

Pandemic Resilient Cities: the possibility of Polish cities regeneration in the age of COVID -19

Anna Majewska, Małgorzata Denis, Ewa Jarecka-Bidzińska, Joanna Jaroszewicz, Wioleta Krupowicz,

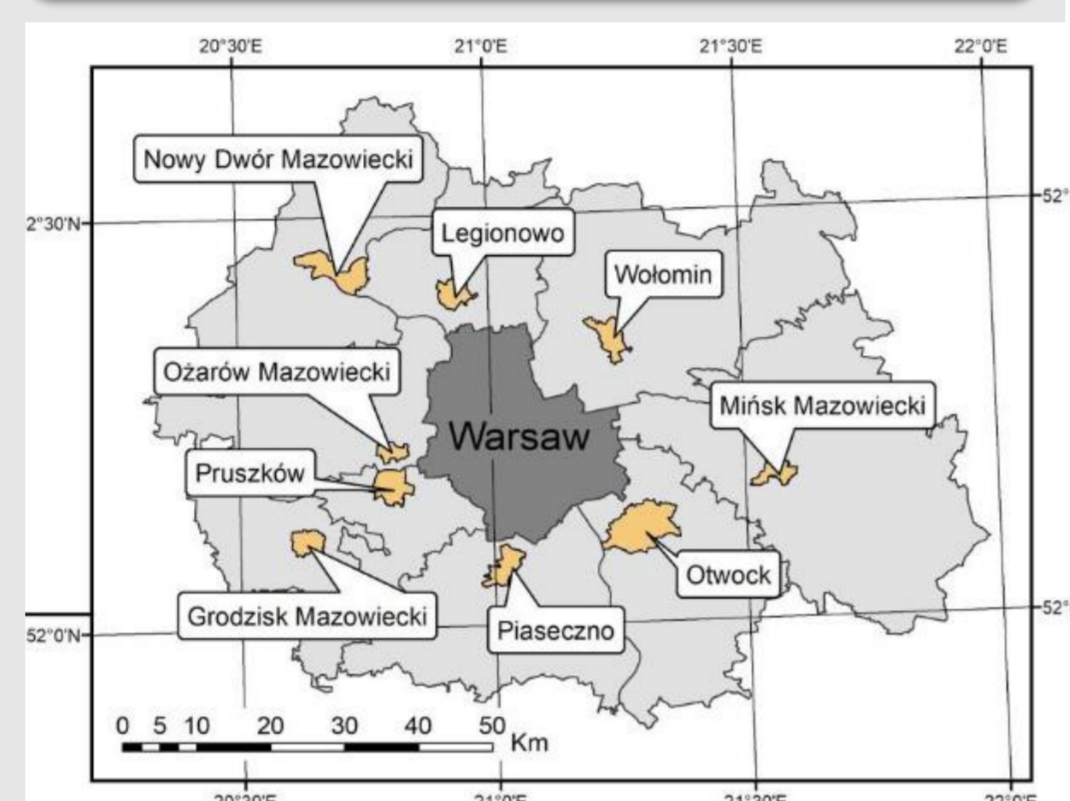
Affiliation of authors : Department of Spatial Planning and Environmental Sciences, Faculty of Geodesy and Cartography, Warsaw University of Technology, Warsaw, Poland

INTRODUCTION

Cities and towns experience the most problems related to the functioning of the Covid-19 pandemic, due to the intensity of development, pollution of the natural environment, socio-economic potential, population density and the related demand for the availability of communication, trade and services as well as the complexity of interpersonal social interactions.

Shaping **Pandemic Resilient Cities** is becoming an obvious need and the current trend in urban planning and spatial management. This leads to changes in the functional and spatial structure and the preparation of cities for a pandemic and rapid regeneration in the post-pandemic period. The main goal is to identify the most important problems in selected towns of the agglomeration well connected with Warsaw.

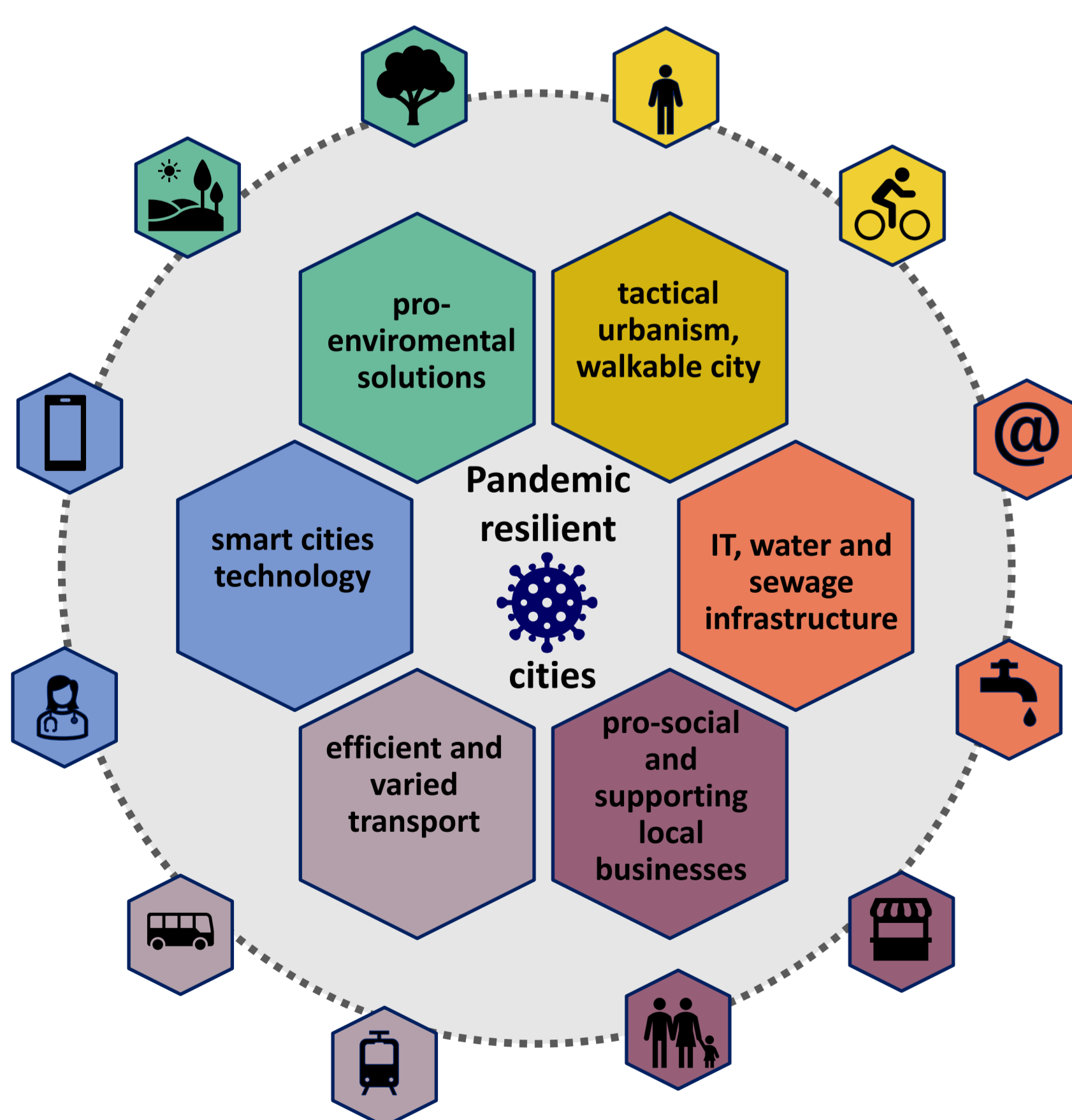
FIG. 1. RESEARCH AREA



OBJECTIVES

FIG. 2. PANDEMIC RESILIENT CITIES OBJECTIVES

One of the basic issues in preparing cities to be a pandemic resilient are:



- Urban, architectural and spatial planning solutions**
 - tactical urbanism
 - walkable
 - „15 – minutes city”
 - public areas for flexible use
 - degrowth,
 - hyper - proximity,
 - mix - use urban planning
 - human scale of buildings
 - priority of pedestrians
- Contemporary infrastructure**
 - IT, broadband, wi-fi
 - water and sewage infrastructure
 - modernization of old buildings
- Society and business supporting**
 - sustainable development
 - resolving social inequalities
 - supporting the elderly and digitally excluded
 - supporting local trade, services and production, start-ups
- Efficient and varied transport**
 - hierarchical transport
 - bicycle infrastructure
 - efficient and varied ,smart public transport
- Smart cities technology**
 - smart community
 - health technology
 - crowd - manager app
- Pro – environmental solutions**
 - pro-ecological measures
 - reduction of CO2 emissions
 - renewable energy sources
 - adaptation to climate change
 - systems of green and blue areas
 - aeration corridors

METHODS, DATA ANALYSIS

Stage 1 Comparative analysis of selected towns

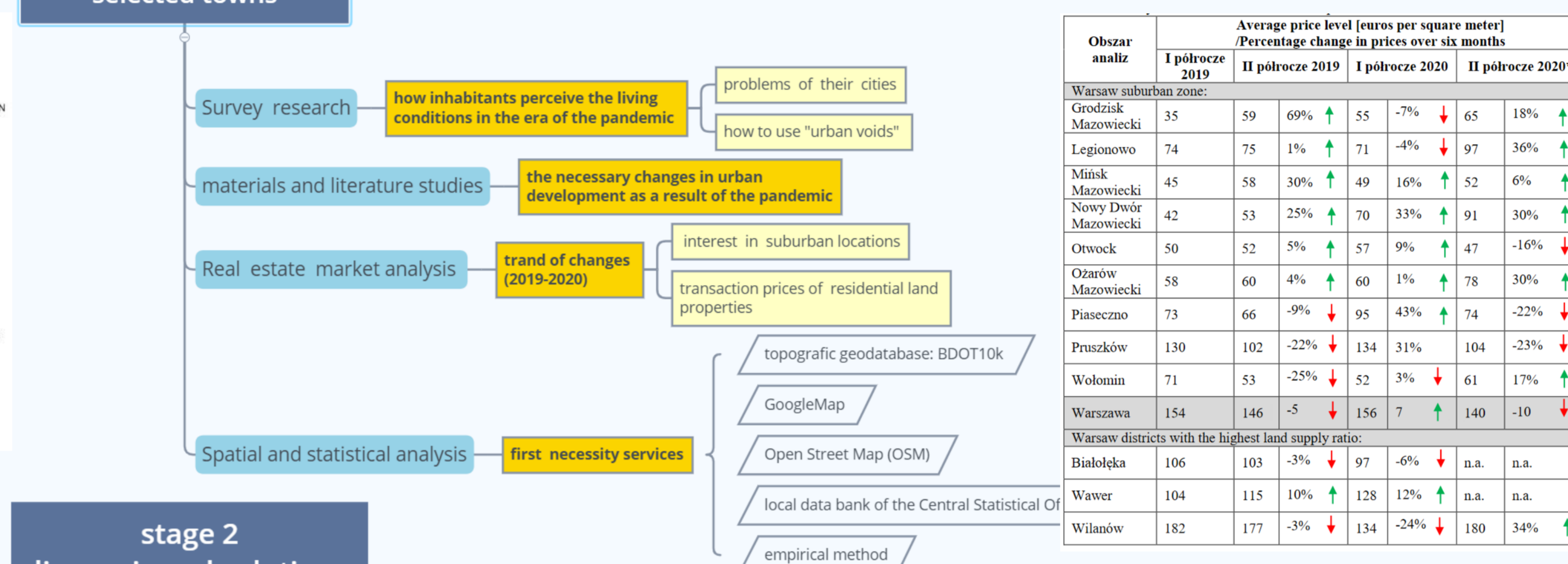


FIG. 3. THE AVERAGE PRICE LEVEL OF LAND PROPERTIES

Obszar analizy	Average price level (euros per square meter)						
	Percentage change in prices over six months						
	I półrocze 2019	II półrocze 2019	I półrocze 2020	II półrocze 2020*			
Warsaw suburban zone:							
Grodzisk Mazowiecki	35	59	69%	55	-7%	65	18%
Legionowo	74	75	1%	71	-4%	97	36%
Młock Mazowiecki	45	58	30%	49	16%	52	6%
Nowy Dwór Mazowiecki	42	53	25%	70	33%	91	30%
Otwock	50	52	5%	57	9%	47	-16%
Ożarów Mazowiecki	58	60	4%	60	1%	78	30%
Piaseczno	73	66	-9%	95	43%	74	-22%
Pruszków	130	102	-22%	134	31%	104	-23%
Wolomin	71	53	-25%	52	3%	61	17%
Warszawa	154	146	-5%	156	7%	140	-10%
Warsaw districts with the highest land supply ratio:							
Białobłota	106	103	-3%	97	-9%	n.a.	n.a.
Wanior	104	115	10%	128	12%	n.a.	n.a.
Wilanów	182	177	-3%	134	-24%	180	34%

stage 2 diagnosis and solutions for Pruszków

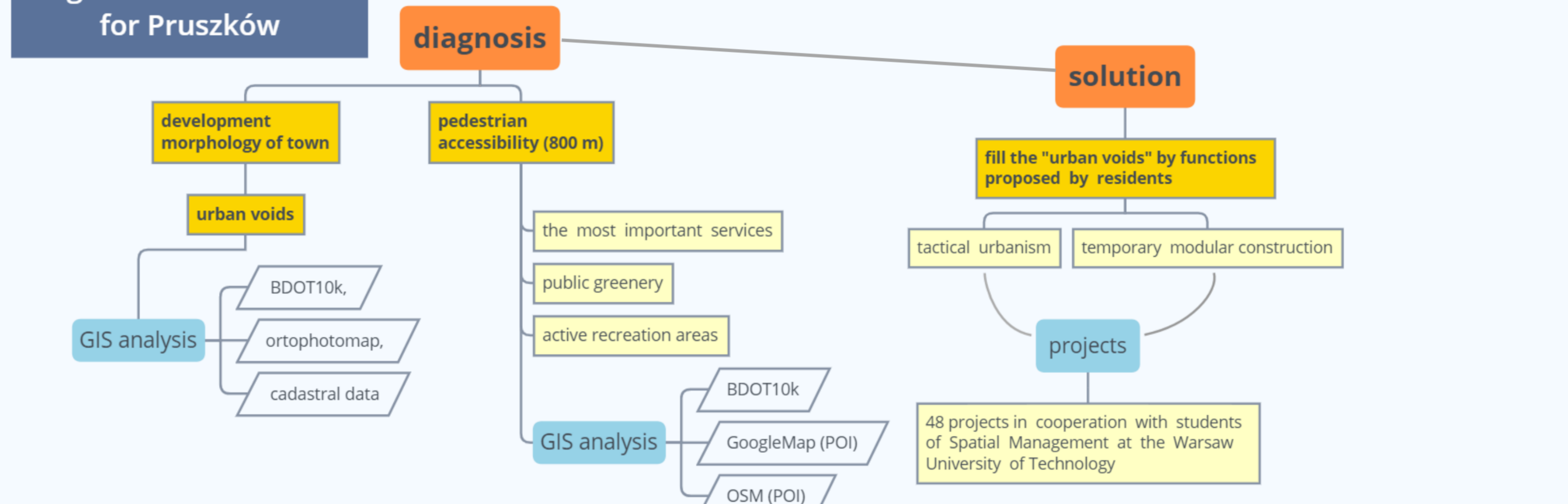
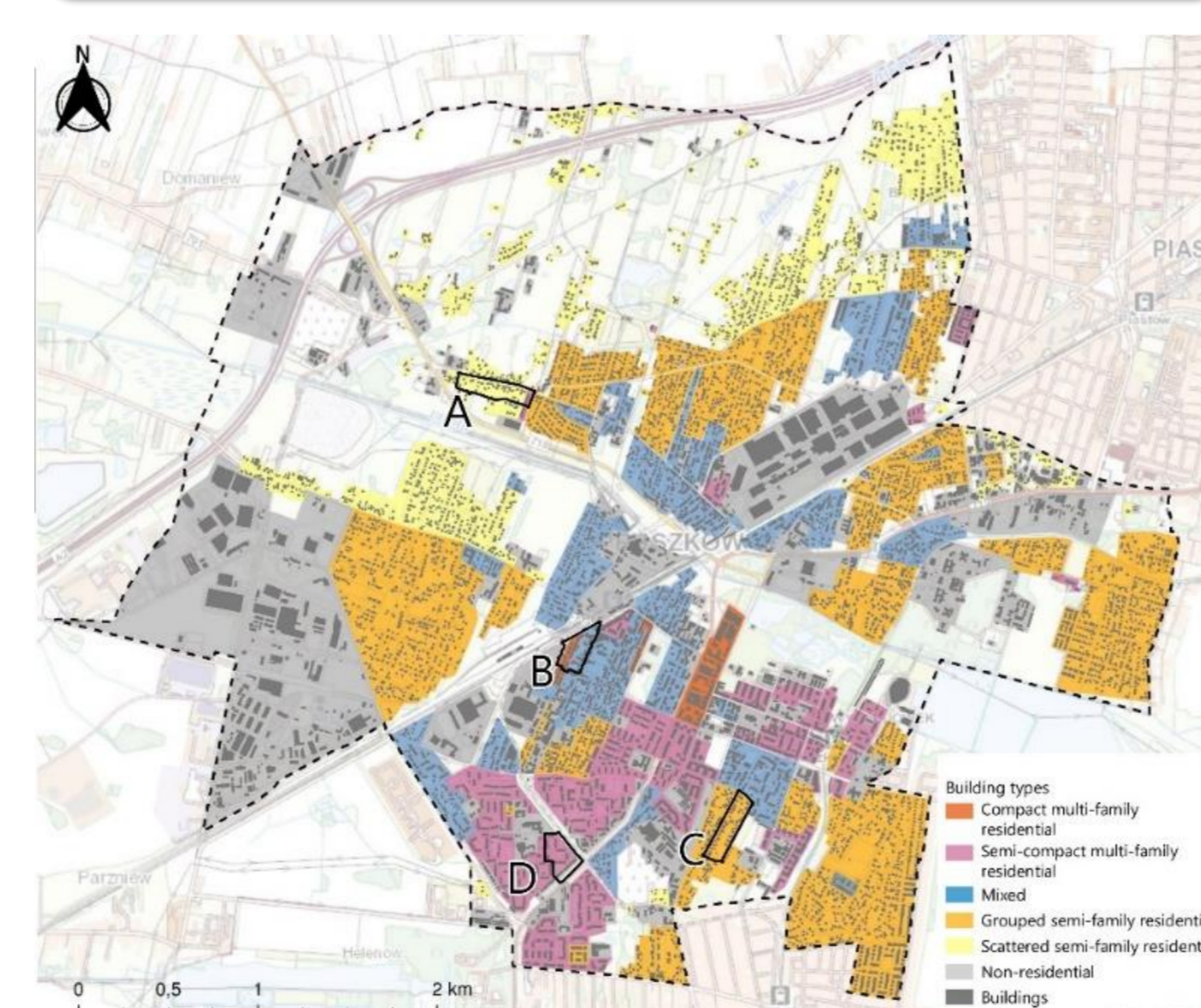
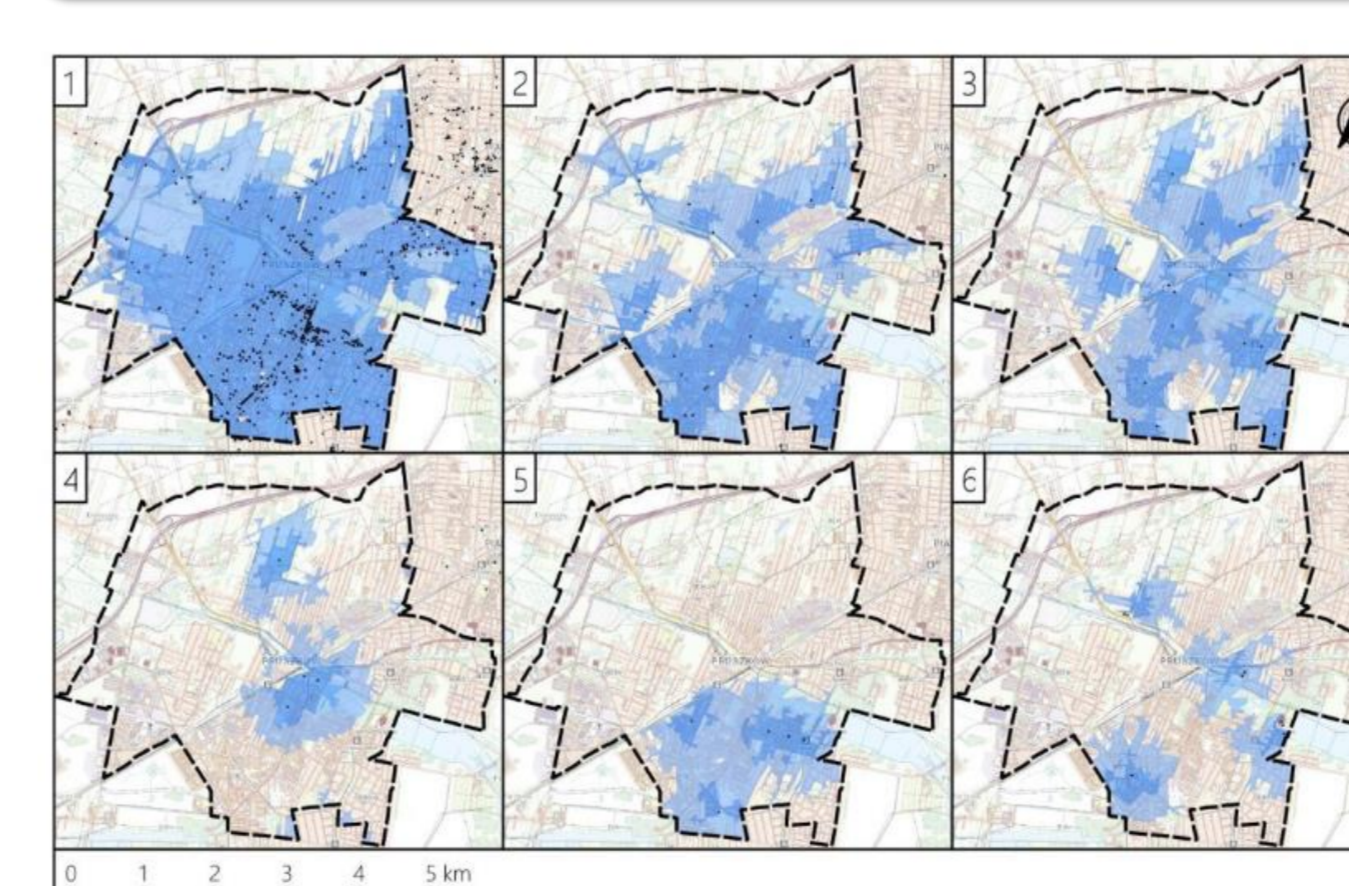


FIG. 4. THE MORPHOLOGY MAP OF PRUSZKÓW



The morphology of Pruszków showing the layout of typical buildings occurring in the analysed towns. Areas marked with letters A, B, C, D are areas for which design concepts have been prepared. Source: student study under the direction of the authors of the article. Students: Buraczyński Robert, Dębowska Hanna, Dziurdzia Weronika, Dolata Anna, Gomola Dominik, Izdebski Maciej.

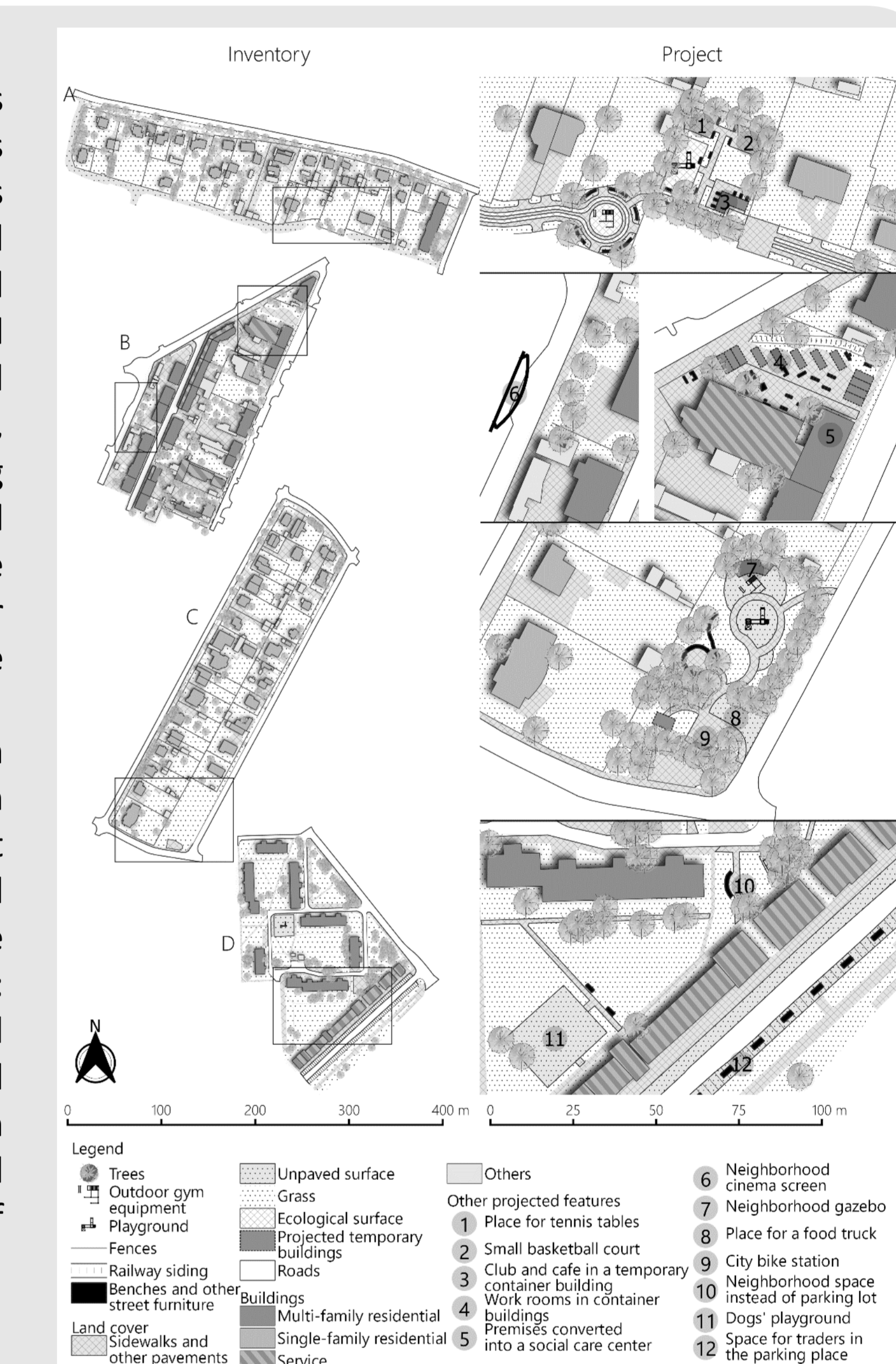
FIG. 5. ACCESS TO THE MOST IMPORTANT SERVICES



1. Access to retail establishments, 2. Access to postal and parcel machines, 3. Access to bicycle 54Stations, 4. Access to parks, 5. Access to public spaces (other than parks), 6. Access to active recreation places (gyms, playgrounds, skate park). student study under the direction of the authors of the article. Students: Buraczyński Robert, Dębowska Hanna, Dziurdzia Weronika, Dolata Anna, Gomola Dominik, Izdebski Maciej.

CONCLUSIONS

FIG. 6. EXAMPLES OF DESIGN CONCEPTS



The COVID-19 pandemic has shown the essence of cities transformation towards "pandemic resilient" and sustainable cities. Functional and spatial deficiencies in small towns, which had functioned so far as commuter suburb, were exposed. Changing consumer preferences and remote type of work have introduced demand for services and trade in the analyzed areas.

Only simultaneous action in six listed in the section „Objectives” fields make it possible to achieve the desired effects. The analysis of three selected issues related to: functional and spatial structure, communication and greenery in connection with the real estate market resulted in conclusions in the form of design proposals.

Examples of design concepts created by students of the Spatial Management Department of the Warsaw University of Technology. Research area the city of Pruszków, source: Work of the GP PW (Spatial Management WUT) students, under the supervision of the authors of the article Authors: quarter A - Maciej Izdebski, quarter B - Hanna Dębowska, quarter C - Robert Buraczyński, quarter D - Anna Dolata.

REFERENCES

- Allam, Z., Jones, D.S., 2020. Pandemic stricken cities on lockdown. Where are our planning and design professionals [now, then and into the future]? Land Use Policy 97, 104805
- Banai R. Pandemic and the planning of resilient cities and regions, 2020, Cities
- Barbarossa, Luca. "The Post Pandemic City: Challenges and Opportunities for a Non-Motorized Urban Environment. An Overview of Italian Cases." Sustainability 12.17 (2020): 7172.
- Li, H., Liu, Y., 2016. Neighborhood socioeconomic disadvantage and urban public green spaces availability: A localized modeling approach to inform land use policy. Land Use Policy, 57, 470-478.
- Pouso, Sarai, et al. "Contact with blue-green spaces during the COVID-19 pandemic lockdown beneficial for mental health." Science of The Total Environment 756 (2021): 143984.
- Megahed, N. A., & Ghoneim, E. M., 2020. Antivirus-built environment: Lessons learned from Covid-19 pandemic. Sustainable Cities and Society, 61.
- Moreno, C., Allam, Z., Chabaud, D., Gall, C., Pralong, F., 2021. Introducing the "15-Minute City": Sustainability, Resilience and Place Identity in Future Post-Pandemic Cities. Smart Cities 4, 93-111
- UN Habitat-World Health Organization. Integrating Health in Urban and Territorial Planning: A SOURCEBOOK. UN Habitat—WHO, 2020.
- Zambrano-Monserrate, M. A., Ruano, M. A. & Sanchez-Alcalde, L. (2020). Indirect effects of COVID-19 on the environment. Science of the Total Environment, 728, 138813.

ACKNOWLEDGEMENTS: This research was funded by the Warsaw University of Technology under the project "IDUB (Initiative of Excellence) against COVID-19: Innovative spatial solutions minimizing the negative effects of the COVID-19 pandemic in conditions of limited social mobility".

International Conference ACPS 2021: ARCHITECTURE, CITY, PEOPLE, STRUCTURE, 21 Maj 21 2021, Wydział Architektury Politechniki Wrocławskiej