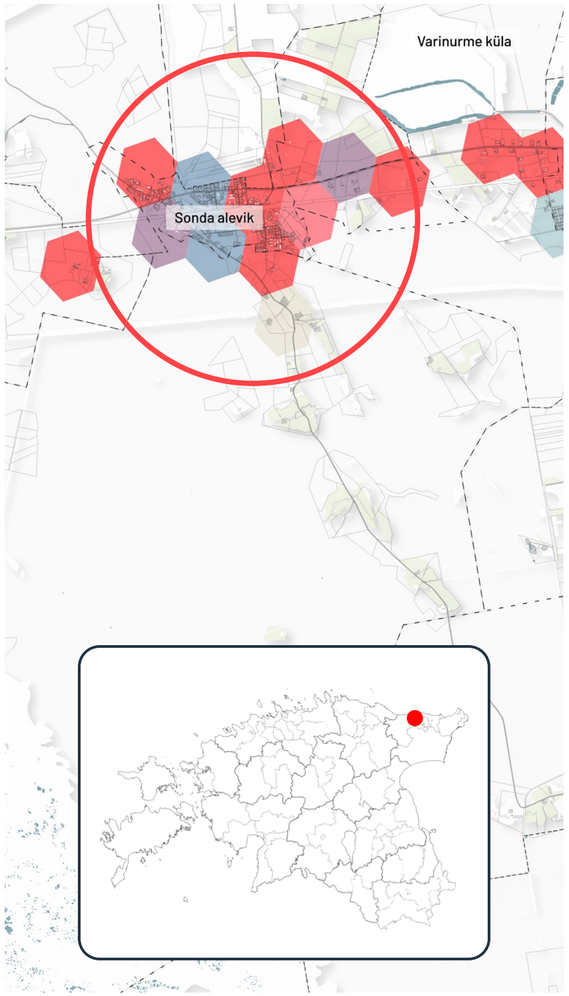
••••••

One of Estonia's cluster of vacant buildings in Sompa, Ida Viru.

This, like many other highly vacant settlements, is characterised by historic buildings with high architectural and cultural value. For the same reasons, those buildings are more difficult and expensive to renovate, make energy efficient and maintain. That is also one of the core reasons for having vacancies.



SONDA
EXAMPLES OF HIGH VACANCY CLUSTERS





VACANCY BY BUILDING TYPE

8 family buildings built before the 70s are the most vacant type in Estonia.

1 every 5 dwelling is empty

Renovations are challenging, costly and this is the decade when they are needed.

In such small buildings, even if one flat become empty, the maintenance costs can become unbearable for the other tenants.

Just 2 or 3 empty flats in such building can make them socially unsustainable.

With interest rates rising, those buildings will become even more vulnerable.

	Vacancy (EL, 2019)				
	3-8	9-18	19-30	31+	Kokku
-1919	26.8%	15.1%	18.0%	8.7%	21.1%
1919-1945	24.5%	11.1%	8.6%	9.2%	16.4%
1946-1960	21.3%	13.2%	9.7%	6.4%	13.8%
1961-1970	20.0%	11.3%	7.8%	5.5%	7.7%
1971-1980	16.5%	9.6%	5.5%	4.2%	6.1%
1981-1990	17.7%	8.7%	5.8%	3.3%	4.8%
1991-2000	16.8%	8.2%	5.1%	3.3%	6.4%
2001-2005	12.1%	6.6%	5.0%	5.5%	7.1%
2006+	7.9%	4.4%	3.0%	8.0%	6.3%
teadmata	12.7%	6.9%	33.7%	6.4%	12.1%
Kokku	19.6%	10.3%	6.5%	4.4%	7.7%

EXAMPLE FROM A MUNICIPALITY PROFILE

During the study we profiled 12 municipalities chosen by the steering group at ministry

Municipalities at the periphery of urban municipalities have higher vacancy rates.

Within a municipality, settlements at the periphery of the densest settlements have higher vacancy rates.

Within settlements, buildings that are far from dense urban environment have higher vacancy rates.



Vacancy rate | Electricity consumption data 2019

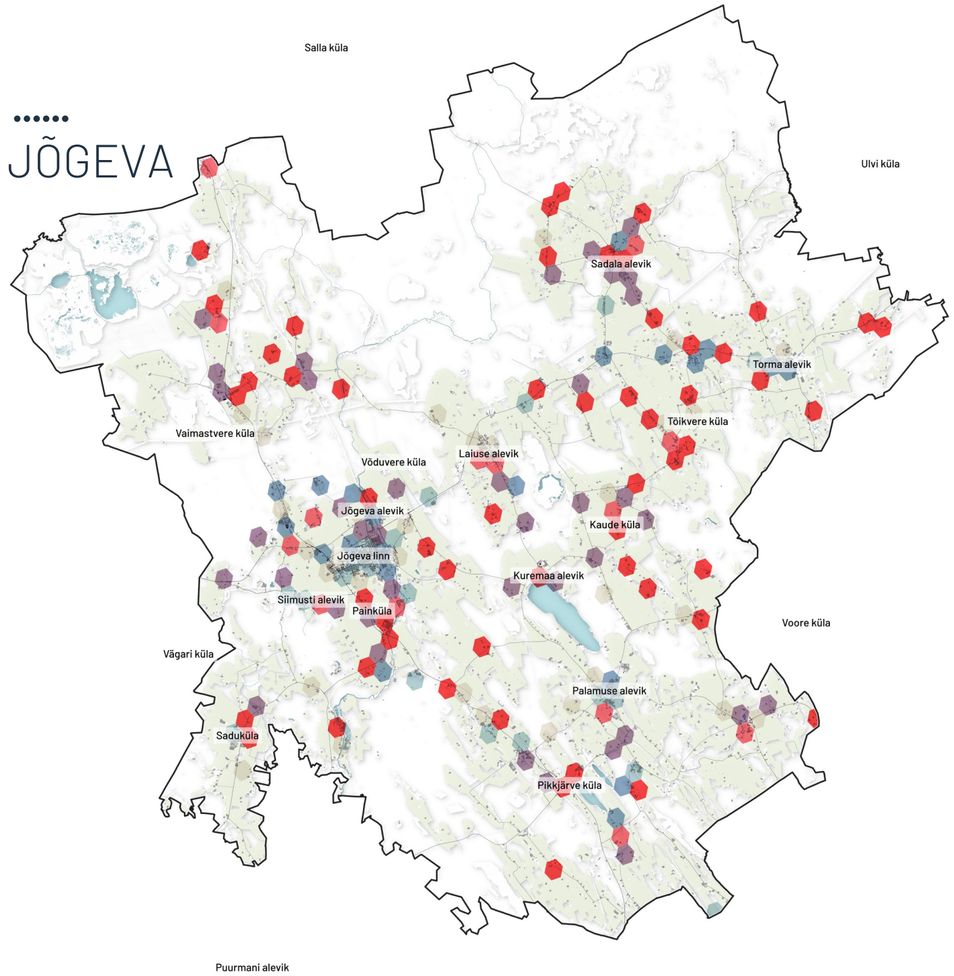
- < 5%
- 5% < 10%
- 10% < 15%
- 15% < 20%
- 20% < 25%
- > 25%

Empty dwellings

5422	836	13 %
3550	510	12 %
1872	326	15 %

Asustatus hoonetüüpide lõikes

BUILDING TYPE			VACANCIES	
Type	Year	Dwells.	Vacancy	Empt-dwel.
A3	-1919	3<8	44%	59
B3	1919-1945	3-8	32%	97
E3	1971-1980	3-8	24%	207
D3	1961-1970	3-8	19%	315



What are the vacancy trajectories across Estonia?



VACANCY TRAJECOTORIES
CHANGE IN VACANCY RATES 2013-2020

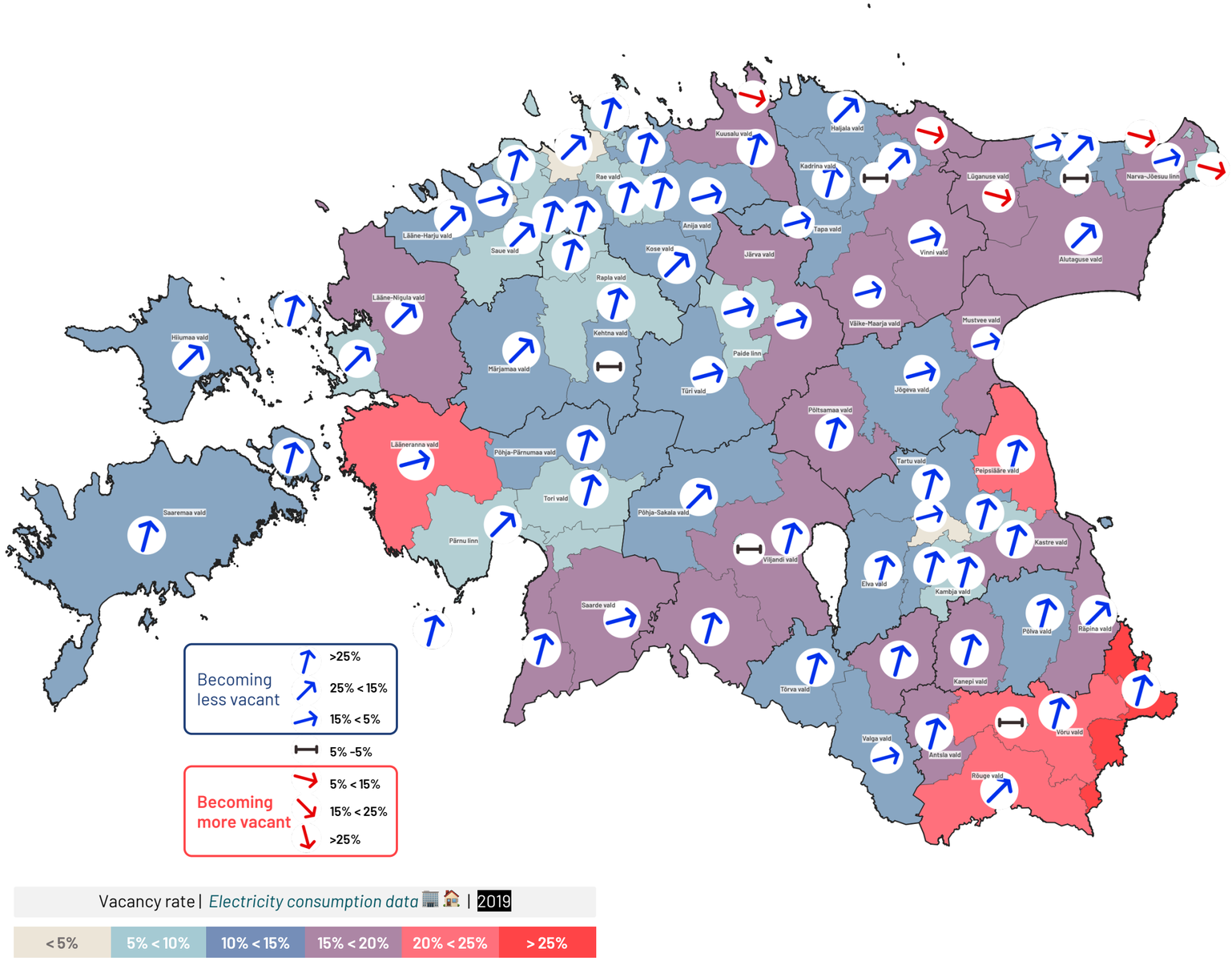
Estonian population size has reached a plateau, and it is expected to start declining rapidly.

Estonia is becoming less vacant across the board

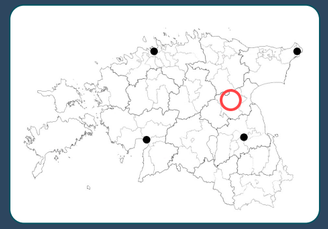
The commuter belts of Tallinn and Tartu are the fastest to recover from vacancy

4 of the 5 municipalities that are becoming more vacant are in East Estonia.

People's perception of shrinkage has less to do with vacancy rates and more with the change in vacancy.



EXAMPLE OF VACANCY TRAJECTORIES IN THE H3 GRID



Vacancy rate | Electricity consumption data 2019

Becoming Less vacant
- >25%
- 25% < 15%
- 15% < 5%

5% –5%

Becoming More vacant
- 5% < 15%
- 15% < 25%
- >25%

Vaimastvere küla

Võduvere küla

Jõgeva linn

Painküla

Vagari küla

Vacancy rate | *Electricity consumption data* | 2019

< 5%	5% < 10%	10% < 15%	15% < 20%	20% < 25%	> 25%

SHRINKAGE AND GROWTH

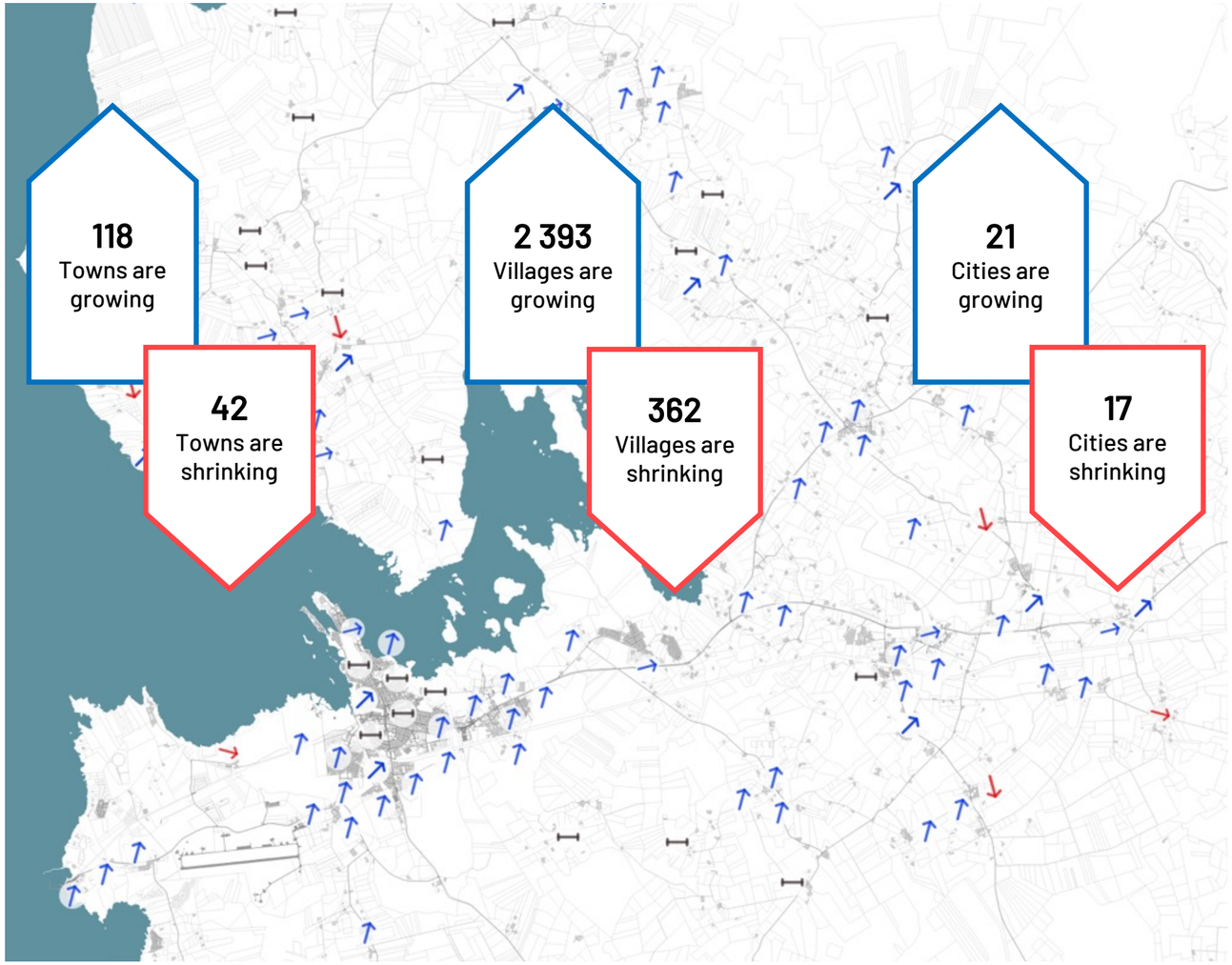
Growing cities can shrink

Shrinking cities can also grow

The number of empty dwellings in settlements affected by depopulation is higher than in settlements with a growing population.

While more areas are growing than shrinking, the latter can generate clusters of highly vacant buildings.

Seventeen cities have been shrinking at a 5-10% rate in the past seven years.



VACANCY TRAJECTORY BY BUILDING TYPE

National Population Registry data

While small buildings built before 1970s are the most vacant, high demand in cities like Tallinn and Tartu are driving down the vacancy.

However, this building is also becoming more vacant everywhere else than Tallinn, Tartu and Narva.

The only building types that are becoming increasingly empty are the panel houses.

Their vacancy rates are below 5%, but they are becoming increasingly unpopular.

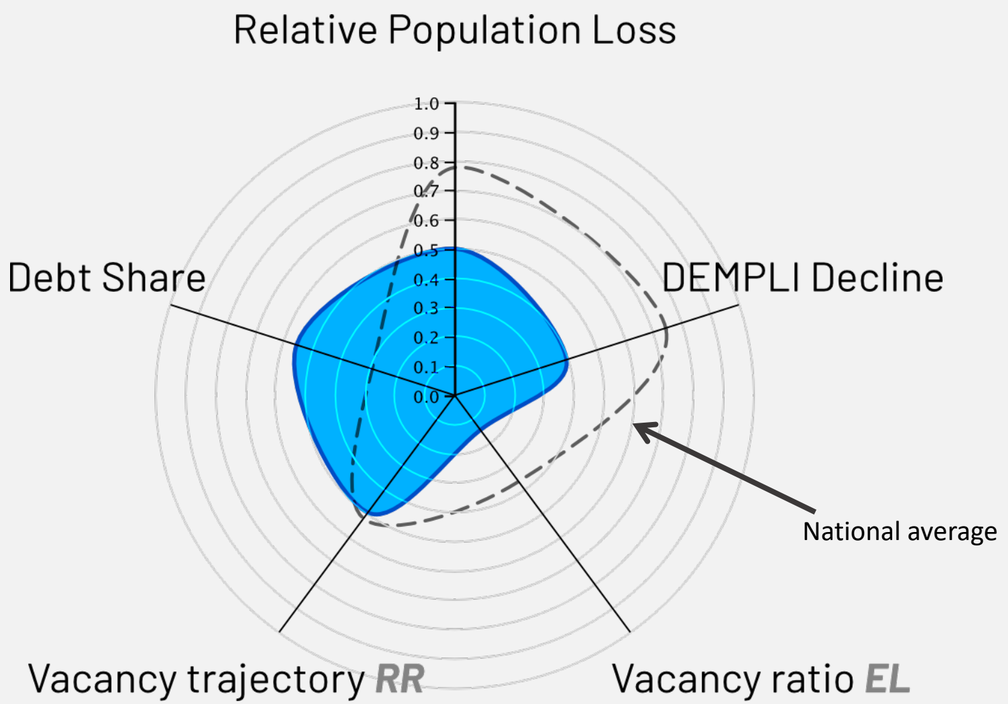
	% Change in Vacancy (RR, 2013 - 2020)				
	3-8	9-18	19-30	31+	Kokku
-1919	-13.7%	-25.7%	-33.7%	-2.0%	-19.0%
1919-1945	-15.2%	-23.0%	-27.7%	-26.8%	-20.3%
1946-1960	-5.9%	-14.9%	-8.5%	-14.1%	-10.4%
1961-1970	-16.8%	-16.0%	-12.1%	8.4%	-1.7%
1971-1980	-20.1%	-25.7%	-4.7%	0.4%	-9.0%
1981-1990	-21.9%	-33.9%	-20.6%	4.6%	-10.8%
1991-2000	-18.3%	-20.7%	-9.8%	-8.8%	-14.8%
2001-2005	-32.5%	-25.5%	-37.0%	-23.1%	-28.5%
2006+	-41.6%	-42.2%	-40.7%	-31.3%	-36.8%
teadmata	58.8%	52.2%	121.0%	175.9%	91.2%
Kokku	-16.9%	-24.5%	-17.8%	0.9%	-11.5%

What are the vacancy rates across Estonia?

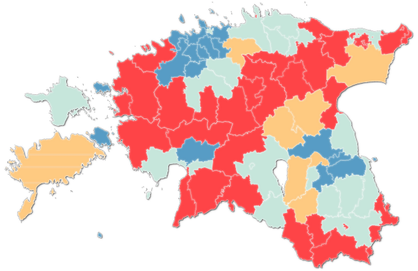


VULNERABILITY INDEX

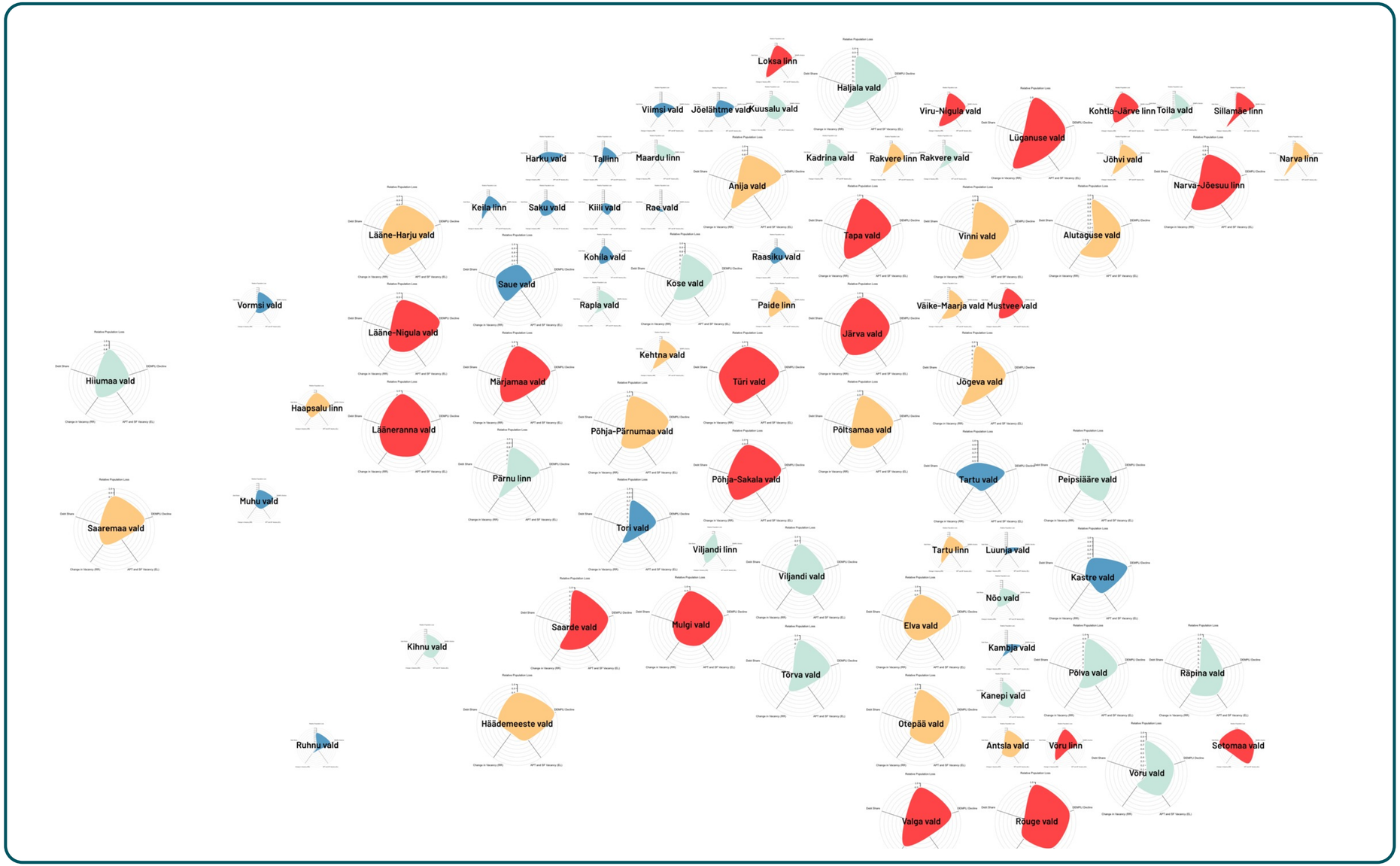
What is the capacity of Estonian municipalities
to deal with shrinkage?



VULNERABILITY INDEX



- MOST VULNERABLE
- VULNERABLE
- LESS VULNERABLE
- LEAST VULNERABLE



PRIORITIES

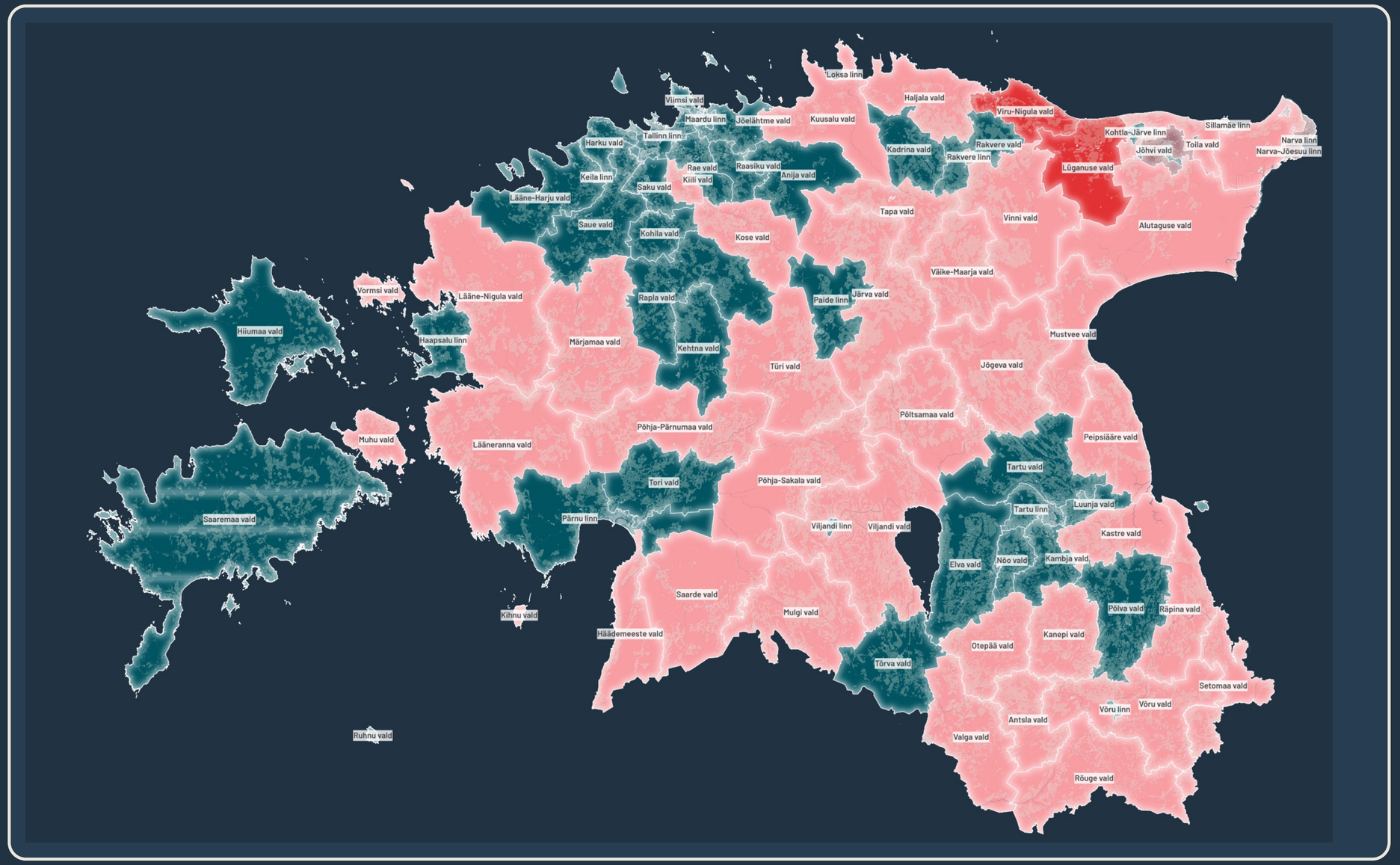
Setting priorities for future studies and interventions

HIGH VACANCY
VACANCY INCREASING

LOW VANCACY
VACANCY INCREASING

HIGH VACANCY
OCCUPANCY INCREASING

LOW VACANCY
OCCUPANCY INCREASING



PRIORITIES

Setting priorities for future studies and interventions

HIGH VACANCY
VACANCY INCREASING

369 settlements

LOW VANCACY
VACANCY INCREASING

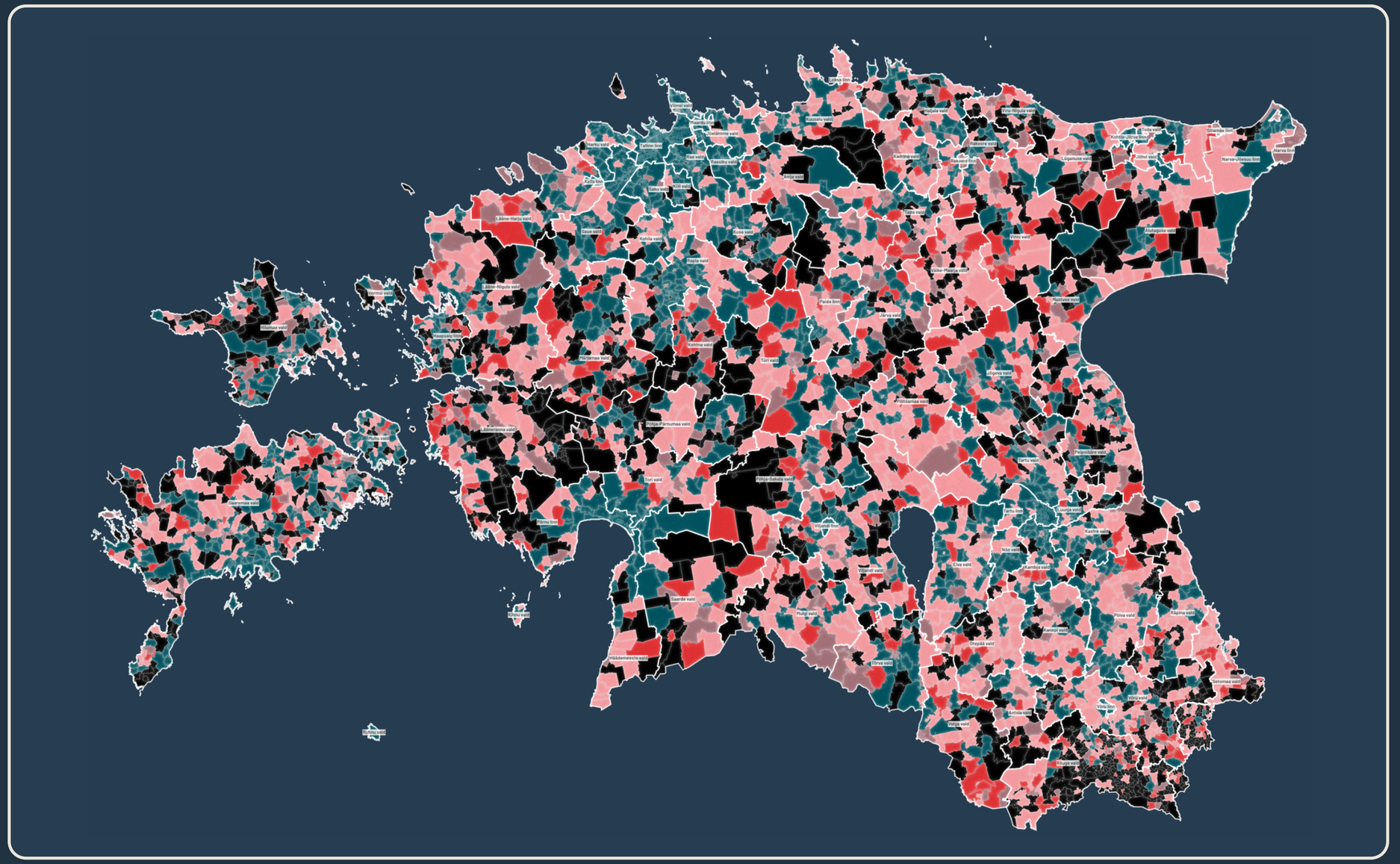
427 settlements

HIGH VACANCY
OCCUPANCY INCREASING

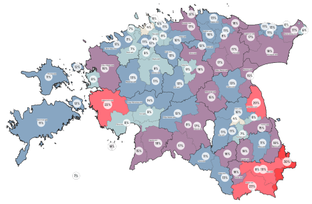
302 settlements

LOW VACANCY
OCCUPANCY INCREASING

1290 settlements



SUMMARY

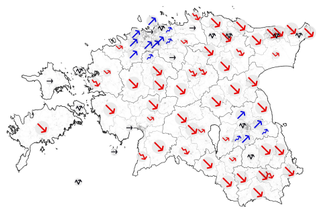


VACANCY

High vacancy rates are present in every region, regardless of depopulation or socio-economic conditions.

25 Municipalities have a vacancy rate of at least 15% - 1 empty flat every 6.

7,7% of apartment dwellings are empty and 12.2% of single family houses.

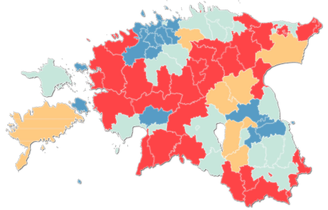


TRAJECTORIES

Population growth is experienced only in the commuter belts of Tallinn and Tartu.

4 of the 5 municipalities that are becoming more vacant are in East Estonia.

17 cities are shrinking at 5-10% rate in the past 7 years.

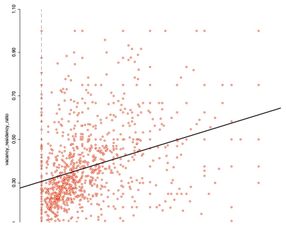


VULNERABILITY

One forth of Estonian municipalities are highly vulnerable to shrinkage.

Small buildings built before the 70s are the most vulnerable to shrinkage.

Large apartment buildings built in the 60s and 80s are becoming increasingly vacant

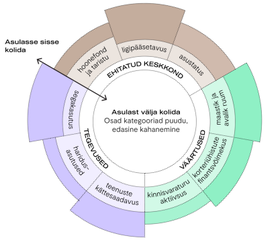


POSITIVE DEVIANCE

Investment in public space and infrastructure can help to increase occupancy.

Occupied buildings in clusters of highly vacant buildings avoided becoming vacant through renovations.

Banks are reluctant to provide credit to shrinking cities, contributing to a vicious circle preventing regeneration.



SCENARIO

Local centres have a low vacancy, but apartment building stock is not renovated and is thus at risk of emptying in the coming decade.

Monofunctional towns and villages far from local centres are becoming more vacant and are first to 'empty out' (starting with apartment buildings).

The vitality of towns and villages around local centres depends on the availability of services.

OPPORTUNITIES FOR INTERNATIONAL COOPERATION

CHALLANGE-BASED EVENTS

A series of 2-day co-creation workshops with local stakeholders, citizens and planners to learn about shrinkage, open the debate and co-design a concrete vision and roadmap for a local project or initiative.



The core of the debates will be to invite experts and policy maker from the two side of the discourse and learn what are the possible scenario.

«Vacancy is already the outcome of complex social socio-economic processes»

↓

DIVEST IN SHRINKING CITIES

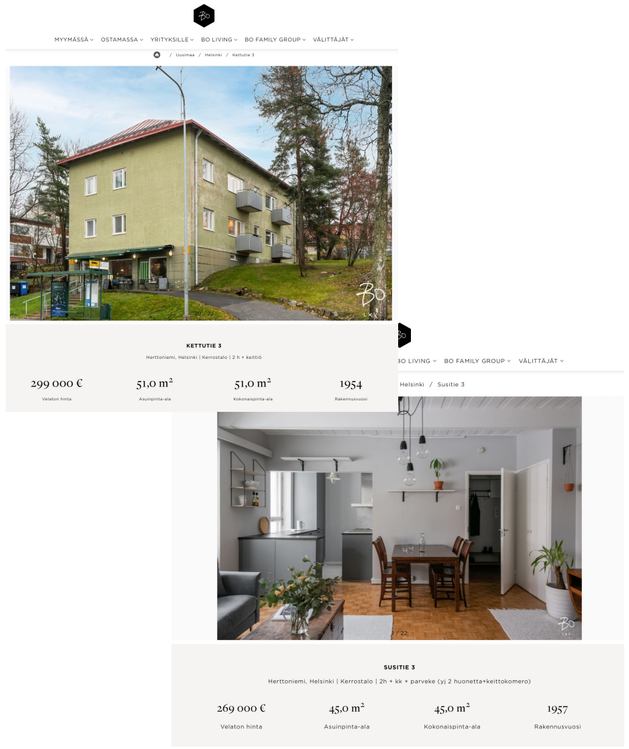
«Vacancy is the outcome of poor managmenet and lack of services»

↓

INVEST IN SMART-SHRINKAGE

PILOT STUDY

Initiation of a research pilot using the methodology we developed in the national study to analyse the most vulnerable building types starting from real-estate data.



RESEARCH CO-OP

Cooperating with local research centres on shrinking cities, knowledge transfer, and developing a localised methodology to analyse shrinking patterns.

