Project Fusilli

A simple recipe for clever metropolitan planning

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A SIMPLE RECIPE FOR CLEVER METROPOLITAN PLANNING

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The game

0. PREPARE FOR THE GAME

This is how you start every recipe. You open the fridge, and you see what's inside. With those ingredients, you become creative. Should you cook a soup? Or maybe pasta? What about your city's ingredients?

1. READ THE CITY

If your ingredients are suitable for pasta, then you should check the necessary steps. What about *cacio e pepe*? A cooking recipe might be easy to read...But what about reading the city?

2. COMPARE THE CITY

What kind of cheese should you use? Taste and compare them. For your pasta, *pecorino romano* cheese might be the best choice. You basically do the same with cities. You compare them, and choose the best options for your goals.

3. UNDERSTAND THE CITY

You certainly know that some pasta works well with certain types of wine. And you should be well prepared to choose the right one. This is also why it is important to understand the city... You need particular interventions for specific places.

4. FIND A REAL-LIFE CHALLENGE

Oops! You dropped a different sort of pasta in your fusilli bowl? You might have just spotted a challenge. When it comes to metropolitan areas, however, spotting the righ challenge might prove difficult.

5. ASK THE RIGHT QUESTION

If you did find the challenge, then it might be the right time to ask questions about the tools at hand for solving it. In your case, you probably just need a fork. In your city, you might need somewhat more complex instruments, in combinations.

6. DRAW A STAKEHOLDER MAP

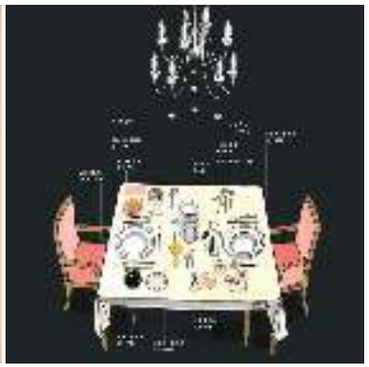
Cooking is always a pleasure when you're not doing it alone. Planning is the same, and solving complex problems might actually teach you to work with a complicated stakeholder network.

7. TRANSLATE INFORMATION INTO COMMON LANGUAGE

Sewing tangled pasta to make a blanket might be a really crazy idea! But trying to translate complex planning information into common language might prove mandatory...

8. FIND THE RESOURCES. MONEY AND MANDATES

A jar of well kept olives might add the extra taste you need sometimes. Resources are your piggy bank and you should use them wisely when planning.



9. DEFINE THE RULES OF THE GAME

With your pasta cooked, you should start preparing the dining table. Rules apply here too, since there is a specific etiquette you need to follow. Do you know the rules in the planning game?

10. BUILD THE GAME ROOM

This is the shelf you use to start preparing the final set-up for your dinner. What will you use? Plates, cutlery, wine glasses, etc. In the planning game, you might use scale models, maps, recorded interviews, photographs, and many more.

11. PLAY THE GAME

Finally, we get to eat! In planning, multiple play sessions might be needed, but keep in mind that much of the value comes from the act of playing.

12. RECORD IMPORTANT MOVES

Now that we have enjoyed dinner, it is high time to record the key moments in this wonderful recipe! Did you get well with your cooking companion? Was there balance between you two, did you work well together, or did you become enemies by the end of the cooking session?

13. LEARN

If this was your first time cooking pasta, no worries! Next time you'll get better at it. Learning by doing is the best. And remember: Serious gaming is a handy solution for tackling a wide variety of metropolitan challenges.

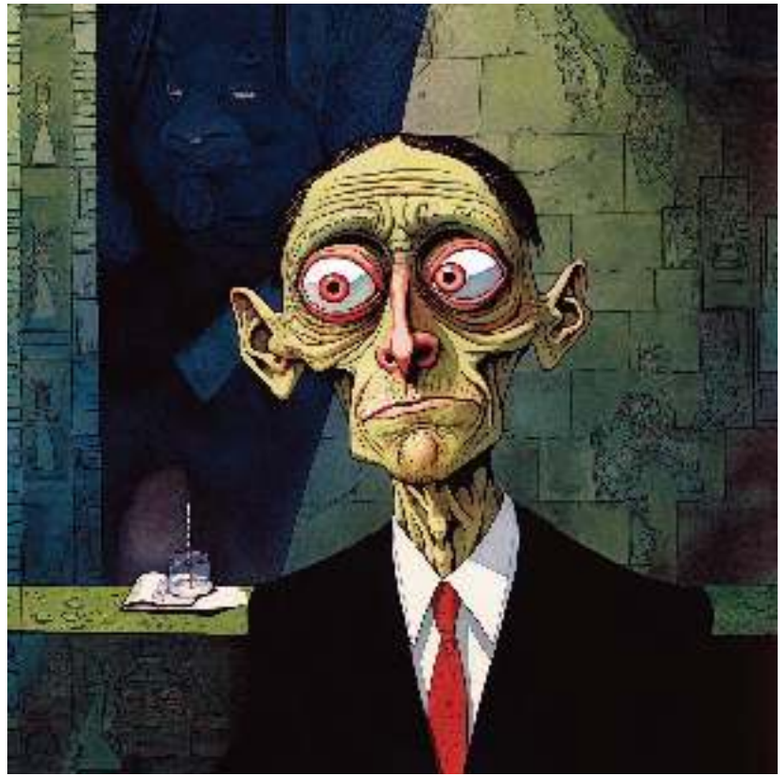
L. Lists

LIST OF FIGURES

ABBREVIATIONS

ARWU	Academic Ranking of World Universities
CBD	Central Business District
EEA	European Environment Agency
EU	European Union
FUA	Functional Urban Area
GHS-FUA	Global Human Settlement – Functional Urban Area
LAU	Local Administrative Unit
LSA	Land Suitability Analysis
LUE	Land Use Efficiency
OSM	Open Street Map
UCDB	Urban Centre Database
ZUP	Zonal Urban Plan

Streets are forever...



and greed is not always good.

F.

FORWORD

Welcome to the Simple Recipe for Clever Metropolitan Planning! This guide is designed to help you navigate the intricate terrain of urban planning when grappling with the tension between good planning and market forces. Consider this to be your playbook, a set of game rules to help you achieve a harmonious balance between creating sustainable, fair, and thriving urban environments, while understanding and engaging with the powerful market forces at play.

OUR PREMISE

First, there is the tension between good urban planning and the market forces shaping cities.

There are people who think that every square meter of urban land should be rigorously planned, and people who believe market forces should be given a more prominent role in designing cities. There will always be some strain between them.

Most cities today fall in one of the following two categories: Those that have no spatial plans in place to guide their growth, and those that implement spatial plans with rigorous zoning regulations. Comparing them would quickly lead us to believe that good design usually leads to a better quality of life. On the other hand, there are prominent urban specialists like Edward Glaeser or Alain Bertaud, who contend that market forces should play a more prominent role in shaping our cities.

We believe that the truth lies somewhere in the middle. Few can claim that Ildefons Cerda's master plan for Barcelona, or Haussmann's plan for Paris have not contributed to making these cities more attractive to people. At the same time, the economic challenges currently facing Barcelona also indicate that good design cannot solve all problems.

Hence, the aim of this guide is not to find the ideal balance between design and market forces, but rather to place these two important dimensions on our mental maps, and use them as lenses for a better and more efficient study of cities and their growth.

The essence of good urban planning is this: cities that promote well-being, solidarity, environmental sustainability, and economic vitality. It emphasizes the efficient use of land, a fair distribution of resources and services, and the creation of lively and accessible public spaces.

The influence of market forces is this: driven by dynamics in supply and demand, they often dominate urban development. The pursuit of profit drives real estate developers, investors, and businesses to make decisions that align with market demands, often sidelining considerations of social justice, environmental impact, and community well-being. This influence can result in urban sprawl, gentrification, and the exclusion of marginalized communities. Always keep in mind that markets have the power to shape the city at breakneck speed.

USA vs. Europe

Specifically, if a planner decides upon an ideal density for a residential area, his or her answer will most likely be based on a set of norms, such as the optimal walking distance to a favourite amenity, good neighborhood indicators, etc. At the same time, an economist will decide on density based on the idea that land is a limited resource, and its price indicates how scarce the resource is at that particular time. From the perspective of an economist, ideal density does not exist. It is rather an indicator of land use, which depends on a series of variables that can change over time for the same location (Bertaud 2018: 34). Therefore, where the price is higher, land should be used more intensively. This vision is often found in the United States. Here, proponents of land use allocation based on market mechanisms believe that this system:

- Transmits information very easily about under– or misused land, via price fluctuations.
- Encourages the intensive use of small plots that are in very high demand, especially those best served by public transportation.
- Stimulates innovation in construction methods: If there was no price for land, there would most likely be no skyscrapers and no elevators.

In Europe, and especially in the former socialist countries, the situation is different: Here, planners view private sector mechanisms with reluctance and tend to plan mostly according to needs, and less according to market forces. In Eastern Europe, this is due to the transition towards a market economy. It started shortly after 1990, and quickly resulted in a rapid and rather opaque privatization of many land resources.

Hence, very few city plans are based on a market logic. Elements related to market dynamics, land prices, transportation costs, commuting time, or elements based on such basic concepts as supply and demand are rarely mentioned. Numerous plans envisage different land uses, based mostly on design rationales and less on economic rationales. Even more problematic is the fact that economists are rarely involved directly in planning decisions and in the design of land use instruments and regulations (*ibidem:* 36f.).

Planning and market forces

And second, there is the need for balance. By recognizing this need, urban planning must engage with market forces, to channel their energies towards social welfare.

Engaging with market forces requires a nuanced approach. Instead of disregarding or opposing market-driven development outright, urban planning should strive to influence and guide it. By incorporating regulations, incentives, and strategic interventions, urban planners can steer market forces towards outcomes that prioritize long-term benefits over short-term gains.

Here, our guide comes in handy. In order to understand how to steer such complex urban planning processes, a recipe for clever metropolitan planning should be used as a starting point. The guide lists the most important steps where one can act strategically. Strikingly similar to (serious) city gaming, getting to a win-win situation, actually means:

1. Collaborative decision-making: By encouraging collaboration between urban planners, developers, policymakers, and communities, dialogue ensures and diverse perspectives reveal themselves.
2. Negotiation: Regulations and incentives that align market forces with sustainable and fair urban outcomes can help steer development in the desired direction.
3. Public-Private Partnerships: Engaging public and private actors in joint ventures promotes responsible and inclusive development that combines market-driven efficiency with public interests.
4. Community Engagement: Actively involving local communities in the urban planning process ensures consideration of their needs, aspirations, and cultural identities, thereby fostering a sense of ownership and social cohesion.

Examples are a powerful tool: Hence, we have selected two metropolitan areas, Cluj, in Romania, and Brno, in the Czech Republic, to accompany us throughout the text. This selection is not accidental but is based on a simple observation: During the past two decades Brno grew, comparatively, more compactly, but performed worse economically, while Cluj sprawled at an accelerated pace, but performed better economically.

With their help, the following chapters will introduce a step-by-step approach to planning metropolitan areas more effectively.

So, dear reader, prepare your strategies, sharpen your skills, and embrace the challenge before you. This guide will be your trusted companion as you navigate the intricate interplay between good urban planning and the powerful market forces that shape our cities. Together, let us embark on a journey to create cities that are not only economically prosperous but also sustainable, inclusive, and truly livable for all.

Game on!

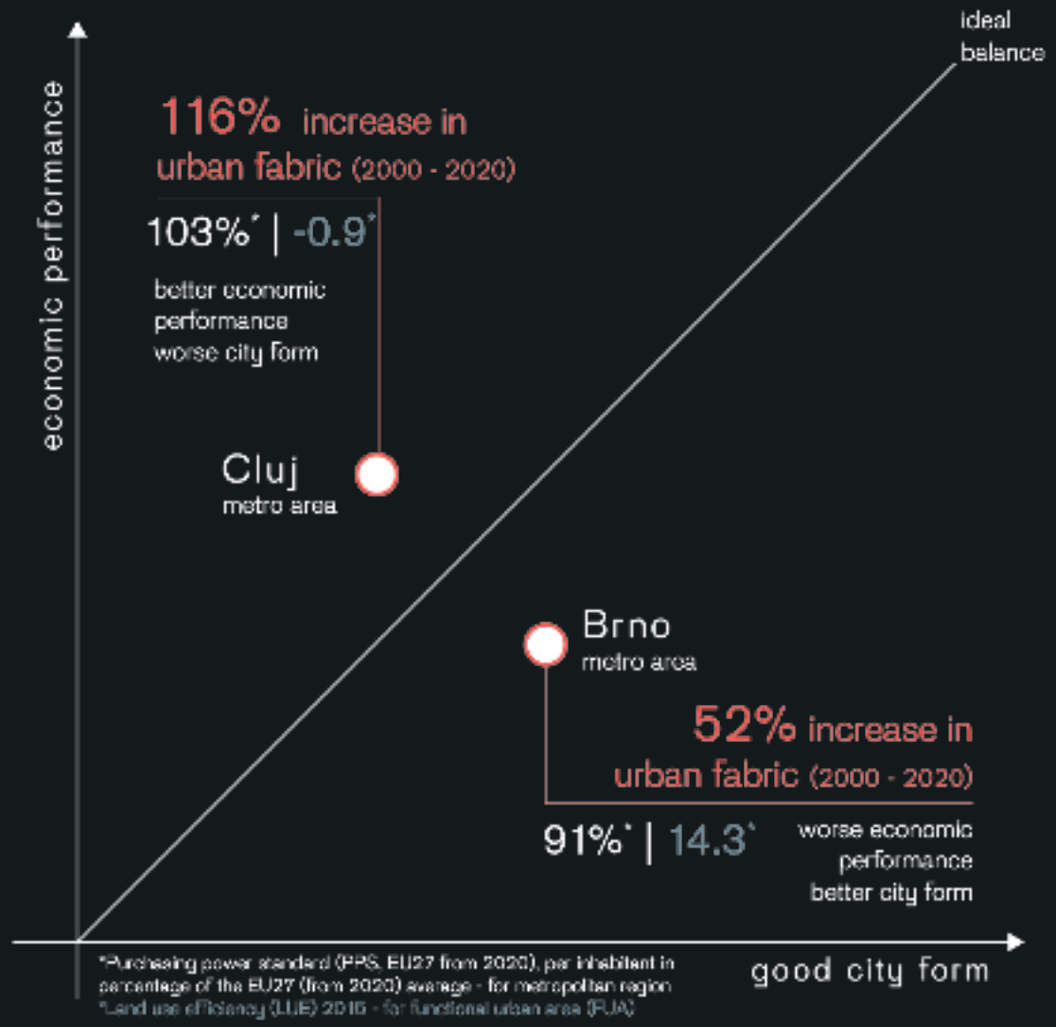


Figure 1. The tension between economic performance and city form
Source: the authors, with figures from EUROSTAT and GHSL

Take-home message

This guide puts planning, market, and problems into context. It is action oriented. It dispenses with empty rhetoric, and focuses on finding the way through the jungle of development. Essentially, it is a recipe for preparing a course in metropolitan development.

Focus is key here. Hence, enter (serious) city games, or, as Bernard Suits famously put it, “playing a game is the voluntary attempt to overcome unnecessary obstacles.” In earnest, city games are a safe and practical way to solve urban challenges, because they imitate real life.

- They are goal oriented: Each challenge can be gamified, from master planning to scenarios and to public-private partnerships (PPPs).
- They are multiplayer: There is more to a city game than the municipality or the private investor. Land owners, NGOs, professionals, small and large entrepreneurs, as well as council members, all play their part to the best of their abilities. Wicked problems require fine blends of money, legislation, knowledge, time, and skills.
- They encourage negotiation: There is no easy way out of a real life challenge. Alliances, compromises, and easy wins are part of the mix. They require effort, dedication, rules, and manners.

Furthermore:

- They are inexpensive: They only cost a fraction of a real project.
- They are safe: Blunders are easy to spot and to correct.
- They are fun!

Who can use the guide & *how to use it?*

This guide is useful for all: planners, economists, developers, public authorities, etc. This is why we have decided to present the information in a simplified manner, according to the decision-making factor:

M Decision makers (a.k.a. the initiators and developers of urban planning documentations),

T Decision takers (a.k.a. institutions in charge of approving them),

B Decision bearers (a.k.a. the civil society that feels the impact of decisions on a daily basis).

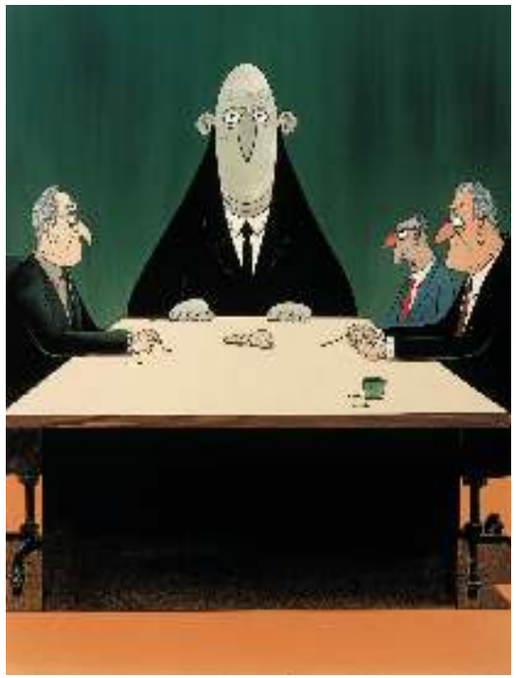
Our classification intuitively illustrates how the guide will be presented to each category. Therefore, throughout the text, you will spot some information that is accompanied by a sign indicating the main addressee.

Example

B You are not unique. Perhaps somebody did it better. This means learning from their experiences, leveraging existing knowledge, gaining inspiration, setting goals and benchmarking progress, collaboration, networking, and so much more. Innovation often arises from a combination of existing knowledge and fresh insights, so do not hesitate to bring your own ideas to the table. DECISION BEARERS

May they
not converge
in causes
anymore,
but only in
processes
lying ahead
of them.

makers...



takers...

bearers

The structure

This guide is structured in fourteen chapters that provide you with a roadmap to navigate the diverse terrain of urban planning. Just as a well-designed city requires a thoughtful layout of streets and neighbourhoods, this guide is organized to empower you with the knowledge and tools necessary to tackle the tension between good urban planning and market forces.

00
PREPARE for the game

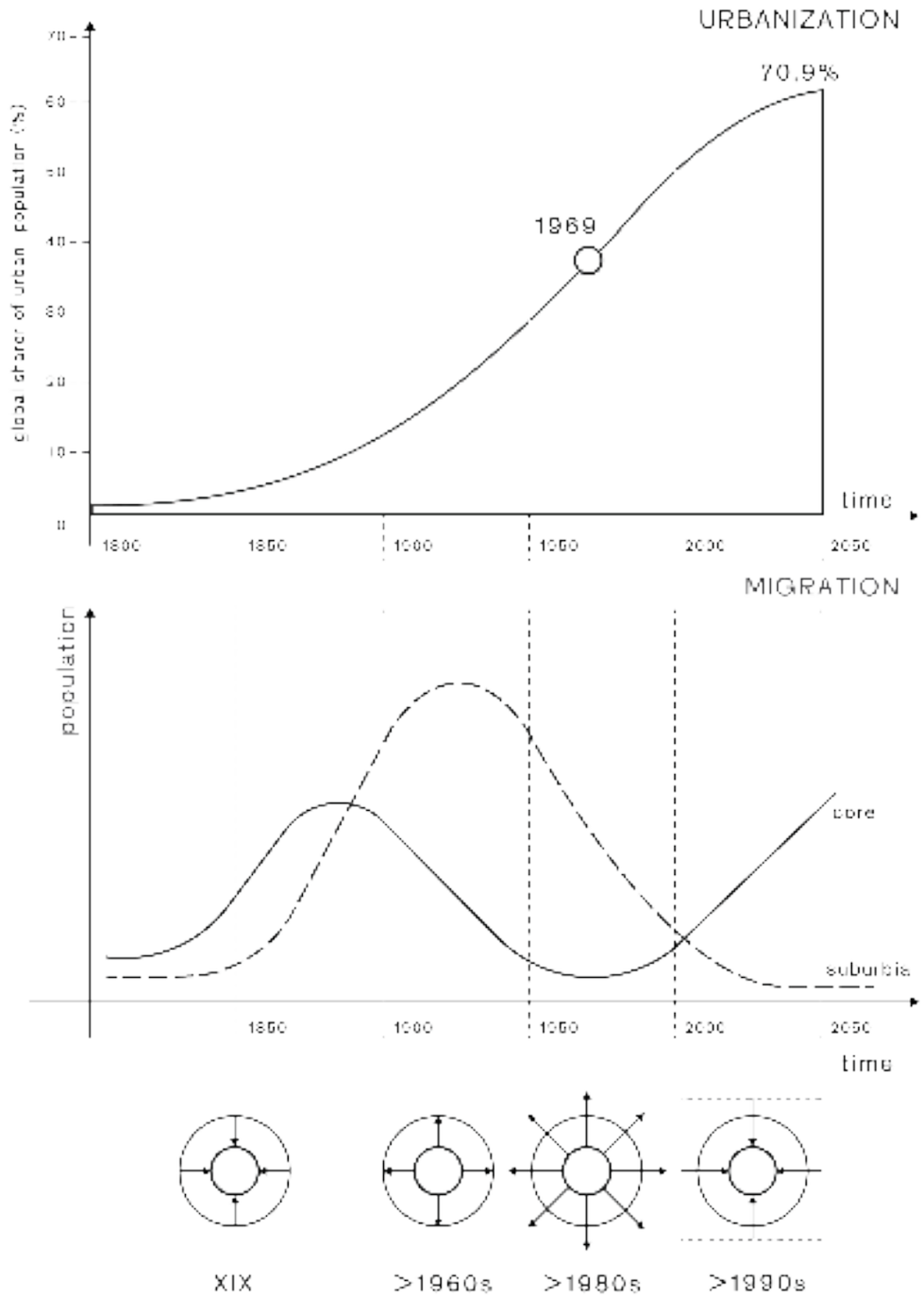


Figure 3. Urbanization over time (1800 – 2050)
Source: Smil, 2019: 337 and van den Berg et. al, 1982: 37ff.

P.

0. PREPARE FOR THE GAME

M DECISION MAKERS

T DECISION TAKERS

Economically dynamic cities attract a large number of commuters, new residents and businesses, therefore establishing functional relationships well beyond the city limits and triggering spatial growth and transformation of the built environment.

A common trait of dynamic European cities is urban sprawl, with growth concentrated on the urban fringe and beyond the administrative boundaries of the city (*cf.* Figure 3). According to the European Environment Agency (EEA), between 2012 and 2018, 80% of the land-take registered in the European Union took place in the commuting zones of metropolitan areas[1].

Until recently, competitive cities used their hinterlands for economic growth, jobs and productivity increases (Bremmer 2018, Shen 2015). Today, however, planners need to readjust their focus. They are forced to specialize in the management of consolidated areas, the development of former industrial platforms, urban regeneration, conversions and in urban densification (*cf.* Figure 3). In short, urban planners need to become skilled negotiators of the common good. For their part, local authorities must play an active role in urban development and use the coercive, remunerative or normative[2] power at their disposal.

1. Throughout the following pages, the term metropolitan area is used loosely to refer to a city together with its commuting zone. It does not refer to a specific definition. Typically, the Metropolitan Area is defined relying on the concept of Functional Urban Area (FUA) and the two terms are often used interchangeably. According to the EC-OECD-WB methodology, a Functional Urban Area (FUA) consists of a city and its commuting zone. Functional urban areas therefore consist of a densely inhabited city and a less densely populated commuting zone whose labor market is highly integrated with the city. The Commuting Zone contains the surrounding travel-to-work areas of a city where at least 15% of employed residents are working. There are also alternative methodologies available, such as the alternative threshold method based on commuting times. Note, however, that the term metropolitan area is often used to refer to the voluntary association between governing bodies of the core city and of two or more surrounding administrative units, hence the boundaries of metropolitan interjurisdictional forms of cooperation can differ from those determined using the EC-OECD-WB methodology. In spite of the EC-OECD-WB methodology, the European Union (EU) lacks a comprehensive legislative approach to defining metropolitan areas, with different legislative frameworks applied in different counties.

Keep in mind that functional areas come in all shapes and sizes. Across the EU-27, Eurostat's 2021 Urban Audit identified 614 FUAs, with their commuting areas ranging in size from 19 km^2 – Melilla de la Concepción FUA, Spain, to 17,484 km^2 – Berlin FUA, Germany. The average commuting area is 1,502 km^2. Naturally, the population encompassed by FUAs also varies significantly, from a little over 13 million inhabitants in the functional area of Paris, to 50 thousand inhabitants in the smallest functional areas.

2. With reference to the three categories of political instruments identified by Evert Vedung: those based on sanctions (sticks), those based on incentives (carrots) and those based on information (sermons) (Vedung, 2010).

B The role of private developers in cities is not inherently good or bad. Private developers play a critical role in urban development and can contribute to the growth and improvement of cities. In the best of times, they bring investments, expertise, and innovation to the table, helping to create new buildings and amenities that enhance the quality of urban life. However, when private developers only seek short-term profit, and when they do not align with the broader goals and needs of the city, the effects can be harmful. To ensure positive outcomes, it is essential for city authorities and urban planners to actively engage with private developers and other key actors throughout the planning process.

DECISION BEARERS

01
READ
the city

R.

M DECISION MAKERS

T DECISION TAKERS

1. READ THE CITY

A fine map is crucial for exploring a city's history. A series of fine maps is a treasure trove! The aim here is to try and reconstruct the history of Cluj, as an example of how you can hone your skills in reading the city. Urban history is a rapidly evolving field, in which nothing is taken for granted. Hence, we will stick to some basic interpretation principles that are easy to use and yield good results.

Hence, the essential features of an historical city map are the following: the environment, the streets, plots, public buildings, and, finally, fortifications. The following maps have all the ingredients, and show the growth of Cluj between 1175 and the XVI[th] century.

And here are the principles:

- First, look at the main roads: most medieval towns appear next to transport routes,[3] usually at their crossroads.

In Cluj, two historical roads meet. Coming from the Danube, we have the Roman road going northwards, connecting Drobeta (Drobeta–Turnu Severin), Ulpia Traiana Sarmizegetusa,[4] Apulum (Alba Iulia), Napoca (Cluj) and Porolissum (Moigrad, next to Zalau). The Roman road is crossed by the medieval road opened by Charles I of Hungary, which connected Oradea to Dej.

- Then, get a grip on the historical population growth in the city you are exploring. Censuses appear relatively late, so for earlier times you must work with approximations. For medieval cities, this is usually done by counting plots of land and then multiplying them with an average number of persons per household.[5]

Doing the math reveals the size of medieval Cluj: At around 1200, there were some 300 people living here. At the time of the Mongol invasion of 1241, the population had grown to some 500 people, before being almost completely wiped out. By 1300, there were some 1,700 people, in 1350, some 3,000, and in 1500, the population finally climbed to 7,000. The 10,000 threshold was reached sometime during the mid 1780s, the 100,000 threshold in 1930, and the 300,000 threshold at the beginning of the 1990s.

- Then, compare the shape of plots: larger, square plots usually imply subsistence farming, whereas smaller, rectangular plots imply craft and trade. The more rectangular plots you find, the better, because you have just found the remains of trading city dwellers (*cf.* Figure 4) And where there are city dwellers, there is a rural hinterland supporting them with agricultural produce.
- In parallel, trace the city walls: Walls mean a fixed enclosure that offers protection. As people move inside the city, its density grows. And when the available space is used up, then the height of the buildings starts to increase.
- And finally, look at public buildings. Building took a long time back then, so you can date city extensions by the architectural style of the main buildings in that part of the city, such as churches, guild houses, and city halls. Moreover, you can spot the limits of the historical city by finding the churches and the monasteries of the mendicant orders,[6] which usually settled at the fringes of the city, where land was still available for building.

With a little bit of practice, these five principles can take you a long way towards reading a city's history properly. Of course, cities vary. But these principles are nimble enough to be adapted to almost any European situation.

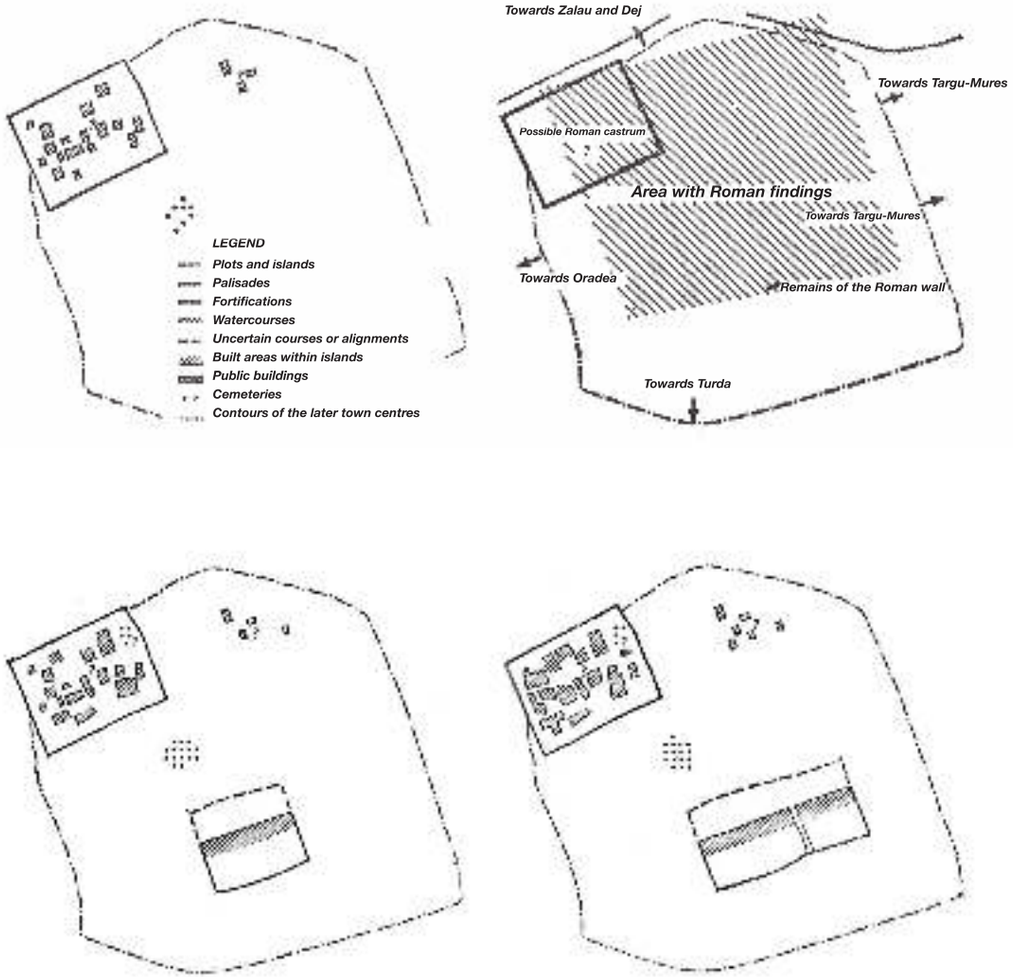
3. Towns usually appear at the end of a transport route, at the junction of two transport routes of the same kind or at the junction of two transport routes of a different kind. In other words, "[....] population and resources tend to accumulate wherever there is a break in transport lines" (Bairoch, 1988: 143).

4. The capital of Roman Dacia.

5. Of course, this involves a bit of detective work. Hence, if you cannot identify historical plots, you can estimate them by dividing the built-up area surrounded by the city walls by 500 m^2 or 1,000 m^2, which was the usual size of a medieval urban plot. Here is some additional info that might prove helpful: Whereas urban plots in ranged from 500 m^2 to 1,100 m^2, rural plots ranged between 1,300 m^2 and 2,400 m^2 (*cf.* Niedermaier, 1979: 76).

For the average number of persons, you can safely assume some 5 persons per household (*cf.* Niedermaier, 1979: 81). If you want even more precision, you can assume some 4.5 persons per household after the year 1347, when the Black Death (bubonic plague) struck Transylvania (*cf. ibid.:* 83).

6. Such as the Franciscans and Dominicans. 'Mendicant' essentially means 'given to begging'.



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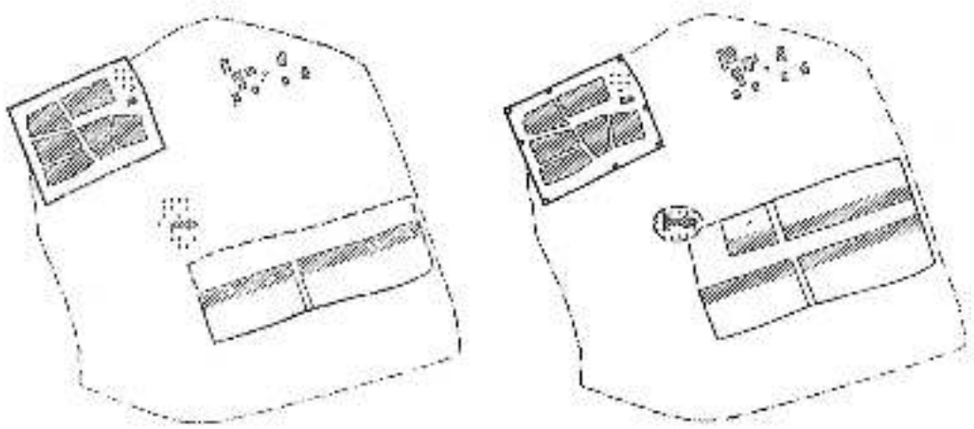

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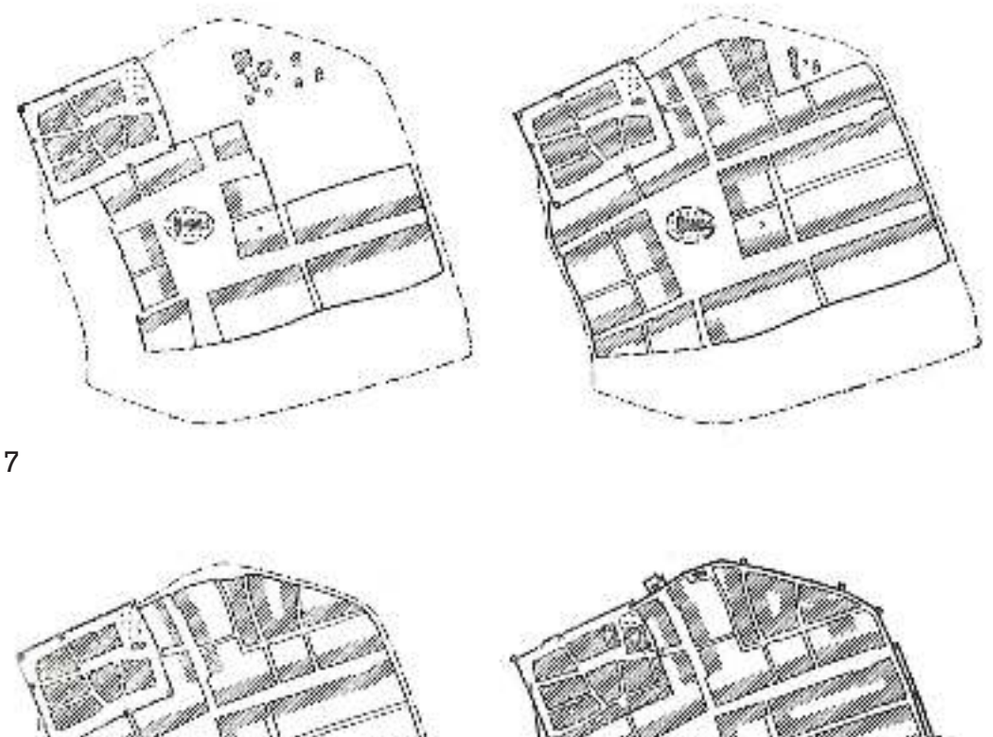

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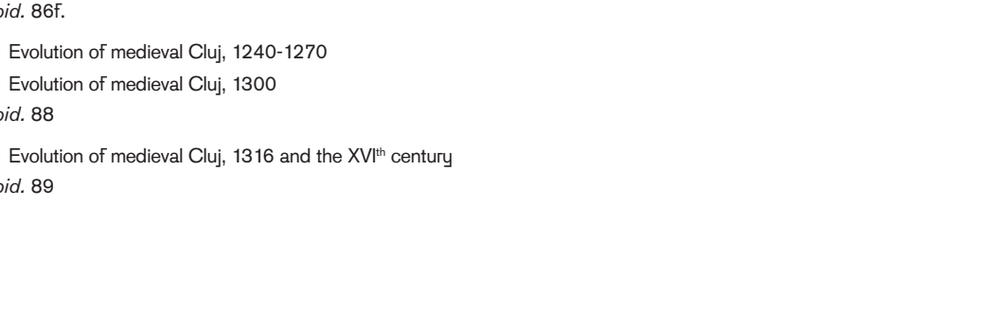

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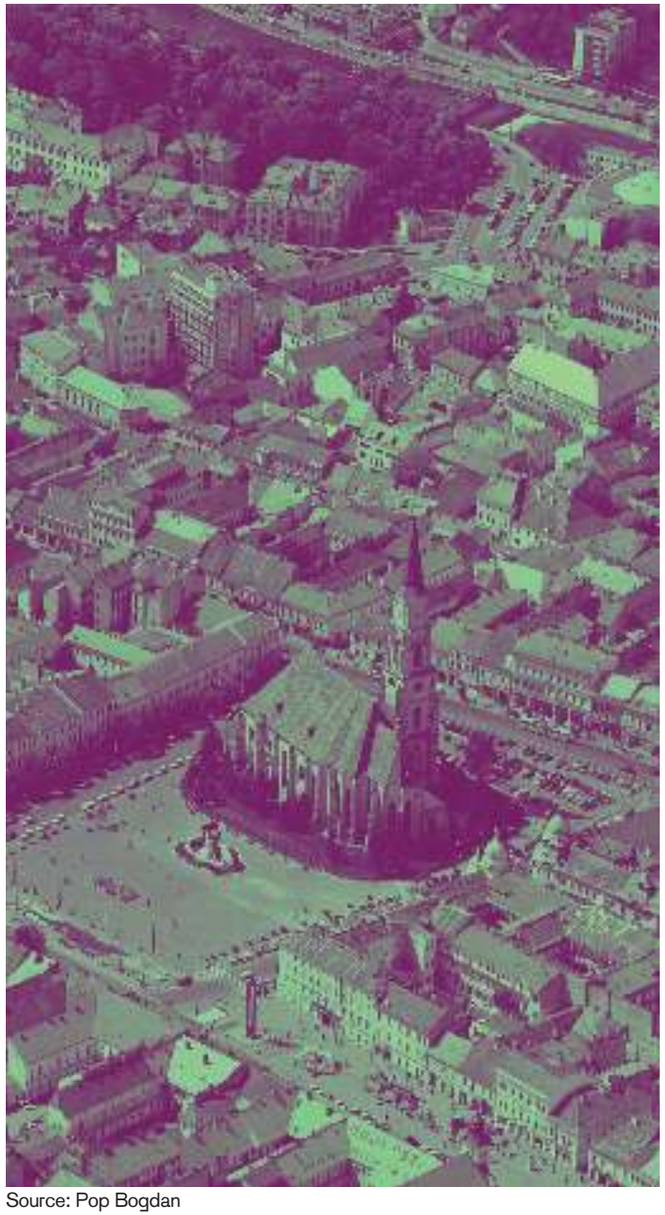
Figure 4. Evolution of medieval Cluj, 1175
Source: Niedermaier 1979: 85f.

Figure 5. Evolution of medieval Cluj, 1200-1225
Source: *ibid.* 86f.

Figure 6. Evolution of medieval Cluj, 1240-1270

Figure 7. Evolution of medieval Cluj, 1300
Source: *ibid.* 88

Figure 8. Evolution of medieval Cluj, 1316 and the XVIth century
Source: *ibid.* 89



Cluj historical centre

Source: Pop Bogdan

B City history might not be a topic of your interest...

However, by drawing parallels with past mistakes where reckless urban transformations proved harmful, you can demonstrate the need for responsible and sustainable development practices that respect the city's unique identity and long-term well-being.

DECISION BEARERS

Having looked at the historical city centre for a while, it's now time to shift gears.

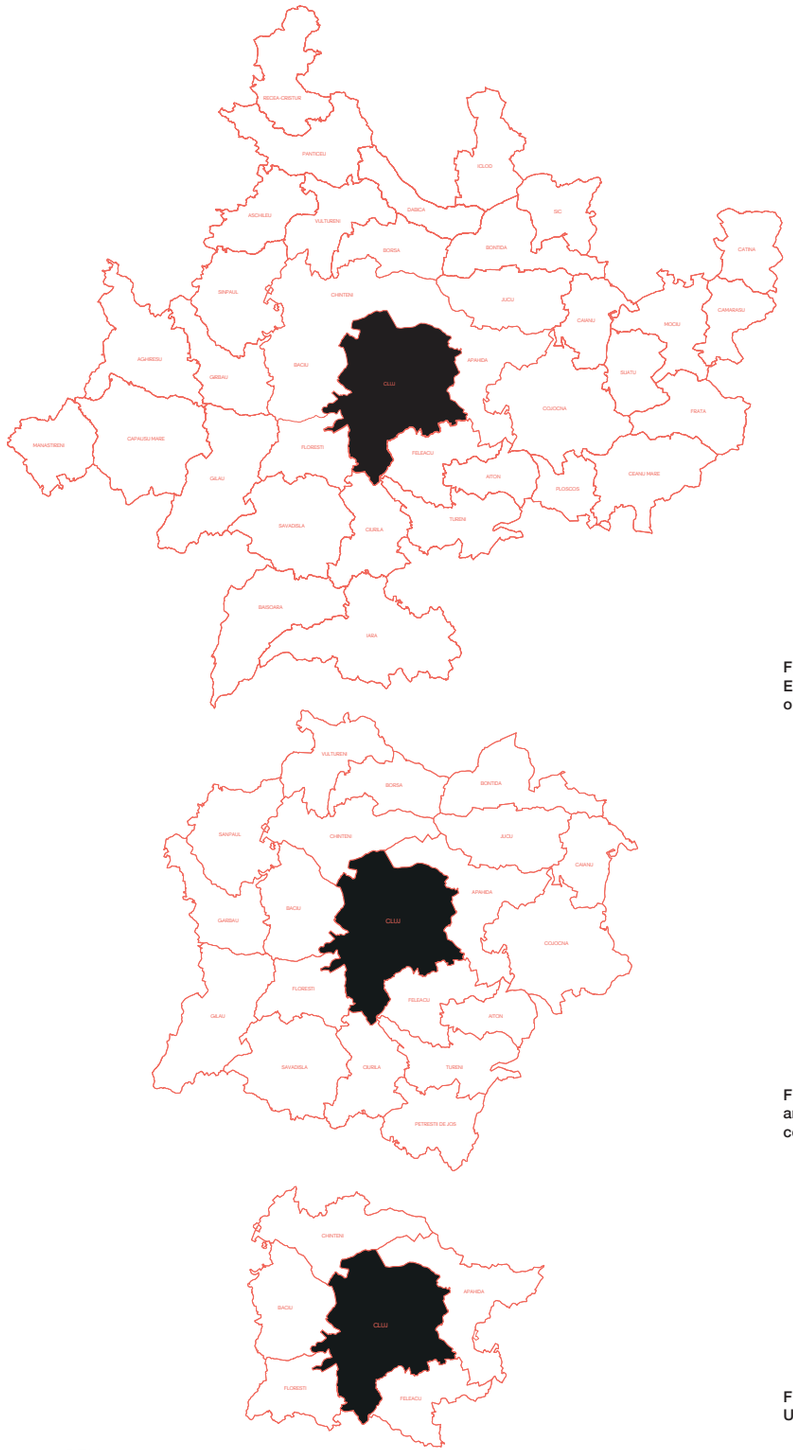
Cities are constantly evolving, particularly dynamic cities, like Cluj, and urban form develops in response. While heavily influenced by history, contemporary urban form is also the product of ongoing social, economic, and technological development. Regional development trends and market dynamics, institutions and regulatory frameworks all play their part.

Needless to say, the reading exercise should not end with the historical perspective.

The contemporary city requires a good understanding of both recent development trends and the local urban planning system. Statistics can prove very useful here, but they are often overlooked by planners. In return, those concerned with data rarely factor in their interpretation the implications of spatial planning decisions. It is time to bring them together in an integrated analysis. The end goal is to link urban data and local planning regulations with the built form and the functional relationships existing within the urban ecosystem. Here are a few principles to follow:

- First, get a grip of economic and commuter trends, to determine the extent of the functional urban area – the functional edge. National censuses often look at commuting patterns, but the surveying frequency might not keep up with the metropolitan dynamics. A handy alternative is the Global Human Settlement – Functional Urban Area (GHS-FUA) database, which is linked with the European Environment Agency's Urban Atlas. It regularly applies standard methodologies to relevant datasets available at global or European level to determine the delineation of commuting areas.
- Keep in mind that there might be a metropolitan interjurisdictional cooperation framework in place. These are often based on voluntary cooperation and as a result, the institutionalized metropolitan area might differ from the statistically defined functional area. In these instances, it is useful to use this delineation as the unit of analysis for investigating urban development trends, because metropolitan associations have the institutional capacity to ensure integrated planning and initiate strategic projects. In addition, you might also find national applications of international methodologies using more recent datasets. They may yield (slightly) different results. If there is a legal framework buttressing the cooperation within metropolitan or functional areas, then the national definition should be used.

For clarity, take a look at the functional area of Cluj. The functional urban area identified using the EC-OECD-WB methodology includes the city and 37 other municipalities, or Local Administrative Units (LAUs), while the area of interjurisdictional cooperation only includes the first two rings of municipalities (20 LAUs) (*cf.* Figure 9). Romania recently passed a law for metropolitan areas, mandating county capitals, like Cluj, to include a maximum of two rings of municipalities in their metropolitan associations.



FUA identified using the EC-OECD-WB methodology.

FUA legally defined as an area of interjurisdictional cooperation.

FUA identified by EEA Urban Atlas / GSHL FUA.

Figure 9. Different definitions of FUA

Source: the authors, based on the Urban Atlas

- Next, look for the edge of the continuous urban fabric – the urban edge. It might no longer be contained within the administrative boundaries of the city, due to accelerated urban expansion. In dynamic markets, the first ring of municipalities might also be sprawling, eventually merging with the urban core. A clear understanding of the urban edge can harness interjurisdictional cooperation, emphasizing the need for an integrated approach to spatial planning across a continuous built-up area, regardless of the administrative arrangements.

Take a look again at Cluj and Brno and you can see how the urban footprint extends beyond the administrative boundaries of each city (*cf.* Figure 10).

- In time, the built-up area of the city of Cluj has merged with those of the neighbouring villages: Floresti, Baciu, Chinteni, Feleacu, and Apahida. Planning remained confined within the boundaries of each administration, while market forces gradually became stronger and stronger. The results are noticeable: disjointed urban forms, conflicting land-uses and inefficient delivery of public services.
- In Brno, even though the peri-urban settlements are more compact, the urban footprint also extends beyond the administrative boundaries, particularly along the main transportation axis, to Ceská in the North, where one compact residential area spans across both administrations, and to Modrice in the South, where new industrial and logistical spaces emerged along the E461 road.

To sum up, the lack of an integrated planning approach usually translates into missed opportunities.

- Then, get a grip of the parts that make up the metropolitan area, their different roles, characteristics, challenges and development opportunities. These can be narrowed down to the following:
  - The core: the heart of the city, which encompasses the continuous high-density built-up area. In turn, it is made up of multiple urban districts that might provide a more effective scale for action.
  - The peri-urban villages: lower-density settlements located on the outskirts of the city, which retain rural characteristics, but can transform and expand as a result of dispersed urban growth, thereby shaping hybrid landscapes with rural and urban land uses.
  - The suburbs: commuter settlements emerging around the city. They can be either rapidly transforming peri-urban villages or primarily residential new developments.
  - The nodes: focal points in the metropolitan system, that concentrate activities and attract large numbers of people. Nodes can be of an economic, functional or recreational nature (i.e., economic – industrial parks and business centres, functional – commercial areas, schools, transit stations, recreational – parks).
- At the same time, take note of the metropolitan corridors, such as main roads, transit corridors, major infrastructure networks or blue-green corridors. These corridors act as the spine of the metropolitan area and connect its various parts.

A good overview of how these elements interact within the metropolitan system reveals the opportunities for future development. It is here that strategies should interlock.

- Finally, deep dive into spatial development patterns and investigate aspects such as densities, types of land-use, the mix of amenities, land-use efficiency or walkability. These will reveal the areas that need improvement.

Figure 10. The urban footprint of Cluj and Brno extending beyond their administrative borders
Source: the authors, based on the Urban Atlas

Brno historical center

Source: https://shorturl.at/hkwOP {11.07.2023}

These exercises should be constantly pursued by all of the city's ground-breakers, from planners, to local decision makers, to developers and to residents. Reading the historical and contemporary city can be useful to all, as it can help define an urban identity, highlight both challenges and opportunities, foster cooperation, inform priority investments and steer development towards a more efficient urban form.

DECISION BEARERS

02
COMPARE
the city

C.

M DECISION MAKERS

T DECISION TAKERS

2. COMPARE THE CITY

B You are not unique. Perhaps somebody else did it better.
This means learning from their experiences, leveraging existing knowledge, gaining inspiration, setting goals and benchmarking progress, collaboration, networking, and so much more. Innovation often arises from a combination of existing knowledge and fresh insights, so do not hesitate to bring your own ideas to the table.

DECISION BEARERS

The next step is to compare the city. Comparing Cluj and Brno makes sense, as they are the second largest cities in their respective countries, therefore being relevant for a plethora of other secondary cities in Europe.

We will start numerically and then continue graphically. Let's look at some numbers first: It is always important here to find a common framework when comparing different cities. A great tool is the Urban Centre Database (UCDB), which describes some 10,000 cities across the world. In addition, it is open and free to use.[7]

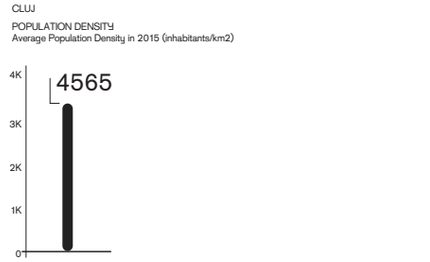
Note that 2015 is the most recent year for the calculations made in the UCDB. Here is what we have found:

- Cluj had a higher population density than Brno in 2015, with 4,565 inhabitants/km^2, compared to 3,372 inhabitants/km^2 for Brno (*cf.* Figure 11).[8] We can also look at these numbers a bit differently: Hence, Brno had 168 m^2 of built-up area per capita, Cluj came second, with only 131 m^2 of built-up area per capita (*cf.* Figure 12).
- Numbers differ in economic performance as well: In 2015, the gross domestic product (GDP) of Cluj totaled $ 4 billion, while the GDP of Brno was $ 5 billion (*cf.* Figure 13). Also note that both cities rank above their national average.
- In terms of geography, elevation differed slightly, with Cluj located at a higher altitude, but average temperatures and precipitation remained quite similar, nonetheless, and close to the national average.
- When it comes to the environment, pollution seems to be less serious in Cluj, with the figures for fine particulate matter 2.5 concentration at 18 mg/m^3 for Cluj, and 25 mg/m^3, for Brno. Both cities seem to pollute the night skies similarly, with Cluj having a total night-time light of 27 nW/cm^2*sr, and Brno with 25 nW/cm^2*sr. But heatwaves have struck Cluj more than Brno, with Cluj registering 12 heatwaves during the period between 1980 and 2010, while Brno only 7. However, both cities are close to their country averages.
- And finally, achievement of the Sustainable Development Goals (SDGs): When it comes to land use efficiency, Brno ranks far higher, with a 14.3 ratio of land consumption to population growth between 1990 and 2015, while Cluj has a negative ratio of 0.9. However, Cluj fares somewhat better when comparing the access to green areas: In 2014, 30% of the population lived in dense green areas, compared to 28% in Brno (*cf.* Figure 14).

Before investigating some of these figures spatially, take a look at the other numbers provided by the UCDB, as some of them are really interesting!

7. It also comes with an interactive visualisation tool. Check it out at: https://bit.ly/3n0qO7U [05/05/2023].

8. If you want to check the calculations, Cluj had a population of 278,493, and a surface area of 61 km^2, while Brno had a population of 316,980, and a surface area of 94 km^2. All figures are for the year 2015.



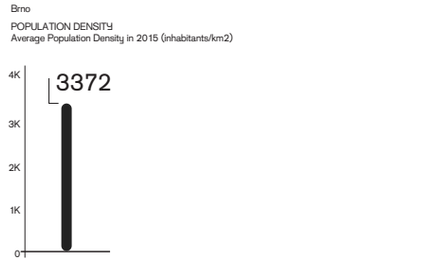
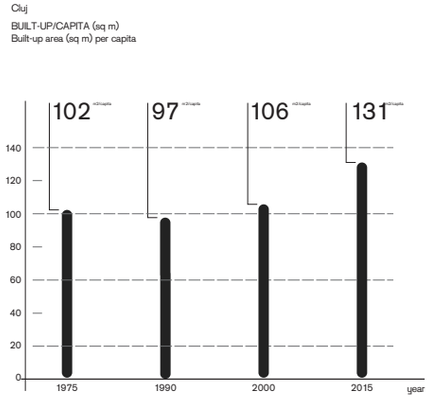


Figure 11. Average population density in 2015 (inhabitants/km^2) for Cluj and Brno

Source: GHSL



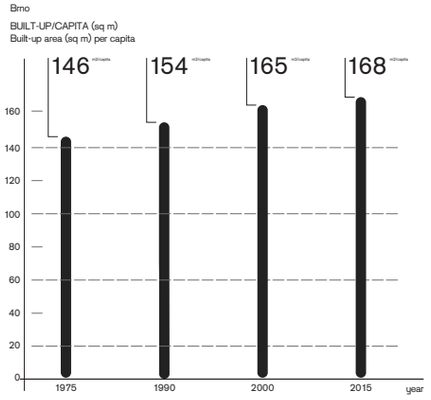
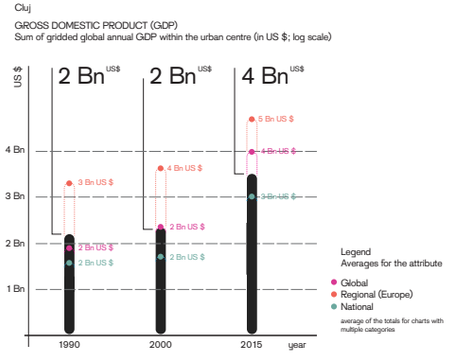


Figure 12. Built-up area per capita for Cluj and Brno

Source: GHSL



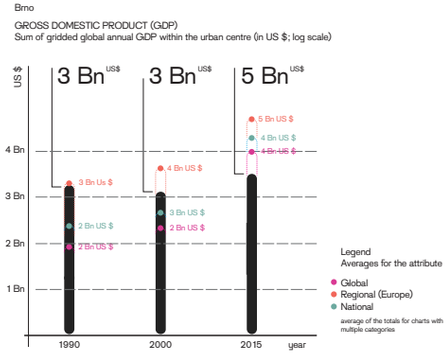
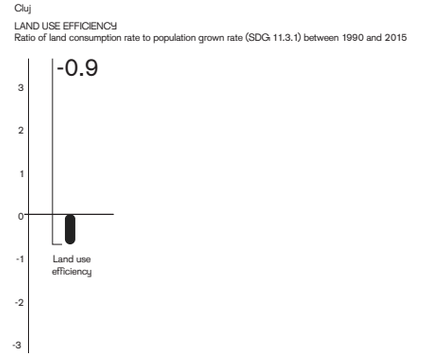


Figure 13. GDP

Source: GHSL



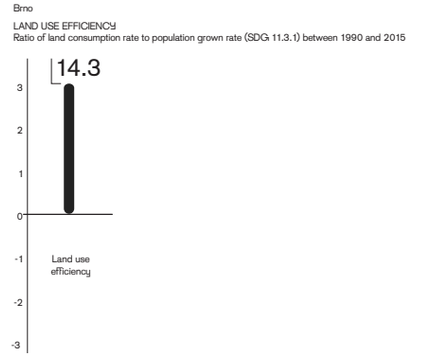


Figure 14. Land use efficiency

Source: GHSL

9. Note, however, that older datasets mean less precision and, hence, more room for error.

10. At that time, it was part of the Czech and Slovak Federative Republic, which dissolved on the 31st of December 1992.

11. *Cf.* Corbane *et al.*, 2017: 4.

12. Technically, the built area is defined as the floor area measured at ground level, along the perimeter of the exterior walls of a building. It excludes both overhanging and underground built areas (*cf.* Berghauser Pont and Haupt, 2021: 95). A building's footprint is important, because it enters the formula of the Ground Space Index (GSI), one of the two most important measures for density. We'll return to it in the next chapter.

Having looked at numbers, it's time to view some comparative maps. We're interested here in observing patterns: more specifically, growth patterns and trends in land use efficiency. In short, we'll see how Cluj and Brno evolved over time and how efficiently they use their built-up areas.

Again, the starting point is the Urban Centre Database (UCDB): Apart from the graphics illustrated above, it also comes with a wealth of satellite imagery converted to GIS data. The period covered ranges from the mid 1970s to the present day.[9]

Using this data, we have produced three map batches:

- The first batch depicts the built-up areas of Cluj and Brno across time, starting with the 1990s, when both Romania and the Czech Republic[10] witnessed regime changes, and ending with the year 2020. In short, this is some 30 years of urban growth, not only in the urban core, but also in the rest of the Functional Urban Area (FUA) (*cf.* Figure 15).
- The second batch builds on the first and depicts land use efficiency for the same period. In simple terms, land use efficiency is the change of built-up area per capita (*cf.* Figure 16).[11]
- And finally, the third batch is comprised of heat maps: They show high densities in built area or, in simpler terms, peaks in the built footprint[12] for the years 1990, 2000, 2010, and 2020 (*cf.* Figure 17).

The emerging patterns are interesting: While the change in built-up areas tends to be more evenly distributed in Brno, in the case of Cluj one can observe a rather linear pattern. When looking at the heat maps, this difference becomes obvious: while Brno's map becomes more and more red over time, that of Cluj presents a crescent that becomes strikingly evident.

Another thing to note is that in Brno built-up areas seem to cover a larger part of the Functional Urban Area (FUA) than in Cluj. In other words, a larger portion of Brno's territory consists of land occupied by buildings. In both cases, most of the newly built-up areas are at the fringes of the existing footprint. However, in Cluj, we can see that there are new built-up areas that grow independently from existing ones. This is not the case in Brno.

Regarding land use efficiency (LUE) change, Brno recorded improvements especially at the outskirts of the urban core, while in Cluj improvements occurred mostly within the urban core. These are the purple areas on the maps. In dusty rose and white are the areas where land use efficiency has declined or stagnated. We can also notice that these colors dominate all of Brno's maps, while in Cluj they are most visible between 2005 and 2015. Finally, in deep violet and royal purple (at the bottom of the legend) are the zones where land use efficiency has declined the most. In Brno, these colors are scarce on each of the maps. This is not the case of Cluj, at least not during the years between 2015 and 2020, when the map is coloured in many shades of violet.

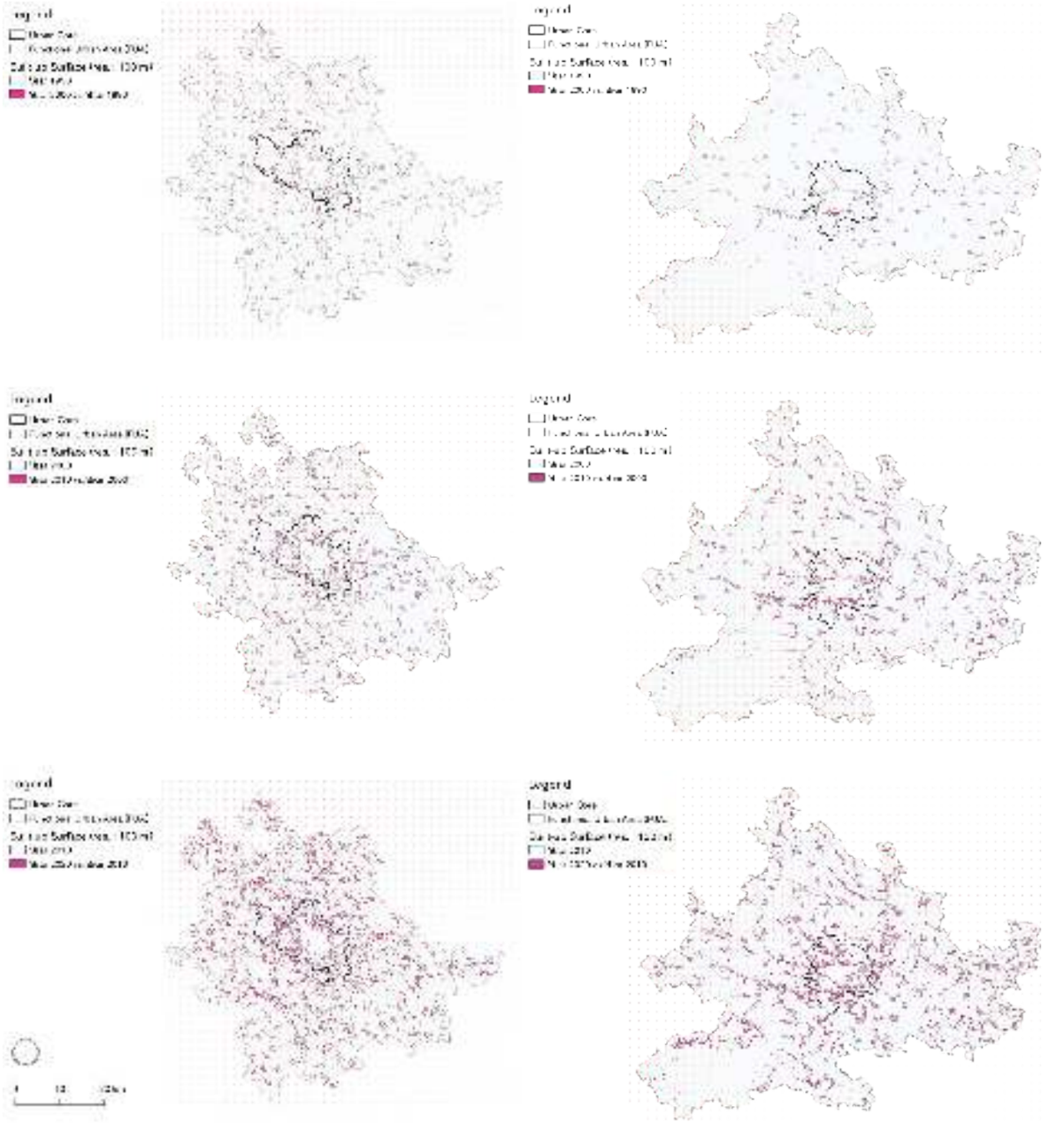


Figure 15. Built-up surface for Brno and Cluj FUA (1990-2010)
Source: GHSL

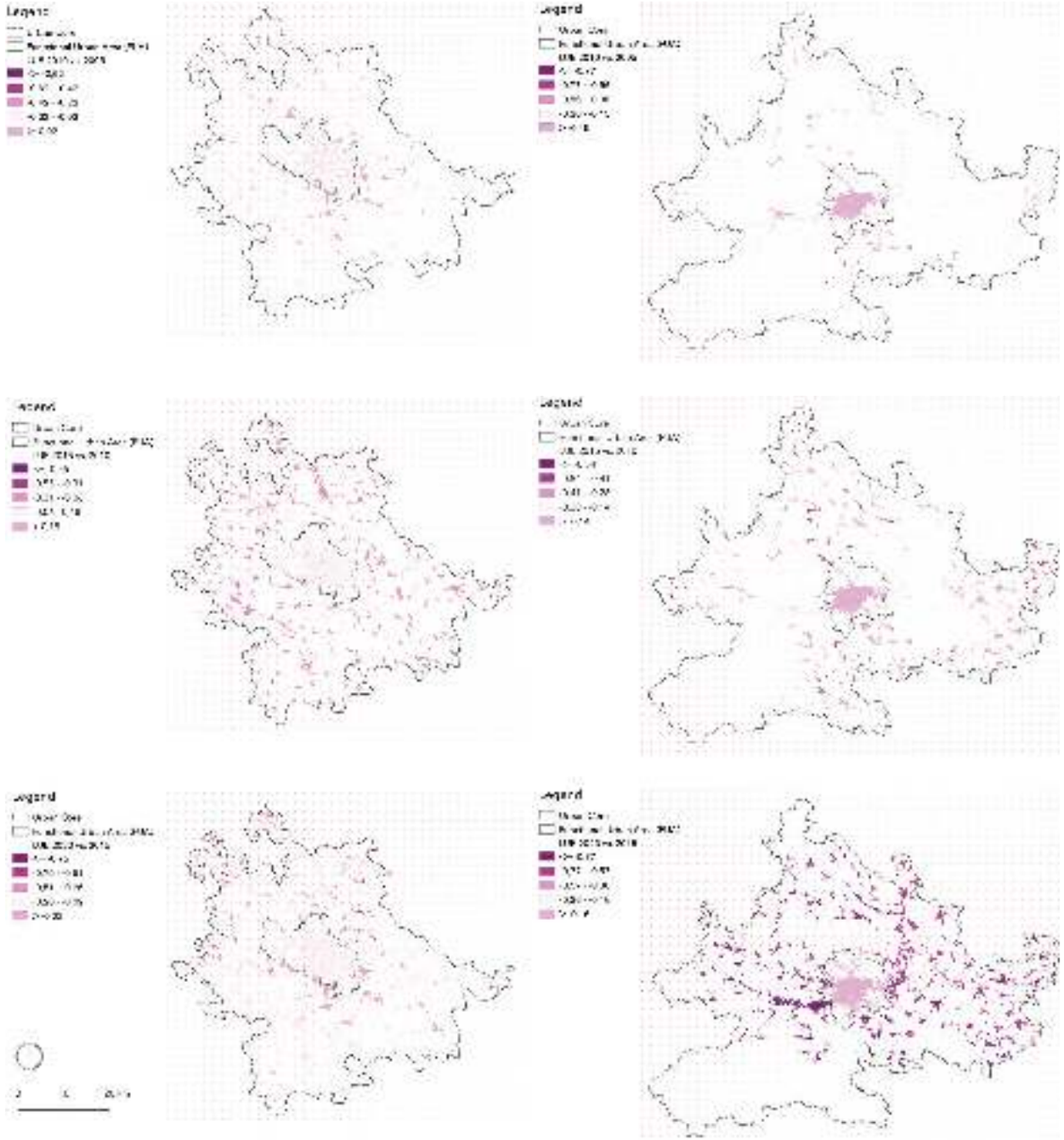


Figure 16. LUE for Brno and Cluj FUA (2005-2020)
Source: GHSL

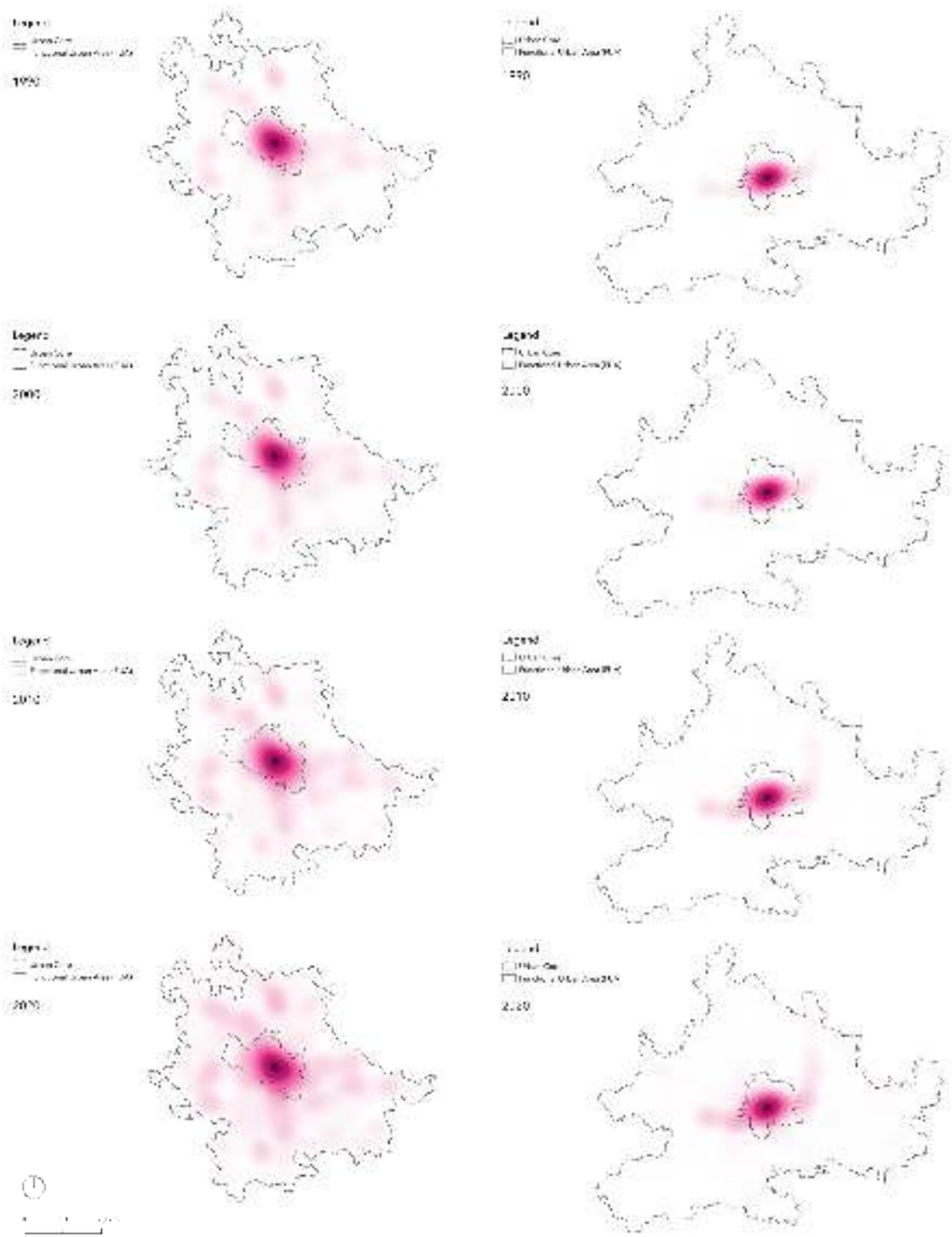


Figure 17. Heatmaps, peaks in the built footprint for Brno and Cluj
Source: GHSL

13. https://shorturl.at/mwxP8 [11.07.2023]

14. https://shorturl.at/dtILM [11.07.2023]

15. https://shorturl.at/nsOS1 [11.07.2023]

To gain a better understanding of the drivers behind these spatial patterns and the opportunities in each region, we must also investigate the social and economic profiles of these two cities.

For demographics, census data is very useful, but don't forget about those residents who might not be visible in such statistics. A case in point are university students, who can significantly add to the temporary population of a city. Moreover, universities are catalysts for economic development, by preparing a skilled and educated workforce every year. Hence, they attract businesses, foster innovation and a culture of entrepreneurship.

Zooming into Brno and Cluj-Napoca, we find that they both have a fairly large student population, with roughly 80,000 students[13, 14] enrolled. Furthermore, both cities benefit from the presence of strong universities: Two universities from Brno and one from Cluj-Napoca are included in the 2022 Academic Ranking of World Universities (ARWU), published by Shanghai Ranking Consultancy[15], which includes the best 1.000 universities in the world. These are the Masaryk University and Brno University of Technology, which rank 2nd and 6th within the 8 universities included from the Czech Republic, and the Babes-Bolyai University in Cluj, the only Romanian university included in this ranking.

Needless to say, planners should be aware of such information and incorporate them in their plans, catering to students and encouraging investments in the educational sector, as well as considering urban regeneration projects in and around university campuses.

a.

CLUJ SCIENCE CAMPUS

Universities play a crucial role

In 2022, the municipality of Cluj, in collaboration with Babes-Bolyai university, launched a design competition for an educational, research, development and innovation center, called the Science Campus.

The competition was organized in collaboration with the Romanian Order of Architects, whose experts drafted the competition brief and selected the winning proposal. The collaboration between public administration, university representatives, planners and architects is a relevant example of urban actors effectively working together.

The project aims to capitalize on the competitive advantage of the city, which is home to a top university, with a renowned bio-nano-science department. It is geared towards further developing the local economy, while enhancing the quality of urban life for both residents and students. In addition to research buildings, the campus also aims to add value to its surroundings, featuring a public square, sport facilitates, and a living lab.

Figure 18. Competition proposal, first prize ►

Source: https://shorturl.at/fmIZ3 [13.07.2023]

Another useful tool in determining the economic profile of a city is *Metroverse*[16], an online tool developed by Harvard University's Growth Lab, which presents information about the local economic composition and technological capabilities of cities, allowing for comparison between similar cities around the world and emphasizing growth and diversification paths for their future. Let's see what it reveals about Cluj and Brno, for the year 2020.

In both Brno and Cluj, the largest economic sector consists of professional and business services, which account for 21.08% and 29.72% of the city's employees, respectively. Data indicates that the two cities benefit from a fairly large pool of young high-skilled / high-paid professionals and points towards the more lucrative sectors in which they activate. (*cf.* Figure 19 and Figure 20).

Such information can help orient development policies to strengthen the local economy and cater to the specific needs of both the existing and future population. For example, young, well-off professionals appreciate lively public space and the quality of life offered by the city. However, they also value modern and generous living spaces, especially when starting a family, so the absence of strong neighbourhood regeneration initiatives, might eventually contribute to sprawl. At the same time, if there is a high concentration of lower paid workers, local policies should pay more attention to ensuring equitable access to affordable quality housing and basic public services.

In Figure 21 you can compare the share of employees by industries for both Brno and Cluj. Note that Brno is shown in darker shades, while Cluj is shown in lighter shades.

Data also indicates the economic activities which emerge as opportunities:

- In Cluj, most activities belong to the manufacturing sector (e.g., manufacturing of paper, textile products, beverage and tobacco, fabricated metal products, plastics and rubber, computer and electronic equipment) (*cf.* Figure 22).
- In Brno, there is a more balanced distribution of activities belonging to the manufacturing sector (e.g., manufacturing of beverage and tobacco, apparel, paper, transportation equipment, furniture), professional and business services (e.g., publishing industries, motion pictures and sound recording industries, broadcasting, telecommunication), and financial activities (e.g., credit intermediation, rental and leasing services) (*cf.* Figure 22).

16. https://shorturl.at/nFPU2 [13.07.2023].

17. Building on all these measures, we can rank industries not only by their relative presence in Cluj and Brno, but by their relative technological fit to their productive structure. These measures can help analysts understand how both cities' economic strengths and weakness compare to those of global peers with similar population. Additionally, it can help identify industries that are surprisingly large or small.

Such an analysis not only leads to a better understanding of the city and more effective planning, but it also highlights numerous opportunities for cross pollination and best-practice exchange between the two cities.

Figure 19. Economic profile for Brno. Share of employees using the North American Industry Classification System (NAICS)

Source: Metroverse, data for the year 2020.

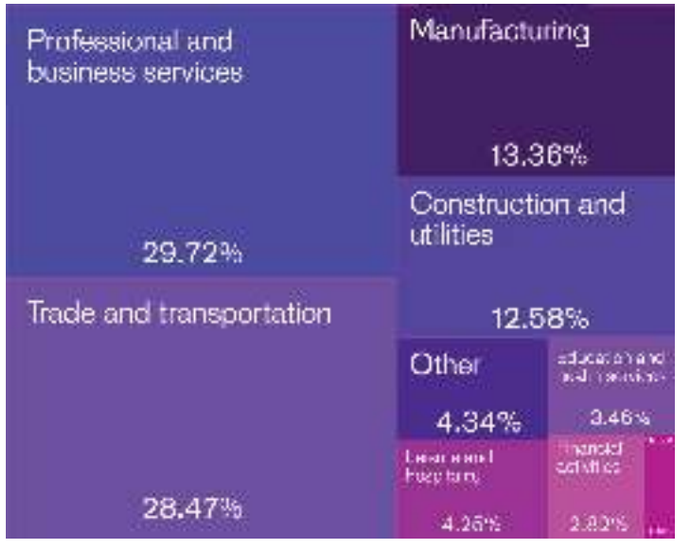


Figure 20. Economic profile for Cluj. Share of employees using the North American Industry Classification System (NAICS)

Source: Metroverse, data for the year 2020

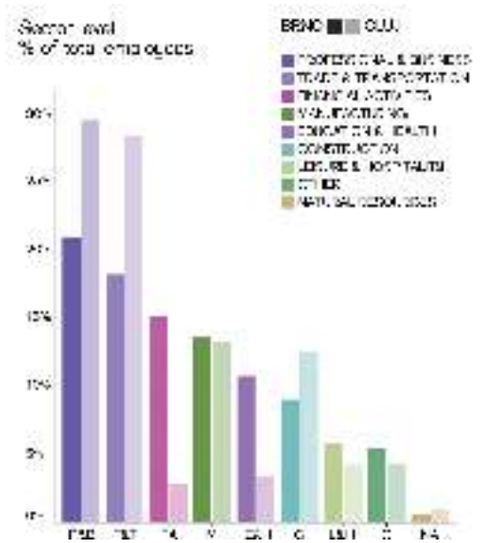


Figure 21. Cluj and Brno's economic composition compared

Source: Metroverse

CITY	NAME	RELATIVE PRESENCE	TECHNOLOGICAL FIT	ASSIGNED CATEGORY
BRNO	FUNDS, TRUSTS AND OTHER FINANCIAL VEHICLES	0.03	0.70	OPPORTUNITY
BRNO	BROADCASTING (EXCEPT INTERNET)	0.081	0.013	OPPORTUNITY
BRNO	INSURANCE CARRIERS AND RELATED ACTIVITIES	0.19	0.035	OPPORTUNITY
BRNO	TRANSPORTATION EQUIPMENT MANUFACTURING	0.24	0.32	OPPORTUNITY
BRNO	APPAREL MANUFACTURING	0.25	0.051	OPPORTUNITY
BRNO	TELECOMMUNICATIONS	0.26	0.27	OPPORTUNITY
BRNO	MOTION PICTURE AND SOUND RECORDING INDUSTRIES	0.26	0.40	OPPORTUNITY
BRNO	NONMETALLIC MINERAL PRODUCT MANUFACTURING	0.3	0.31	OPPORTUNITY
BRNO	FURNITURE AND RELATED PRODUCT MANUFACTURING	0.31	0.19	OPPORTUNITY
BRNO	SECURITIES, COMMODITY CONTRACTS AND OTHER FINANCIAL INVSTM.	0.33	0.052	OPPORTUNITY
CLUJ	TEXTILE PRODUCT MILLS	0.05	0.74	OPPORTUNITY
CLUJ	COMPUTER AND ELECTRONIC PRODUCT MANUFACTURING	0.18	0.29	OPPORTUNITY
CLUJ	FABRICATED METAL PRODUCT MANUFACTURING	0.31	0.33	OPPORTUNITY
CLUJ	BEVERAGE AND TOBACCO PRODUCT MANUFACTURING	0.37	0.12	OPPORTUNITY
CLUJ	OTHER INFORMATION SERVICES	0.42	0.26	OPPORTUNITY
CLUJ	PAPER MANUFACTURING	0.43	0.33	OPPORTUNITY
CLUJ	WOOD PRODUCT MANUFACTURING	0.46	0.45	OPPORTUNITY
CLUJ	MISCELLANEOUS MANUFACTURING	0.60	0.19	OPPORTUNITY
CLUJ	RENTAL AND LEASING SERVICES	0.63	0.078	OPPORTUNITY
CLUJ	PUBLISHING INDUSTRIES (EXCEPT INTERNET)	0.69	0.25	OPPORTUNITY

Figure 22. Top ten growth opportunities in Brno and Cluj-Napoca

Source: Metroverse[17]

03
UNDERSTAND
the city

U.

M DECISION MAKERS
T DECISION TAKERS

3. UNDERSTAND THE CITY

After reading and comparing the city, the time has come to understand it. This is the most difficult part. An intimate understanding of one's own city requires years of dedication. However, there is a usually overlooked but very useful idea to grasp the city rapidly: density.

Density is essentially a fraction or, simply put, a numerator divided by a denominator. As such, density is an extremely versatile concept for cities and metropolitan areas, which serves to display concentrations in people, goods, services or built surface.

The two most common forms of density measures in urban planning are the Ground Space Index (GSI) and the Floor Space Index (FSI). Whereas the GSI is essentially the footprint of a building, the FSI is the intensity with which a plot of land is built (*cf.* Figure 23).

When you combine the two measures, you get an extremely powerful diagram, in which the horizontal axis arranges footprints from small to large, i.e., low to high GSI, whereas the vertical axis arranges building intensities from small to large, i.e., low to high FSI (*cf.* Figure 24).

Two simple measures displayed on a diagram: That is all it takes to portray the different areas within a city or a metropolitan area. Hence:

- Starting with the lower left-hand corner, where both building footprints are small and building heights are low, we find the outer fringes of the metropolitan area and the suburbs.
- In the lower right-hand corner, where footprints are large, but building heights remain low, we usually find the interwar villas.
- Moving along to the upper right-hand corner, we encounter bigger and higher buildings: These are the housing estates and the central business districts.

On top of this structural layer, we can add another, operative layer, where:

- Fringes of metropolitan areas usually require basic service provision, as well as nature protection. Suburbias require planning for growth, more in line with strategic planning and composition.
- Neighbourhoods with interwar villas are different: They require preservation and tactical urbanism.
- And finally, housing estates and central business districts usually require regeneration programmes.

This combination between the density fingerprints of a metropolitan area and the types of planning is the main key in understanding any city.

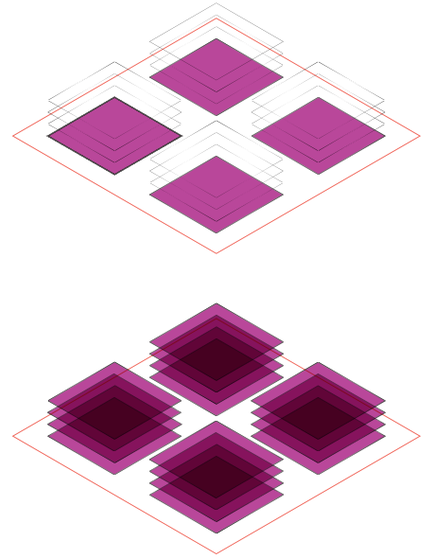


Figure 23. GSI and FSI
Source: Berghauser and Haup, 2009: 95 (2021)

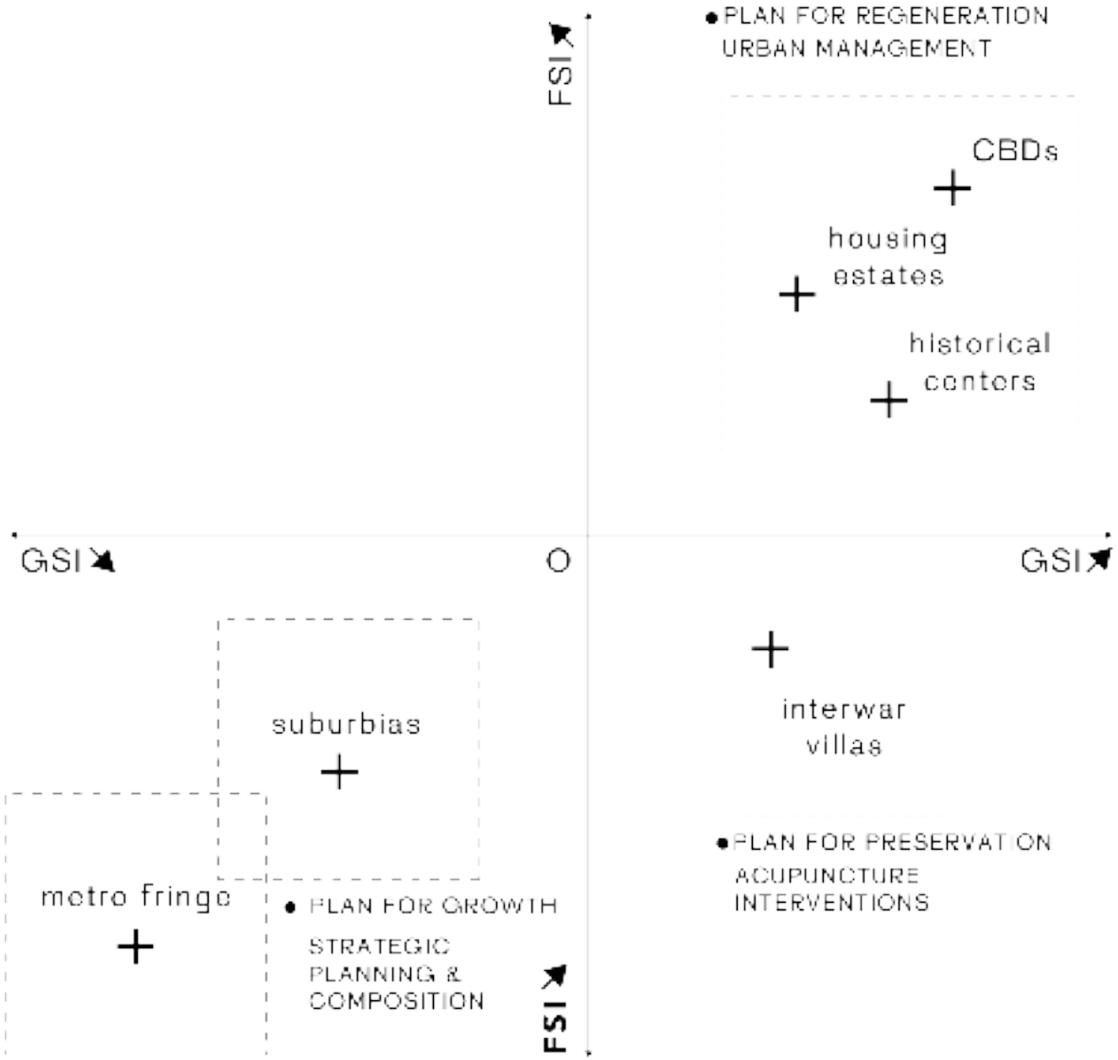


Figure 24. Urban planning interventions based on density
Source: the authors, based on discussions with Per Haupt

B Different areas come with different challenges.
Where do you stand?

DECISION BEARERS

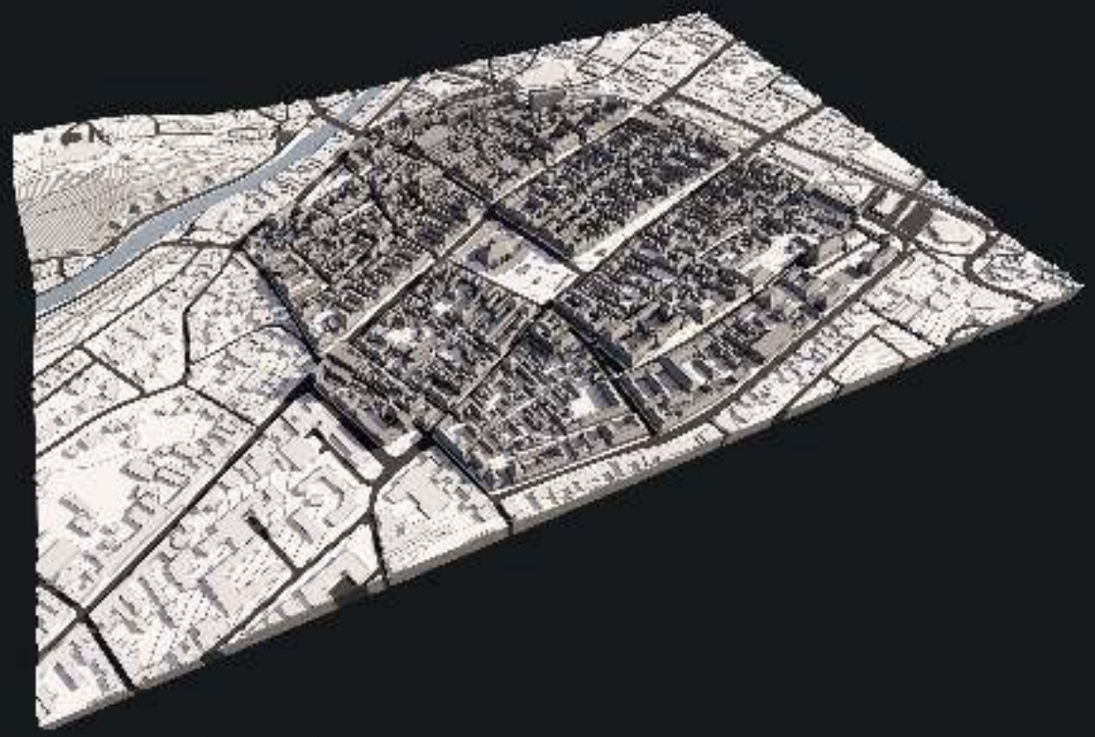


Figure 25. Historical centre of Cluj (3D rendering)
Source: the authors

Figure 26. Historical centre of Brno (3D rendering)
Source: the authors

Cluj historical centre
Source: Google maps

Brno historical centre
Source: Google maps

Figure 27. Grigorescu neighbourhood (eastern part), in Cluj
Source: the authors

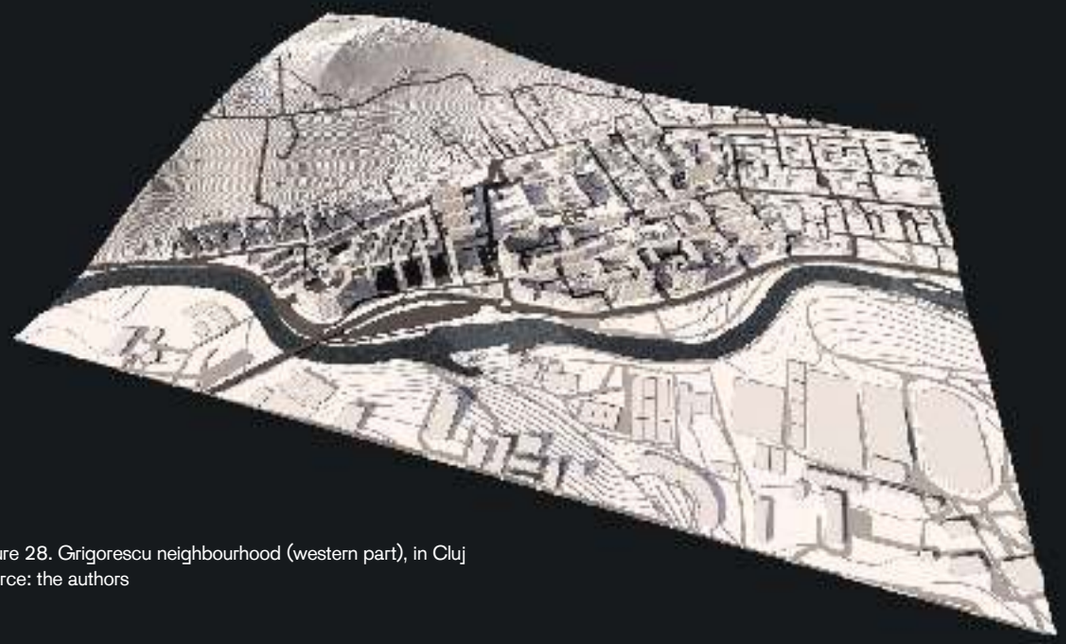


Figure 28. Grigorescu neighbourhood (western part), in Cluj
Source: the authors

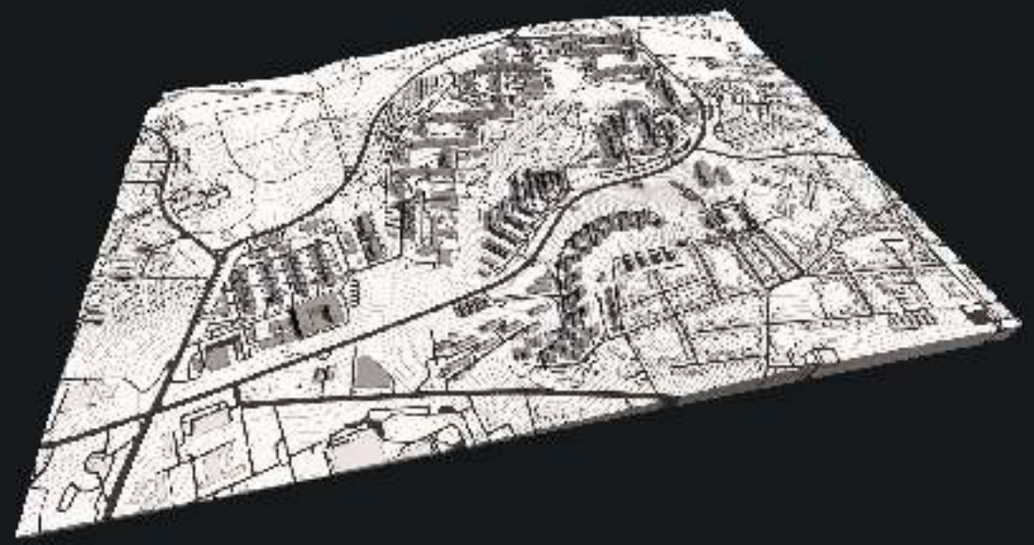


Figure 29. Brno-Líšeň district, in Brno (1)
Source: the authors

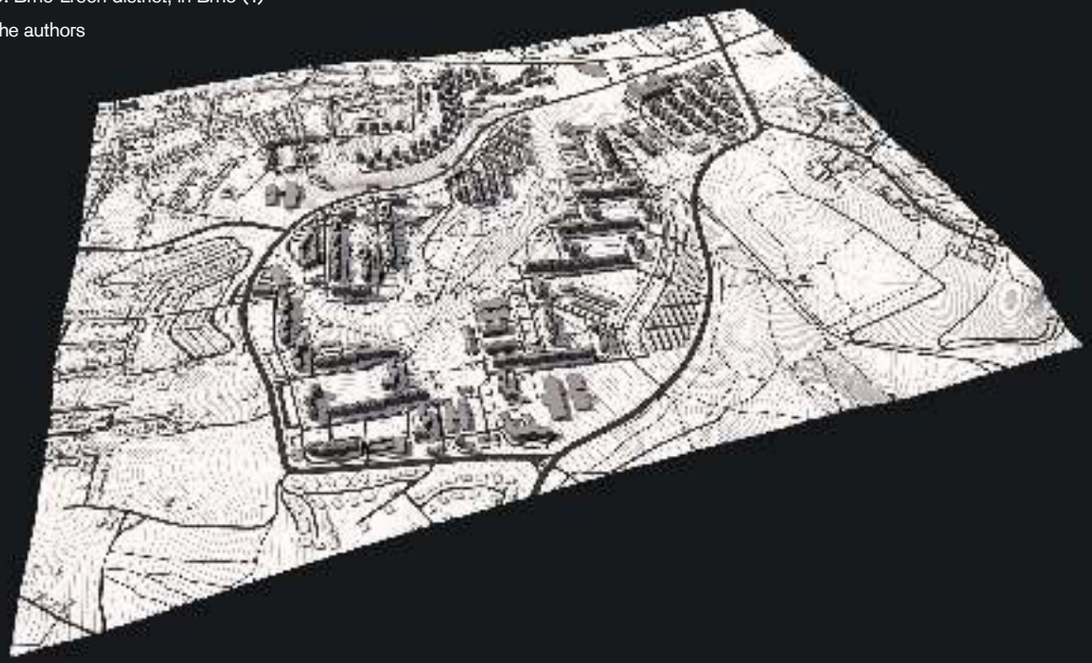


Figure 30. Brno-Líšeň district, in Brno (2)
Source: the authors

b.
BRNO Land Suitability Analysis

An effective tool in assisting strategic development decisions

There are several other methods that you can use to understand the city. For example, the Land Suitability Analysis (LSA) (*cf.* Figure 31) can be a very good starting point in planning strategic interventions at the local and metropolitan level, because it shows where plots with low, medium, high or very high potential for development are located. The Land Suitability Analysis is a relatively simple, but data-intensive tool. The methodology can be used for multiple purposes, but it is most effective in assisting strategic development decisions and the zoning of land.

The advantage of this analysis is the following: It employs computing power to break down large volumes of data and generate results that can aid human decision-making. The methodology itself is relatively simple, although it requires access to large and detailed datasets, knowledge of geographic information system tools, and basic programming capabilities. Here is a list of the most important data you need for the analysis:

- Cadastre data: A full and up-to-data cadastre database is of the utmost importance when performing a LSA. A LSA can be run even with an incomplete cadastre database, but the results should be used with circumspection. Starting from the cadastre, you can first see all the plots in FUAs. This first layer of data also tells us what is already developed and what is, potentially, developable.
- Public land plots: The next layer of relevant data for the LSA is the data on public land plots. This information is key as it identifies the plots/areas that may be used as strategic investment areas by the local/regional administration. Often, this information is not available and administrations have a poor understand-

Figure 31. Brno metropolitan area. Aerial views ►
Source: Google Earth Pro

ing on the assets they own. This, in turn, hinders their capacity to effectively and efficiently manage these assets.

- Undevelopable plots or plots with development restrictions: Another important layer of information includes data on undevelopable plots or plots with development restrictions. Such information could include details on floodable areas, areas with landslides, high-quality agricultural areas, natural reserves, mining areas, etc. This information is key, as it informs the LSA algorithm. For example, it is difficult to raise multi-apartment housing units on high-quality agricultural land in rural areas. One should not develop in natural reserves, and should only develop some uses in floodable areas. Similarly, one should be aware of the additional costs and safety measures required by building in an area affected by landslides.
- Setting the parameters for the Land Suitability Analysis: Once the basic information for the LSA is available, one needs to collect information that may be used as a parameter in the LSA methodology. The map on the opposite page displays the residential development potential for Brno. The analysis looked at parameters such as proximity to an existing road, proximity to an urban centre, size of the plot, or shape of the plot. Such an analysis can be further refined, by looking at different parameters for each type of the development type: industrial, logistics and warehousing activities, office buildings and activities, tourism and recreation. These parameters can be adjusted or modified to sharpen the focus of the LSA, and additional filters can also be introduced.

Once a solid baseline is created, the LSA can become a very useful tool for better informed strategic and spatial planning decisions.

Figure 32. Land suitability analysis for housing/ residential/mixed developments, Brno ►
Source: the World Bank

Land suitability analysis for Brno

Legend

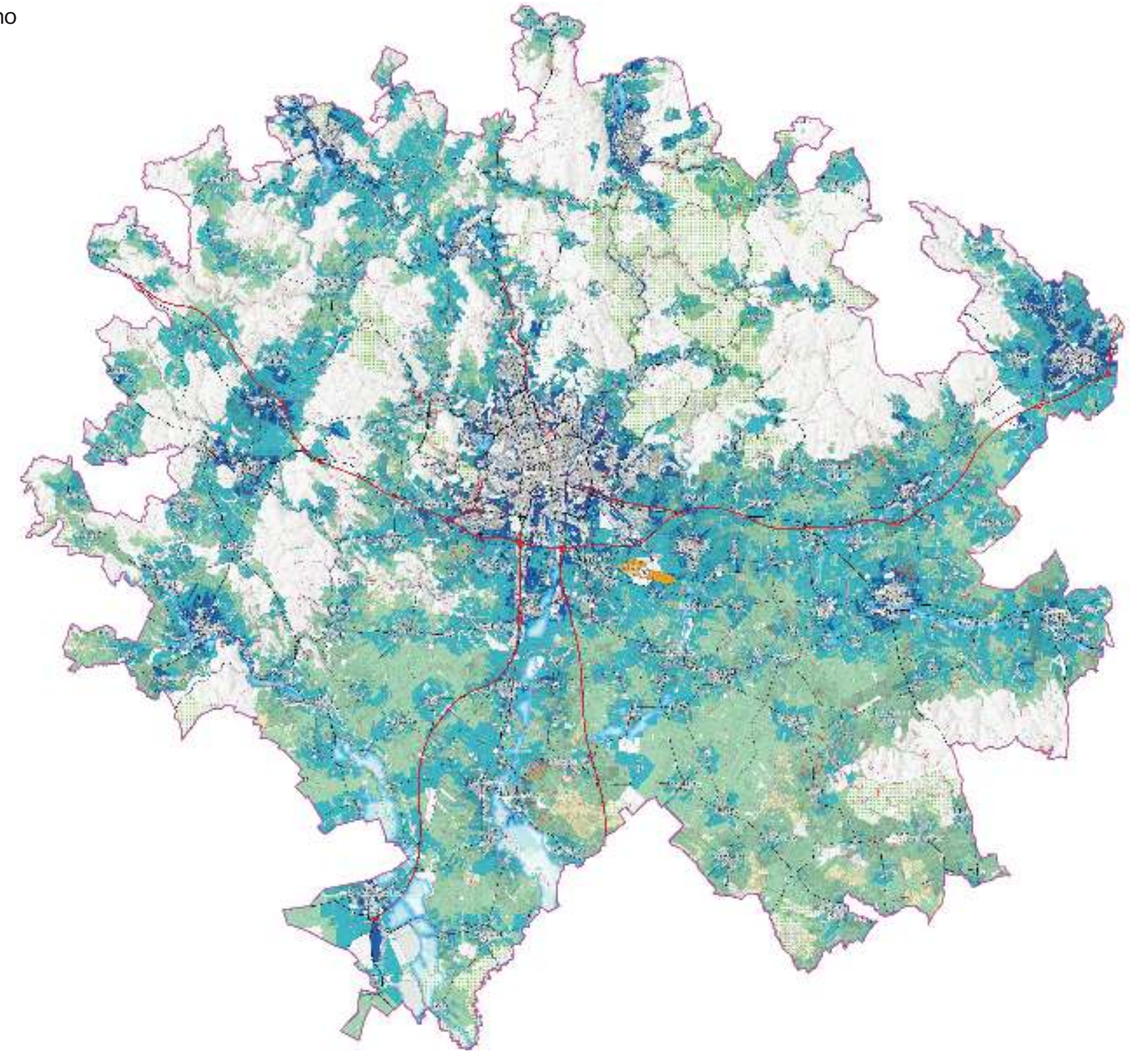
- Brno Metropolitan area
- Municipality (LAUs)
- Land plot
- Airport perimeter
- Natural protected area
- Flood risk area (20 yrs.)
- Landslide risk area

Transport infrastructure

- Motorway
- Trunk road
- Primary road
- Secondary road
- Tertiary road
- Local road or street
- Railway
- Railway station

Suitability analysis
Development potential:
Housing / residential / mixed

- Low
- Medium
- High
- Very high



LAND SUITABILITY ANALYSIS

04
FIND
a real-life challenge

4. FIND A REAL-LIFE CHALLENGE

18. Archilocus lived between c. 680 and c. 645 BC (or c. 740 and c. 680, nobody knows exactly) on the island of Paros, in the Aegean Sea.

19. Isaiah Berlin's take on this line is the following: "But, taken figuratively, the words can be made to yield a sense in which they mark one of the deepest differences which divide writers and thinkers, and, it may be, human beings in general. For there exists a great chasm between those, on one side, who relate everything to a single central vision, one system, less or more coherent or articulate, in terms of which they understand, think and feel – a single, universal, organizing principle in terms of which alone all that they are and say has significance – and, on the other side, those who pursue many ends, often unrelated and even contradictory, connected, if at all, only in some de facto way, for some psychological or physiological cause, related to no moral or aesthetic principle. These last lead lives, perform acts and entertain ideas that are centrifugal rather than centripetal; their thought is scattered or diffused, moving on many levels, seizing upon the essence of a vast variety of experiences and objects for what they are in them- selves, without, consciously or unconsciously, seeking to fit them into, or exclude them from, any one unchanging, all-embracing, sometimes self-contradictory and incomplete, at times fanatical, unitary inner vision" (Berlin, 1953/2013: 2).

20. 'Best' is somewhat debatable here. 'Optimal' might be a better choice of wording.

21. *Cf.* Tan, 2017: 42.

22. https://bit.ly/3PbG6Sl [25.08.2023]

23. Land take can be defined as the increase in artificial areas over time and represents an increase in settlement areas (or artificial surfaces), usually at the expense of rural areas. This process can result in an increase in scattered settlements in rural regions or in an expansion of urban areas around a core (i.e., urban sprawl). There are various synonyms for land take, including land consumption and artificialization.

Based on a surviving fragment by the poet Archilochus,[18] Isaiah Berlin's essay "The Hedgehog and the Fox" might prove the best start when trying to find a real-life challenge for clever urban planning. Consider the following aphorism: "The fox knows many things, but the hedgehog knows one big thing".[19]

'Hedgehogs' and 'foxes' roam the field of planning as well. Hedgehogs have one big idea or theory about how cities should be designed and managed. They might be really focused on one particular issue, like transportation or sustainability, and approach everything from that perspective.

Foxes, on the other hand, are nimbler. They look at a lot of different ideas at the same time. They're more comfortable with things being complicated and messy, and they like to try out new ideas to see what works best.

Both have their strengths and weaknesses. Hedgehogs can bring a lot of focus and a clear idea to a project, while foxes are good at combining different takes to find the best solution to a problem.[20]

However, cities tend to favour foxes, because the challenges they face, from traffic to pollution and affordable housing, require flexibility and ease in the face of ambiguity and complexity. This is because most planning problems are either:

1. The fix-it problem: a situation that needs fixing, or
2. The do-it problem: rather than facing a problem to be solved, there is a goal to be achieved.

However, most of the time, you'll find a combination of both. What's more, most planning problems lend themselves easily to games. Here are some examples:

- Master plans, ranging from greenfield, through brownfield, and to do-it-yourself (DIY) developments,
- Visions that can then be translated into terms of reference,
- Conversion projects for unused buildings,
- Strategies geared towards public policy,
- Scenarios,
- Experimental planning instruments.

Remember that games work best when meeting these three prerequisites:[21]

- The problem at hand is interdisciplinary,
- There are many stakeholders involved,
- The planning process is unpredictable.

For example, The European Environment Agency[22] (EEA) sheds some light on the spatial challenges registered across functional areas. Between 2012 and 2018, the land-take[23] registered across the FUAs of EU-27 and UK equaled 3,581 km^2, which amounts to

an increase of 2.6% compared to 2012. Statistics also highlight some key spatial dynamics:

- Sprawl is a common challenge.
  - Sprawl beyond the administrative boundaries of the core city represents a key challenge across Europe's functional areas. Of the total land take, almost 80% was located within the commuting zone.
  - The highest pressure comes from expansion of industrial and commercial sites, followed by diffuse residential expansion, while dense residential expansion represents only a small fraction of the total. Of the total land take, 56% is attributed to industrial, commercial and diffuse residential expansion and less than 0.01% to dense residential expansion.
- Functional areas grow at different speeds.
  - Spatial growth patterns vary significantly across functional areas, as a result of both demographic trends, market dynamic and planning policies. The average FUA expanded by 2.9% compared to 2012.
  - There is a wide range of spatial development patterns, which opens up room for comparison and exchange of best practices between FUAs. While approximately 11% of FUAs remained relatively static (i.e., registered growth of less than 1%), others expanded their built-up area by as much as 17.2%.
  - The countries with the fastest growing built-up areas are Romania, Poland and Lithuania. They are also the countries with the fastest expansion of the commuting area, which grew more than twice faster than the core city.
- Land use efficiency improved, but remains lower in the commuting zones.
  - Land-use efficiency improved since 2012 in both cities and commuting areas, yet the land used per capita remains three times larger in commuting areas. As of 2018, 218 m^2 of land was used per capita in cities and 691 m^2 in commuting areas, respectively.
  - The countries with the lowest rates of artificial area per capita are Malta, Romania and Greece.
  - The countries with the largest increase in artificial area per capita are the Czech Republic, Lithuania and Latvia.

Urban sprawl is an issue because it does not take into consideration physical proximity to the city centre. Enhancing connections between people and places can improve accessibility to various assets such human resources, shops, schools, and other public services. Proximity to the city centre enables the spatial dimension of the urban environment to translate into time, offering the convenience of accomplishing a wider range of tasks within the same day.

It is worth noting that as density increases, infrastructure costs per person tend to decrease. Moreover, a larger population creates a larger customer base, which allows for a broader array of commercial and cultural activities to flourish. This is why municipalities should entice developers to invest in locations that are strategically aimed to increase density.

DECISION BEARERS

The following images illustrate growth patterns in the metropolitan areas of Brno and Cluj. While the built-up area has increased significantly in both cities, the patterns of growth are distinct.

In Brno, development is compact and continuous, indicating that there are effective spatial planning mechanisms at work, while in Cluj, new development areas are fragmented and lack coherence in planning. In a dynamic market, it is not easy to steer development towards desirable urban forms, but one helpful instrument can be land readjustment.

Land readjustment is mostly used in dynamic residential areas to facilitate compact, integrated urban planning. It implies dividing plots anew, so that owners and developers can work with better dimensions and destinations than before. Land readjustment is done by piecing together and then dividing several neighbouring plots, regardless of whether they are developed or not. It aims to achieve a better division of land into buildable lots and to ensure the necessary surfaces for public amenities. This land readjustment process is described in the General Urban Plan of Cluj, which was approved in 2014 (*cf.* Figure 37).

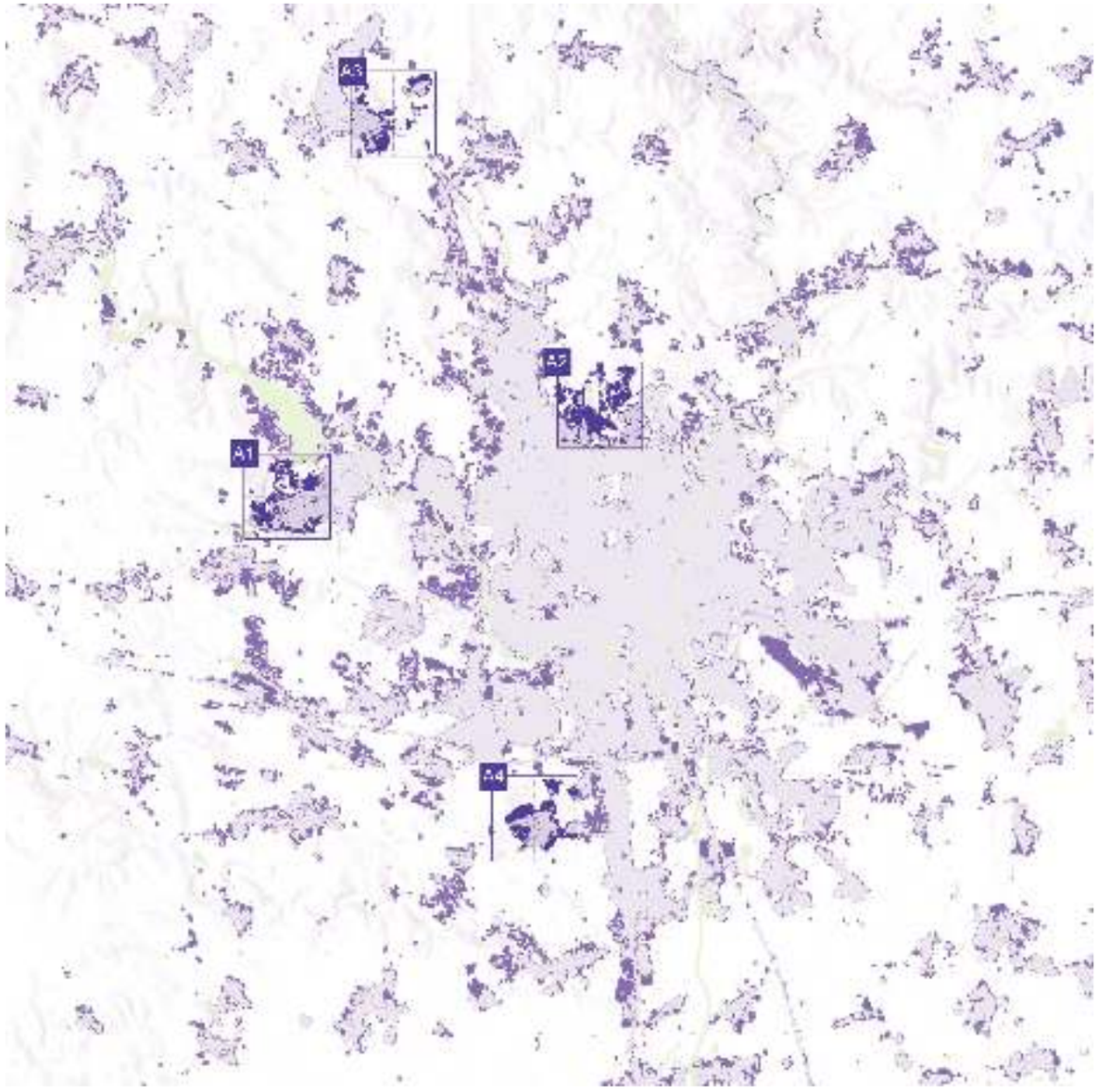


Figure 33. Spatial growth patterns for different areas from Brno (general map)
Source: the authors, based on Open Street Maps (OSM)

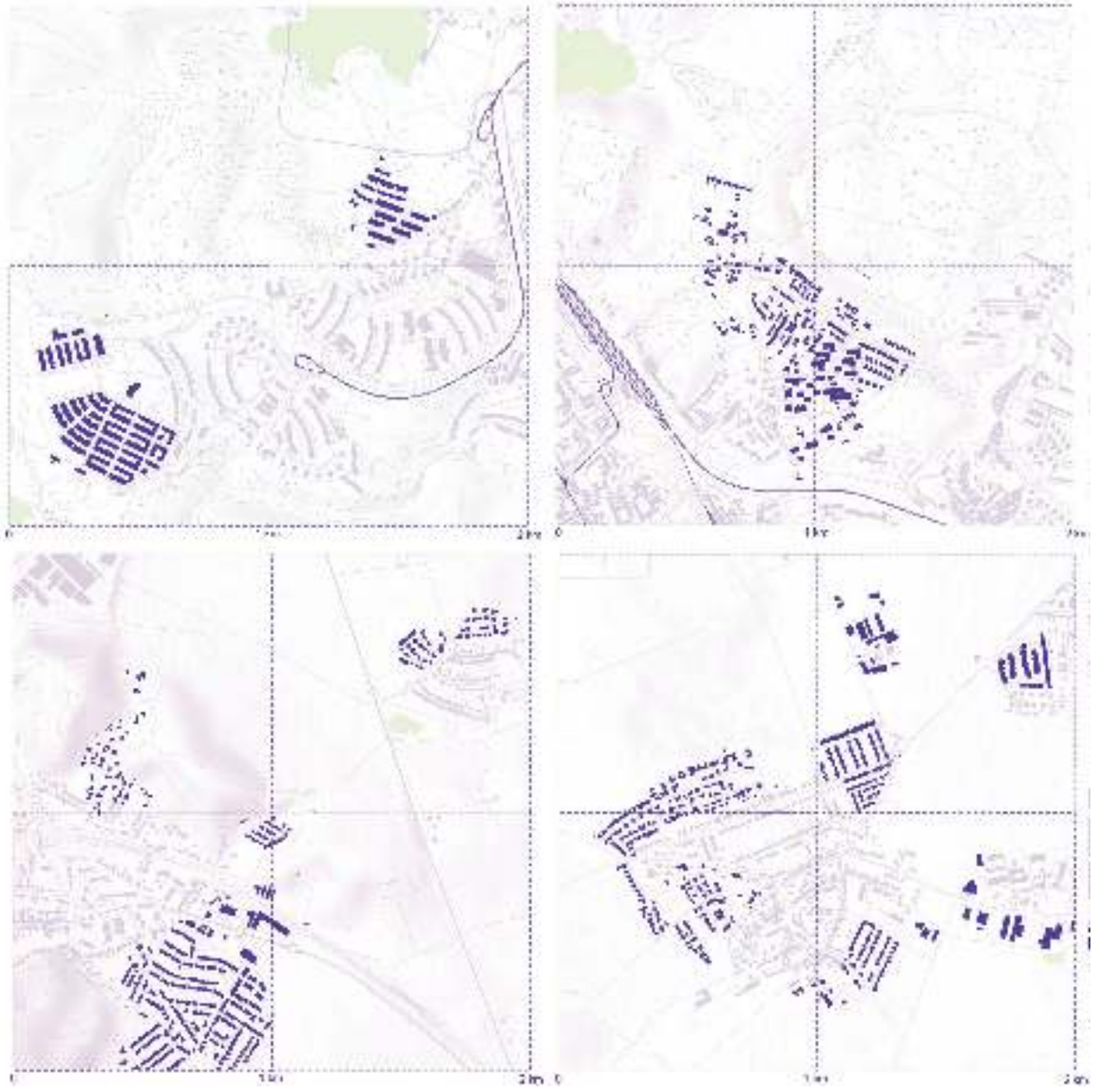


Figure 34. Spatial growth patterns for different areas from Brno (zoomed in A1-A4)
Source: the authors, based on Open Street Maps (OSM)

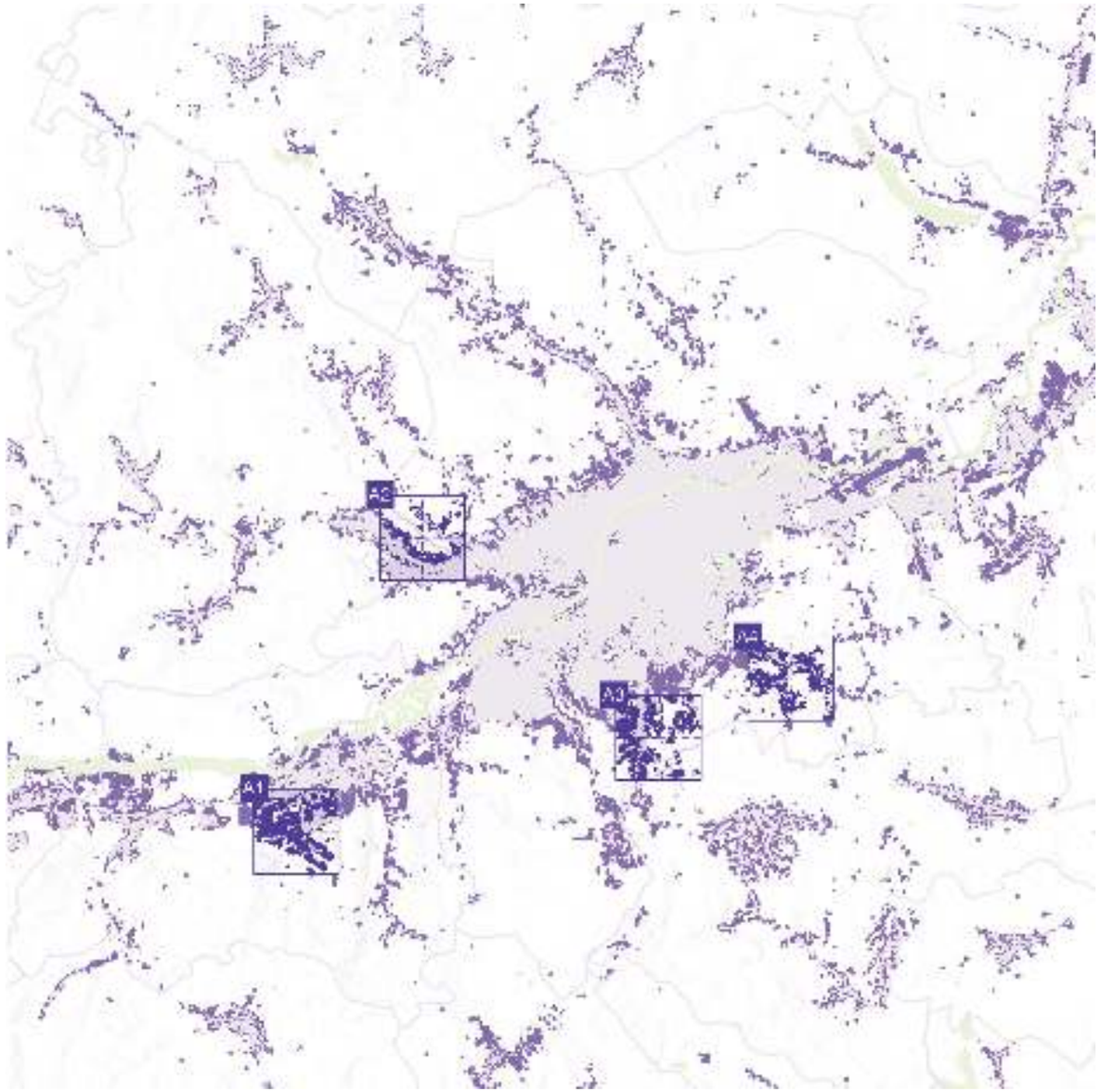


Figure 35. Spatial growth patterns for different areas from Cluj (general map)
Source: the authors, based on Open Street Maps (OSM)

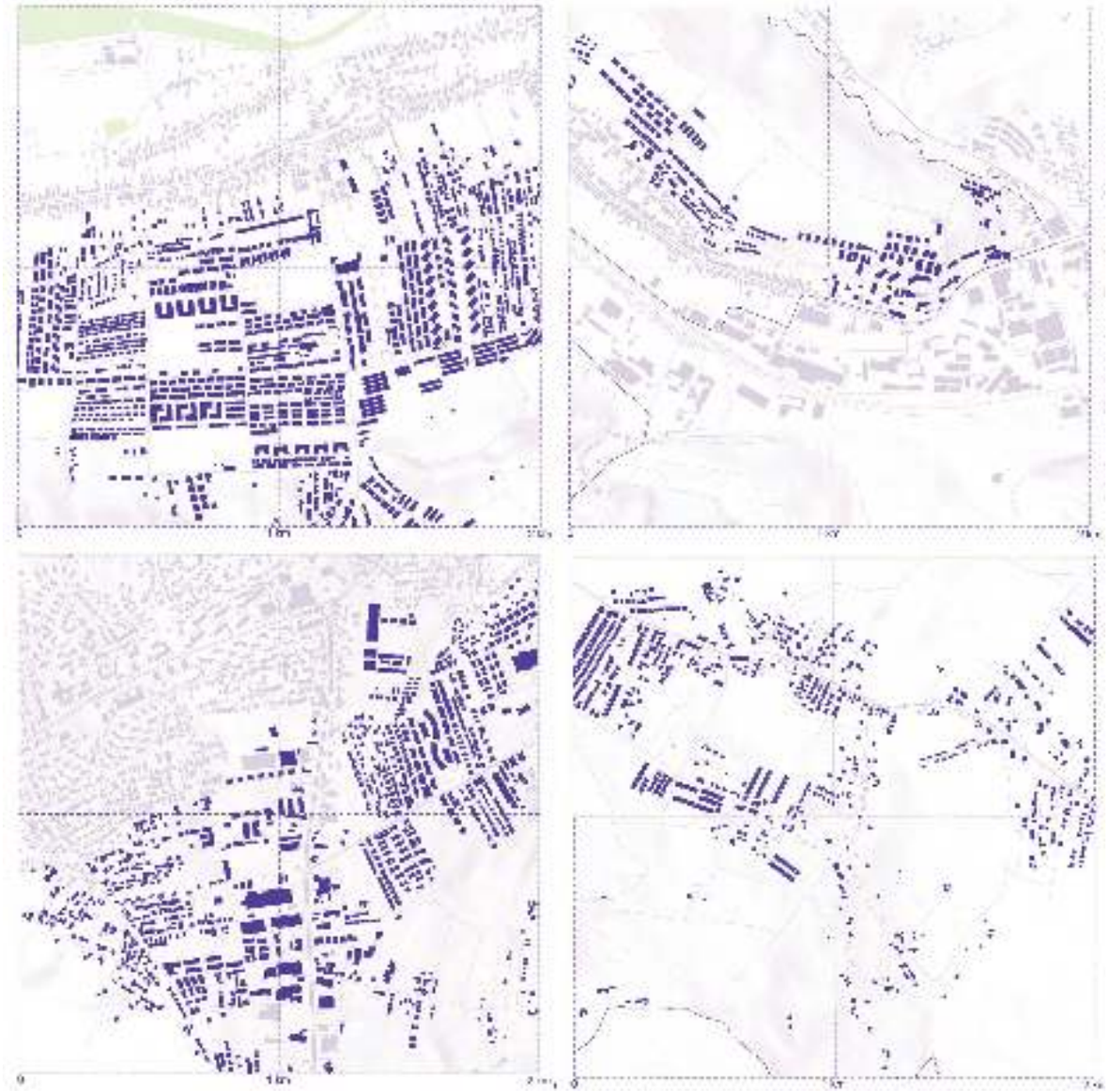


Figure 36. Spatial growth patterns for different areas from Cluj (zoomed in A1-A4)
Source: the authors, based on Open Street Maps (OSM)

The limits of an urbanization area are set based on topographical and cadastral elements (roads, rivers and lakes, significant land features, canals, forests, etc.).

All the plots located within this perimeter will be subject to land readjustment. The owners can form a temporary association aimed at initiating the land readjustment process. This association is exempt from a series of taxes and obligations.

It is within these contours that a Zonal Urban Plan (ZUP) will be drafted, with the obligation to re-parcel and preserve adequate areas for public amenities.

Prior to the land readjustment itself, it is necessary to update the topographical and cadastre registries for the area.

Phase 1

The temporary association has the following mandates:

- It initiates a virtual and temporary unification of the plots that form land readjustment area.
- It works just like a land readjustment specialist.

Phase 2

The Zonal Urban Plan (ZUP) then:

- Provides the functional and spatial layout of the area (streets, public infrastructure networks, building and zoning regulations).
- Prepares the new plots for development, maintaining the initial number of plots, so that each owner receives her or his due share.
- Designates the areas dedicated to public amenities (kindergartens, schools, healthcare facilities, etc.) and for green open spaces.

The land for public amenities is ceded by plot owners, as a percentage of their private property. They receive compensation through the increase in the value added of their plots. Note that receiving a building permit is conditioned upon finalizing the land readjustment process.

Phase 3

Hence, (controlled) urban expansion occurs in stages. A new area undergoes development only after planning is finalized in the previous one. Phasing is paramount here, because it ensures:

- The efficient management of land resources, safeguarding the adequate land reserves necessary for long-term developments,
- A logical policy for investing in public infrastructure,
- The preservation of natural heritage,
- A coherent urban form.

Phase 4

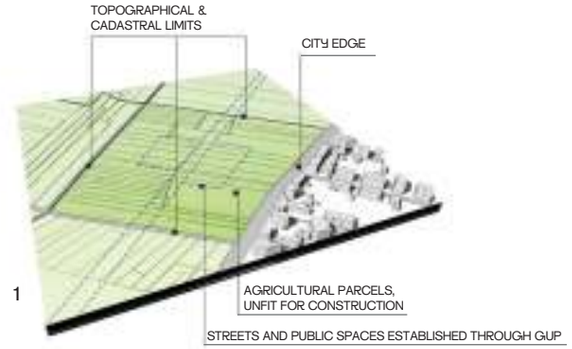


Figure 37. Land readjustment instrument applied in Cluj
Source: Planwerk

C.

CLUJ METRO PLAN

Land readjustment only leads to effective planning at the metropolitan level only when a coherent development strategy is prepared beforehand. In turn, it needs to: provide strategic development areas and their prioritization, single out the local and regional connections of the metropolitan area, devise the methods for producing a compact urban form, designate the instruments at work for producing mixed-use, walkable neighbourhoods, put the collaboration networks in place, and test their proper workings.

Such an exercise has been prepared for the Cluj Metropolitan Area, resulting in a draft master plan for integrated metropolitan development. It has been headed over to local stakeholders for negotiation and refinement: They include the municipalities, the Intercommunity Development Association in charge of the metropolitan area, the County Council, and their respective planning departments.

Planning for collaboration

CLUJ-NAPOCA'S METROPOLITAN STRATEGIC SPATIAL PLAN

Cluj's Metropolitan Strategic Spatial Plan is an integrated development vision for the entire metropolitan area. It aims to be a simple, concise, and clear guideline for everyone involved in spatial planning at the metropolitan level. The plan basically works as an entry point for dialogue and interjurisdictional cooperation, as well as a synthesis of the current metropolitan development plans, aimed at substantiating future projects.

In a dynamic development framework, traditional practices of land-use planning are insufficient, especially when done in isolation. Moreover, regular plans can't keep up with the economic needs and the spatial transformation that comes with them, due to the extensive amount of time required to draft and approve spatial plans in Romania, their static nature and long-term regulatory role.

Against this background, spatial planning should no longer be about controlling and prescribing in detail what, where, and how to build, at least not at the city or metropolitan scale, but rather about identifying opportunities.

To this end, the plan aims to capture the spirit of parts and define a vision for the whole, by integrating future plans, identifying development opportunities, and finding ways to concentrate efforts. It basically tries to build a flexible, yet effective, framework for metropolitan development.

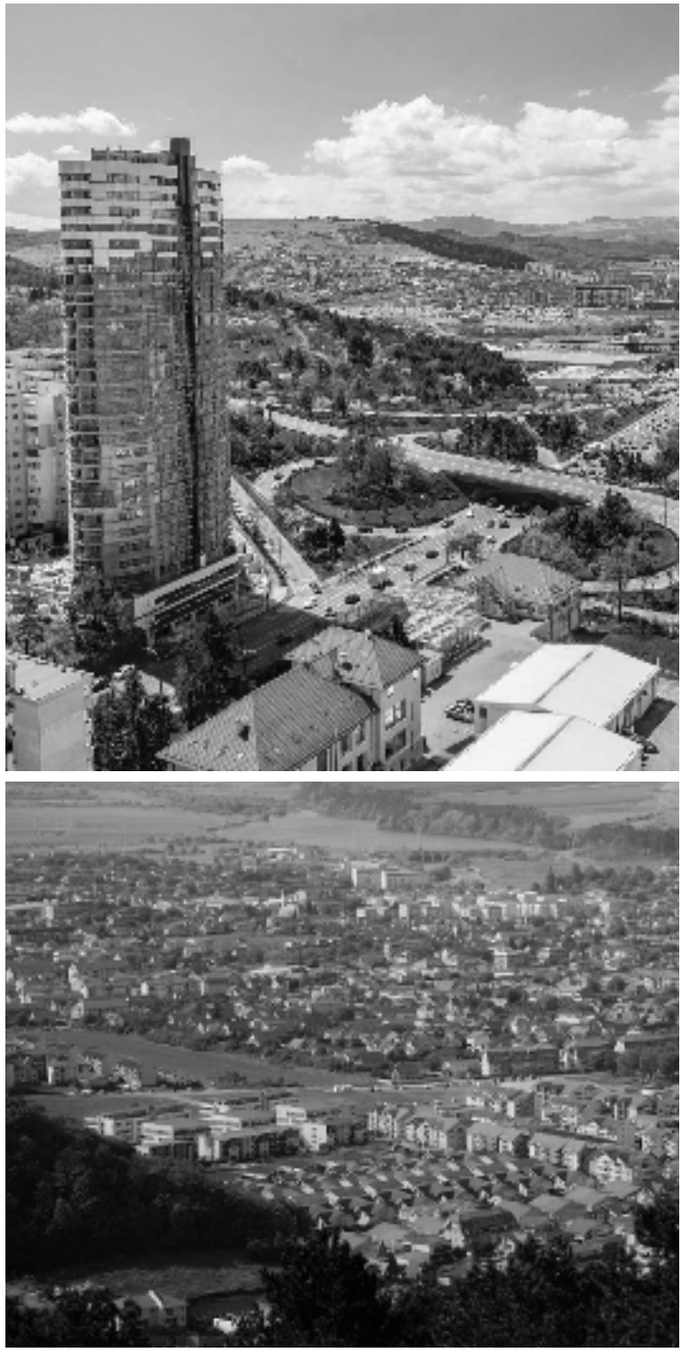


Figure 38. Cluj metropolitan area ►
Source: Photo by Sergiu Razvan (down) - Floresti City Hall; Social Media (up), https://shorturl.at/pAPV2 {14.07.2023}

EXAMPLE

CLUJ-NAPOCA'S METROPOLITAN STRATEGIC SPATIAL PLAN

The Strategic Spatial Plan builds onto existing local strategies and plans prepared for the Cluj Metropolitan Area, Cluj County and the constituent municipalities, integrating their key proposals into a comprehensive vision for metropolitan development. The plan also compiles proposals from sectoral strategies, such as:

- The Integrated Urban Development Strategy of Cluj Napoca (IUDS/SIDU),
- The Sustainable Urban Mobility Plan of Cluj Napoca (SUMP/PMUD),
- The Cluj County Territorial Development Plan (CCTDO/PATJ),
- It also documents the state of 18 General Urban Plans (GUP/PUG), local initiatives of the constituent municipalities, and their alignment with the strategic vision.

The master plan is framed against five fundamental pillars, on which the development of the metropolitan should rest:

- The blue–green transformation corridor on the Somes river,
- Transit oriented development corridors,
- Development nodes,
- Transformation areas,
- Consolidation areas.

These five pillars aim to structure the future development of the entire metropolitan area:

- The natural and artificial metropolitan structure is the foundation of the master plan.
- The green-blue and transportation corridors act as the backbones of transformation and concentrate development.
- The variables are the areas of strategic development, which should be negotiated amongst all interested parties.

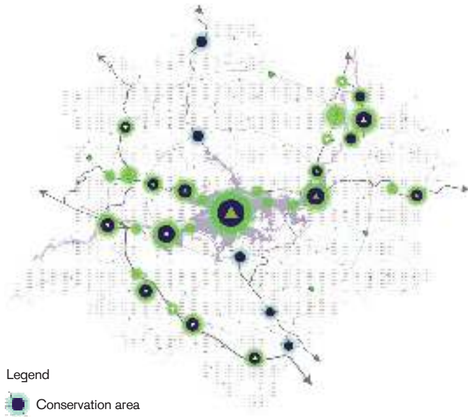


Figure 39. The Variables — Medium Term Proposal

Source: Proposal for the Masterplan for Metropolitan Development in Cluj Metropolitan Area

This framework allows for enough flexibility to capitalize on new opportunities and respond to unforeseen challenges.

Figure 40. Areas of strategic development and key infrastructure projects proposed within the Cluj Metropolitan Area ▶

Source: Proposal for the Masterplan for Metropolitan Development in Cluj Metropolitan Area

Metropolitan development master plan for Cluj

Legend

Areas with development potential

- Urbanization: economic functions (industrial, business)
- Urbanization: residential, mixed-use
- Densification: scattered residential buildings

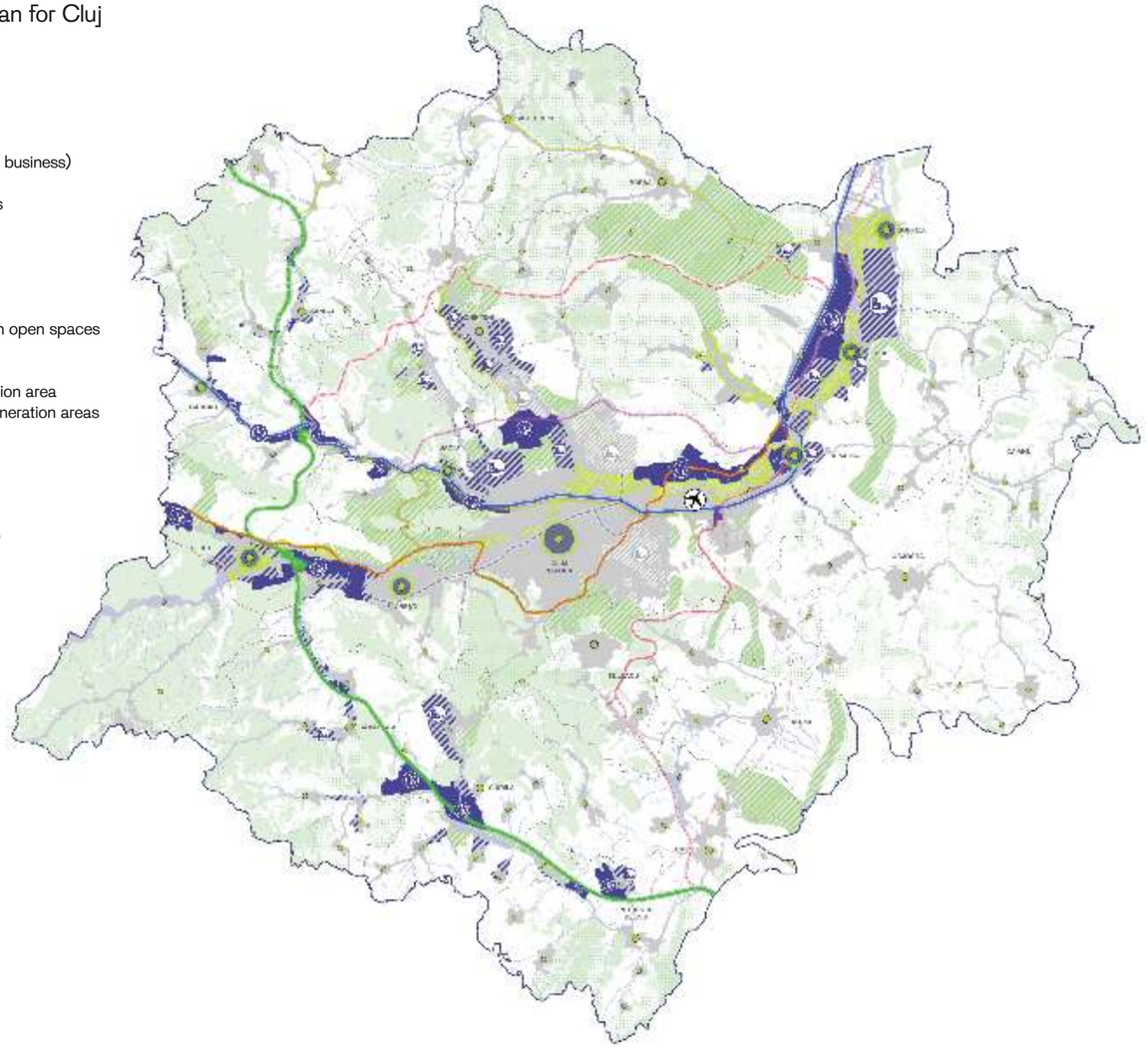
Blue–green infrastructure

- Nature 2000 Protected Area
- Forest
- Proposed areas for forests, parks and green open spaces
- River
- Lake
- Somes blue–green corridor: study / protection area
- Somes blue–green corridor: proposed regeneration areas

Transport infrastructure

- Metropolitan belt
- A3 Highway (existing)
- A3 Highway (under construction / planned)
- Metropolitan train corridor
- Subway (under construction / planned)
- PATJ proposal: belt - large ring
- PATJ proposal: belt - medium ring
- PATJ proposal: expressway
- PATJ proposal: A3 connection
- PATJ proposal: link A3 (metropolitan belt)
- PATJ proposal: Floresti bypass belt
- PATJ proposal: connecting roads

- "Avram Iancu" international airport



CLUJ METRO PLAN

05
ASK
the right question

5. ASK THE RIGHT QUESTION

24. Kneeland, S. (1999): 24.

Asking the right questions is a matter of solving problems effectively. Issues in a city are quite intricate: You can find challenges at different scales, from highly impactful hazards to housing affordability and small-scale public spaces. There is plenty to choose from. So, which issues will take the lead in the urban transformation processes?

In order to ask the right questions, first you have to find and understand the problem.
Here's a checklist you can use:

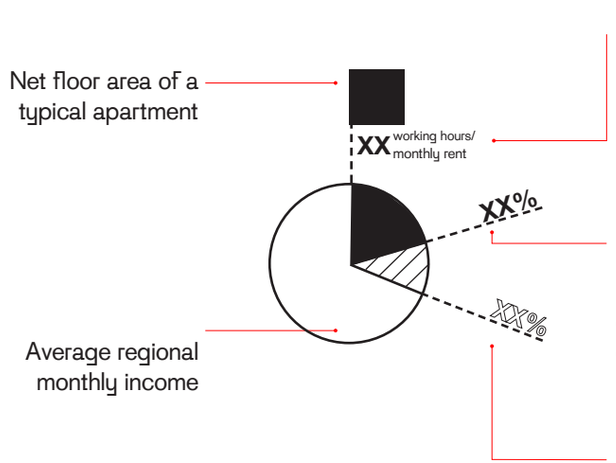
1. Impact: A problem that has a significant impact on a large number of people or has long-lasting environmental effects is likely to be more relevant than a problem that affects only a few people or has minimal consequences for the environment.
2. Urgency: Is it something that needs to be addressed immediately, or can it wait? A problem that has pressing consequences is likely to be more relevant than a problem that can be faced in the future.
3. Feasibility: If a problem is difficult or impossible to solve, it may be less relevant than a problem that can be tackled through practical solutions.
4. Stakeholder involvement: More stakeholders usually imply a more relevant problem.
5. Context: Is this a problem that is specific to a particular place, or is it a problem that is widespread?
6. Justice: Does the problem affect certain groups disproportionately? Addressing the problem would promote social justice?
7. Sustainability: Consider the endurance of any solution, and whether it deals with the root causes of the problem rather than its symptoms.
8. Cost: Gauge the costs associated with addressing the problem, and whether they are justified by the potential benefits.
9. Political will: Assess the level of political support and whether there is a feasible path forward to implementing solutions.
10. Connections: Consider how your problem is linked to other issues and whether addressing it could have broader positive or negative impacts.

You could also ask yourself questions like this:

- What is the problem? This could be anything from traffic congestion to housing affordability and air pollution.
- How acute is it?
- How important is it?
- Whose problem is it? No! That is not the right way to phrase things. It is OUR problem. Whose responsibility is it? That is much better![24]
- What is the available data? This could include population density, land use, transportation patterns, housing affordability, etc. Keep in mind that you will never have time to gather all the info you need for a certain problem. You need to be selective and creative. If you are proficient enough, you can trust your intuition.

Once you decide on the problem at hand, you move on to the more detailed list of questions. Let's take housing affordability, for example: You can start from the housing affordability index, and then move on areas, use, characteristic cost values and quality-related criteria (*cf.* Figure 41).

1. Affordability

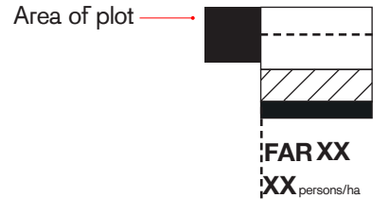


Rental expenditure for the typical home, converted into hours worked, based on the regional pay level.
In the case of owner-occupied homes, monthly pays required for full purchase of a typical home.

Proportion of average income spent on rent for this particular project.
In the case of a user-occupied home, the proportion of monthly pay required to purchase a square meter of this particular home.

Proportion of average income spent on average local rent.
In the case of a user-occupied home, the proportion of monthly pay required to purchase a square meter of this particular home.

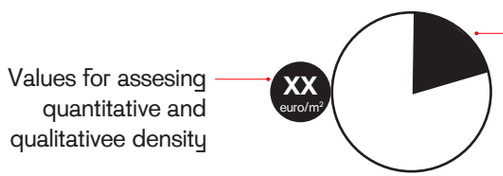
2. Area and Use Structure



Gross floor area, with propotional breakdown of the residential mix and the distribution of different functions

Values for assessing quantitative and qualitative density

3. Characteristic Cost Value



Plot costs relative xx euro/m^2 to construction costs

4. Quality-related Criteria

Value	Criteria	Category
Zoning	Spatial organization in terms of access, living spaces and secondary spaces	Apartment
Use flexibility	Neutrality in terms of use, capacity to be adapted, capacity to be furnished	
Private Sphere	Position of entrance, degree to which the structure can be seen into the home's orientation	
Open Areas	The nature and size of the open areas	
Temperature	The extent and nature of heating/cooling measures	Comfort
Visual Character	Orientation, size of openings, view of surroundings	
Ventilation Quality	Natural/mechanical ventilation, cross-ventilation, non-ventilated rooms	
Acoustic Qualities	Noise protection, filtering out of background noise, special acoustics areas	
Building Systems	Heating/cooling technology building automation, elevators	Fixtures
Kitchen	Type and fixtures	
Bath	Type and fixtures, natural lighting and ventilation	
Communication	The type and qualities of spaces for interaction, communal facilities	Outdoor Areas
Hierarchy	The form and gradations of access possibilities	
Links	Connections to public space	Urban Planning
Proportions	The form and subdivision in relation to the context	
Public Transportation	Access to bus and rail services	Connection
Provision	Access to episodic and periodically required prrovision serrvices	

Figure 41. Housing affordabillity
Source: Domer *et al.* (2017): 84f.

The following comparative graphs for Cluj and Brno are a good starting point for how to measure housing affordability in your city.

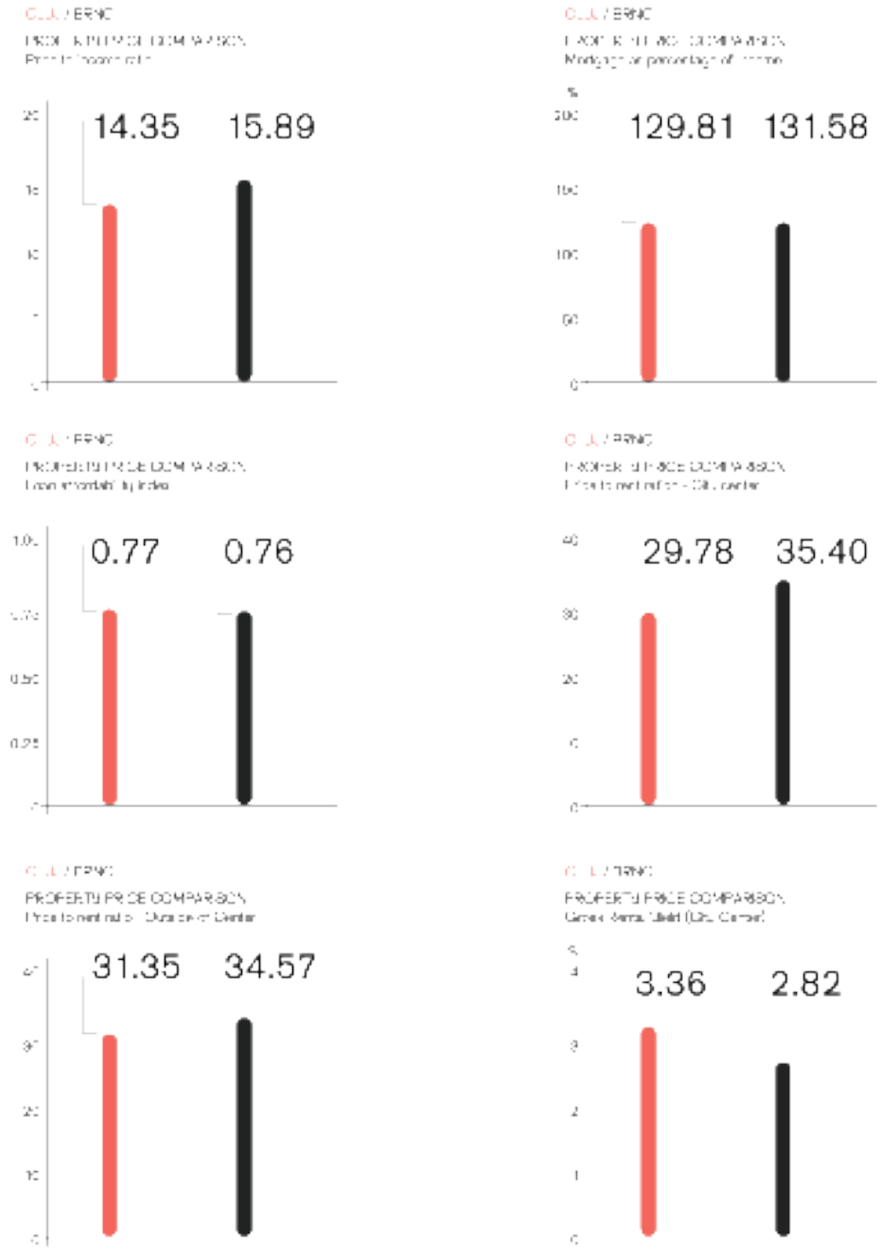


Figure 42. Property prices in Cluj and Brno, 2023
Source: Numbeo, https://shorturl.at/erEK7 {30.06.2023}

Here is a list of the most important questions to ask regarding housing affordability. Obviously, they can be refined further:

Defining and assessing housing affordability:

- How is housing affordability defined in our city, and what factors are considered when determining affordability?
- What measures has the city taken to address the issue of housing affordability, and what impact have these measures had so far?
- How does the city assess the effectiveness of its housing affordability initiatives and how does it make adjustments when needed?

Affordable housing programmes and initiatives:

- Are there any specific initiatives or programmes in place to assist low-income individuals and families in finding affordable housing?
- How does the city ensure that new housing developments include affordable housing options?
- How does the city engage with developers and the private sector to encourage construction of affordable housing?
- What partnerships or collaborations does the city have with non-profit organizations or community groups to address housing affordability?
- Are there any incentives or subsidies available to encourage property owners to provide affordable housing units?

Community engagement:

- How does the city involve the community and residents in the planning and decision-making processes related to housing affordability?
- How does the city work with financial institutions and lenders to provide affordable financing options for potential homeowners or renters?
- How does the city engage with neighbouring municipalities or regional planning bodies to coordinate efforts and address housing affordability on a broader scale?

Transportation and housing affordability:

- What role does public transportation play in housing affordability, and how is transportation infrastructure integrated into housing planning efforts?
- What long-term strategies does the city have in place to sustainably address housing affordability, considering projected population growth and economic changes?

Preventing displacement and gentrification:

- What strategies or policies does the city have in place to prevent gentrification and displacement of low-income residents in neighbourhoods experiencing rapid growth and development?
- What steps are being taken to ensure that affordable housing is distributed across different neighbourhoods in the city, rather than concentrated in certain areas?
- How does the city address the issue of homelessness in relation to housing affordability, and what support services are available to individuals experiencing homelessness?

Choosing a place to live is not an easy task. If choosing a car requires even several months of research, comparative analysis, budget adjustments, etc., then picking up a home should definitely preoccupy you for a time. A good place to live is one that offers in proximity several amenities and services (educational, recreational facilities, public transportation, etc.). Choosing to live in a mono-functional area with lack of diversity might hinder personal growth and limit opportunities for interactions. Also, try not to fall into the trap of some real estate developers. Suburban areas often have limited public transportation options, which means you will need to rely heavily on private vehicles for commuting.
This can lead to higher transportation costs, including fuel expenses and maintenance.

DECISION BEARERS

06
DRAW
a stakeholder map

D.

M DECISION MAKERS
T DECISION TAKERS

6. DRAW A STAKEHOLDER MAP

25. Mitchell *et al.* (1997)

26. The Mendelow Matrix model has been of interest since the 1990s, for the individual analysis of actors according to the interest and decision-making power they exercise.

In a FUA's context, decisions concerning large development projects cannot be made in blank. For a smooth course of development, the municipality must involve a wide range of stakeholders from the early stages of the project.
In this digital age, the network of stakeholders has a crucial role on the evolution of a project, holding the power to either support the project or partially block it. Decision-making power can no longer be considered hierarchically: Communal voices are stronger and more relevant than ever. This is why it is important to analyze, understand and build an effective way of working with stakeholders involved or affected by a project. Once their interests are understood and debated, the project can be optimally managed and the stakeholders engaged to ensure increased ownership of the final result.

But what is stakeholder mapping? When discussing project management, this planning instrument reveals the environment in which the project will be developed, as well as the network of affected stakeholders. In order to know all of this, it is important to list all the main players and their respective needs. Then, you can trace their interests and the goals of the project, and see if and how much they overlap. If conflicts arise, they need to be mediated.

Such an analysis also makes it possible to prioritize the involvement of stakeholders according to their interest, as well as to the social, political, and financial influence they leverage. Against this background, you can follow these three steps:

- Identify potential stakeholders. An optimal approach here is the salience model[25], which uses legitimacy, power, and necessity, to classify the actors in 8 categories: discretionary, dormant, demanding, dominant, dangerous, dependent, definitive and non-stakeholders.
- Organize stakeholders: the phase in which stakeholders are organized according to interest and influence[26] to understand the type of interaction needed, including:
  - Monitoring and anticipating needs (low power and interest),
  - Regular information (low power, high interest),
  - Engagement management (high power and interest),
  - Satisfying needs (high power, low interest).
  - In other words, the more power and involvement a player has in a project, the more carefully it must be managed in terms of risk management.
- Building a stakeholder engagement strategy: This implies devising the method for working with each type of stakeholder.

We'll return to this in the next chapter. Note, for the time being, that methods might also imply a subjective approach, by considering:

- A player's emotional attachment to the project,
- Their motivation for involvement in the project.
- Identification of sympathizers and opponents.

A good example of communication between the local administration and the community is the neighbourhood advisory council, an organization that has proved successful in some Romanian cities. Its purpose is to achieve a permanent dialogue between the administrative bodies and the inhabitants of a certain area, thus promoting the active involvement of the community in solving certain problems and making decisions with a public impact.

B Know your strengths, know your weaknesses, know your enemies, and know your friends.

DECISION BEARERS

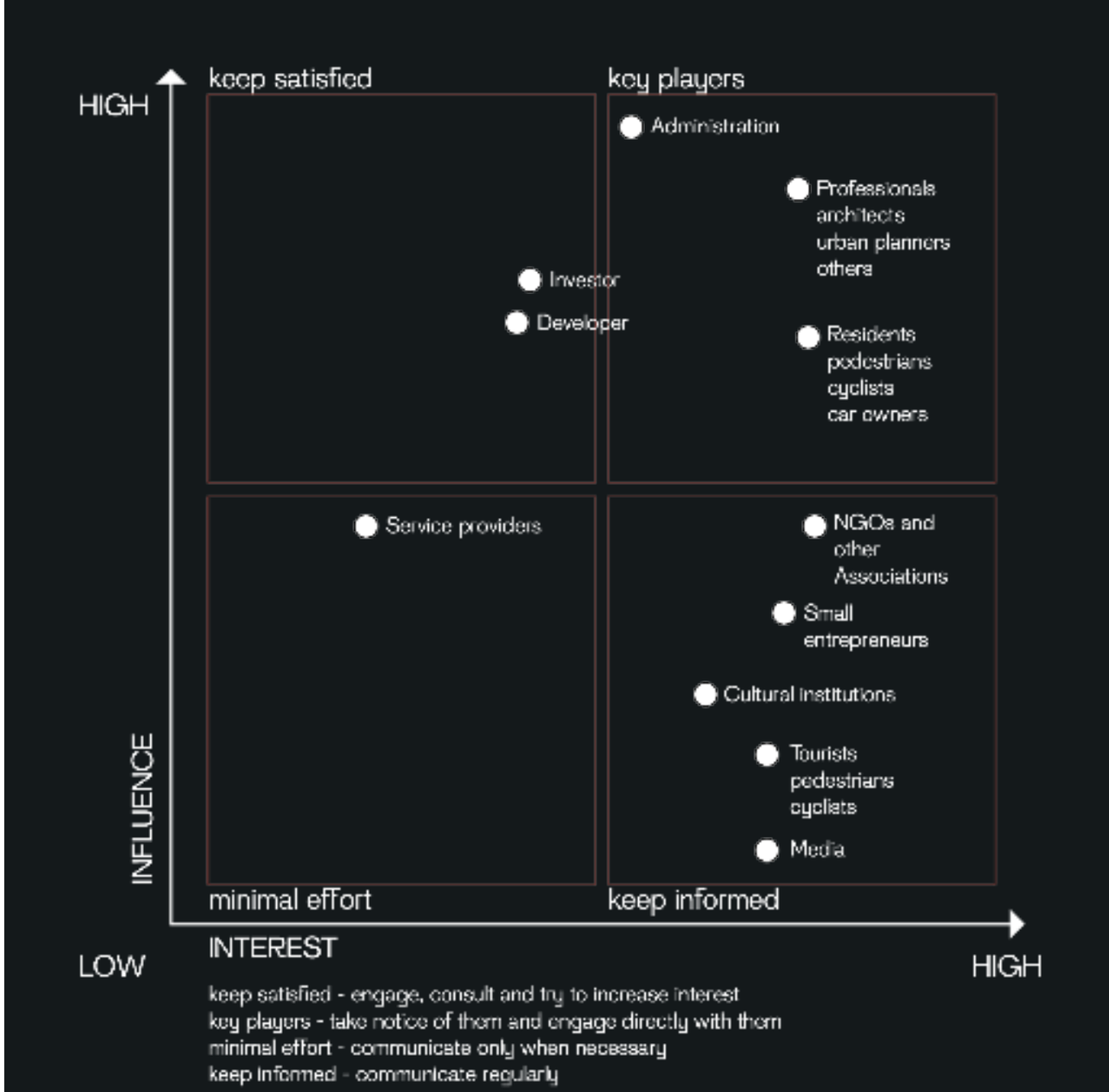


Figure 43. A possible salience diagram
Source: the authors

d.

BRNO URBACT Network

An interesting stakeholder mapping exercise took place on Brno's urban fringe, more precisely in the Red Hill (Červený Kopec). At that time, the district was to undergo redevelopment. Nevertheless, the area has a high degree of fragmentation and has been subject to uncoordinated intervention, while suffering from a degrading public space. The mapping exercise was part of an URBACT Programme called 'Sub>urban. Reinventing the fringe', with the aim to "counter urban sprawl by transforming the complex periphery of cities into more attractive and high-quality areas [...], by carefully increasing the densities of 20th century post-war urban areas [...], instead of expanding the urban territory". To this end, an Integrated Action Plan was prepared for the transformation of this fringe, which included a thorough stakeholder analysis, since the area for redevelopment had a very complex ownership structure.

Transformation of the fringe

Figure 44. Land ownership map of Red Hill district and stakeholder map
Source: Strategy for the transformation of the fringe in Red Hill – Brno

URBACT Network. Sub>urban. Reinventing the fringe. Strategy for the transformation of the fringe in Red Hill – Brno .

The transformation of the fringe[27] took place in several key steps:

- First, mapping of all land owners: It turned out that the entire area was divided between individual private owners, three big companies and the municipality.
- Next, mapping all local stakeholders with power over the redevelopment process: the local university – Masaryk University, other local public institutions, retailers, neighbouring city districts, or transportation organizations.

To organize and energize the stakeholders, a management and governance structure was put in place, consisting of:

- Internal Urban Local Government, led by the City Strategy Department, which included representatives from other relevant municipality departments, such as urban planning, transportation, or investments. It totalled approximately 10 members.
- External Urban Local Government which included all the stakeholders previously identified, in addition to the surrounding areas. It included up to 90 members, who were invited to participate in regular meetings.

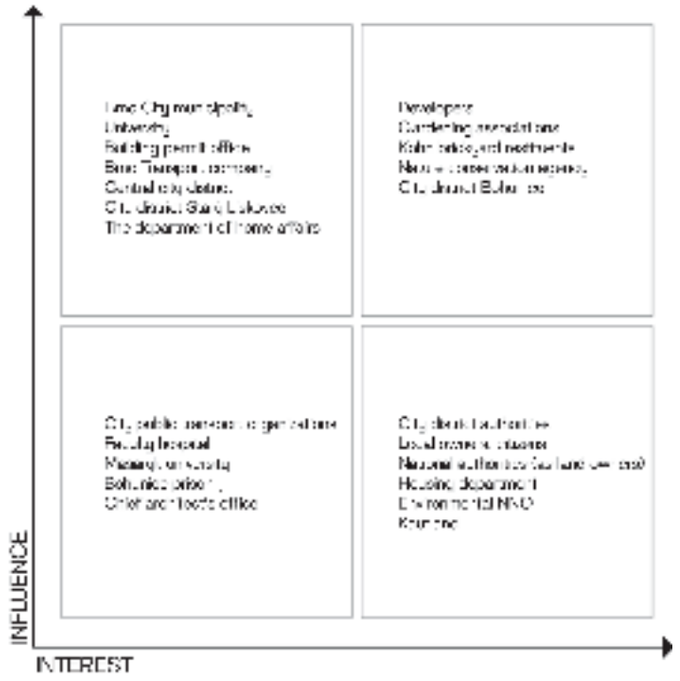
A steering committee was also put in place, representing the decision-making level. In addition, a project manager was selected to coordinate all stakeholders and set up a working team, consisting of people from various relevant departments across the municipality.

A strategy was also drafted to stabilize the network of stakeholders. Here, two types of meetings were planned:

- Organizational meetings with the private investors, biggest land owners and other relevant representatives of individual owners, to discuss practical issues concerning development and progress. They were to be held at least twice a year.
- Annual meetings with all stakeholders to be held at least once a year with the general public, concerning the progress of the action plan.

Land owner group(s)
The ownership is very complex, there are several landlords and tenants, large institutions, land owned by the city, private companies and many individual owners and tenants.

- The land owned by the city is located on a slope destined for greenery (today's gardens).
- The majority of the land owned by individual private owners and three bigger companies.



27. https://bit.ly/3PdhHvJ [14.07.2023]

07

TRANSLATE information into common language

7. TRANSLATE INFORMATION INTO COMMON LANGUAGE

28. Which also include land readjustment and pooling or urban regeneration programmes.

29. And possibly a code, if you want to organize your cards. A simple, yet powerful classification scheme is the following: climate, economy, and (social) welfare (*cf.* Rettich and Tastel, 2020).

This is synthesis and translation at its best: Finding relevant information is difficult enough, but translating it into common language is essentially an art. Remember that relevant information depends on the challenge at hand:

- For master planning: demand assessment, plot ownership, zoning regulations, public service infrastructure capacities, development budgets, etc.
- For transformations of both buildings and urban areas:[28] All of the above, with real estate appraisals and technical evaluations completing the picture.
- For simulations, which range from competition briefs, to public-private partnerships (PPPs). They need feasibility studies, financing mechanisms, and contracting options.

Against this background, translation means any appealing and intuitive combination between text boxes, illustrations and numbers. Details are less relevant than conveying the big picture to all players. The best option here are cards. A card is comprised of five elements:

1. A title,[29]
2. A simple take-home message,
3. A short explanatory text,
4. A drawing,
5. A list of references.

The title provides orientation, the take-home message sticks in the mind, the text provides all the necessary explanations, the drawing focuses the eye, and the list of references shows the quality of your work. Obviously, cards need not be physical. Digital cards are more easily displayed on screens. However, cardboard cards are more pleasant to read and play with. Although it seems simple at first glance, the intelligible exposition of the project is crucial for its success.

Good communication of a project's intentions becomes the decisive factor in an approach focused on public involvement.

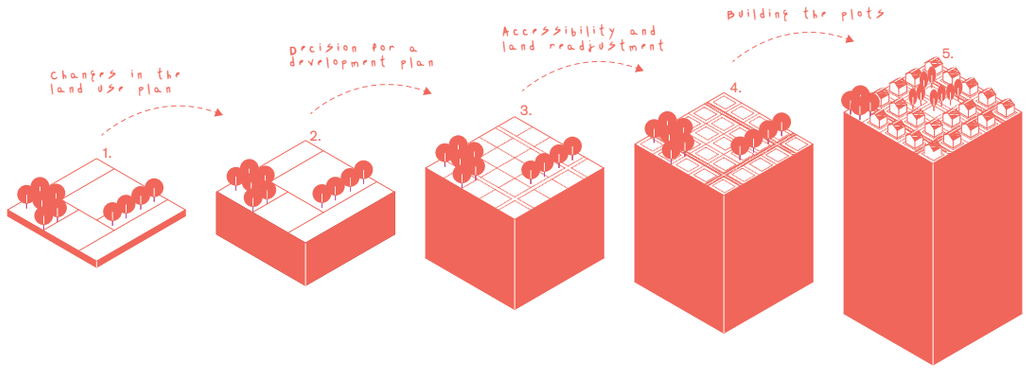
It's high time to return to the stakeholders mentioned in the previous chapter, which we classified in a simplified manner according to the decision-making factor:

- Decision makers (a.k.a. the initiators and developers of a documentation),
- Decision makers (a.k.a. institutions in charge of approving documentation),
- Decision bearers (a.k.a. civil society that feels the impact of the project in everyday life).

This classification intuitively illustrates how a planning documentation is presented to each one. If for the first two categories the technical language comes in handy, for the majority of decision bearers, the most technical parts of the project must be adapted.

The methods for visualizing information and data in an interactive form are numerous and are sensitive to the social context where they are employed. For example, you cannot develop an online consultation platform in an area devoid of internet coverage. Just the same, it is not particularly effective to popularize information by handing out leaflets in a large metropolis.

Establishing an optimal form of communication depends both on the stakeholders involved at a given moment and the goal pursued. At the same time, the communication method should entice stakeholders to collaborate in decision-making. This requires a certain level of trust. In addition, it is also very important to establish a form of communication that is dynamic and adaptable to unforeseen changes. Here digital (automated) approaches work best.



THE LAND TRANSFORMATION PROCESS

Profits arise with new Land—without risk

In Germany, during growth phases, municipalities acquire land, from agricultural or forest areas (undeveloped rural areas). Then, each planning step leads to an increase in land value. However, municipalities incur expenses for planning and constructing infrastructure without being able to recover costs. Therefore, landowners benefit from these planning-induced increases in land value, making a profit without any risk. These are called unearned gains.

To address this issue, municipalities try to purchase such areas or negotiate cost-sharing agreements with property owners before granting building permits. In addition, there are also discussions about including planning value compensation in the Building Code, to support municipalities.

Agricultural and forestry land

Generally, agricultural and forestry land has a lower market value than developed land. When such areas are located near residential or transportation infrastructure, there is a higher probability of their eventual conversion into developed land.

Land with development expectations

With a change in land use that favours development, the land value increases without any specific value-enhancing measures taken on the property itself. The prospect of future development is sufficient.

Land for construction in progress

With the adoption of a development plan (building plan), construction becomes legally possible, if the necessary infrastructure is ensured. Here too, the property value increases without any specific value-enhancing measures. The extent of the increase depends on the level of building density stipulated in the development plan.

Ready-to-build land

When land is ready for construction, specific value-enhancing measures are undertaken. The costs of development are often much lower than the increase in property value, as public infrastructure costs contributing to the value increase are borne by the municipality.

Developed land

After completing all planning and development steps, the value of developed properties significantly increases.

Figure 45. The land transformation process

Source: Rettich and Tastel, 2020: 62f.

THE TRANSACTION VALUE OF LAND

In Germany, the Building Code strictly regulates how property values are determined. All notarized purchase contracts are recorded in a local database and assessed by appointed expert committees every two years. The resulting values are then mapped onto a cadastral map to show the land value of each property in the municipality. These values are based on real purchase transactions and reflect market dynamics, considering factors like property characteristics and human intervention, such as infrastructure and land use.

Accurate property valuation is crucial as it is used by tax authorities to calculate property taxes. Additionally, the market value determines the municipal pre-emptive right, as well as due compensation in cases of expropriation. However, a problem arises when market prices directly influence land values without any filtering, especially in overheated major cities, thereby leading to speculation.

Figure 46. The transaction value of land

Source: Rettich and Tastel, 2020: 59

B Basically, this is how you learn to read diagrams. DECISION BEARERS

08
FIND the resources: money and mandates

F.

M DECISION MAKERS
T DECISION TAKERS

8. FIND THE RESOURCES: MONEY AND MANDATES

Money and mandates are essential for development. Essentially, this is a question of using available resources effectively, and, if necessary, mobilizing new ones. Ideally, each type of intervention (*cf.* Figure 24) gets a dedicated planning instrument. However, that is not always possible, partly because real-life challenges are complex, and partly because research in planning instruments is somewhat slow to catch up with their demand.

Nonetheless, here is a card sample, comprised of 13 planning instruments aimed at making resources available for development.

REFERENCE LAND VALUE	The reference land value is relevant for devising multiple planning instruments (establishing fiscal policies, assessing sites for urban and regional development and, in particular, promoting the transparency of the real estate market). It is therefore an important indicator used by the participants in real estate market. The reference land value is calculated based on information located within the real estate transaction registers of recent years, and is mainly determined by the comparative analysis of sales in similar areas.
ADDED VALUE CAPTURING	The concept is based on the capitalization of high-priced developed land, as a result of municipal intervention (the provision of infrastructure and public services financed by the municipality). Hence, municipalities having the right to use this value for their benefit. Moreover, the history of economic thinking shows that the financing of public infrastructure increases, under certain conditions, the value of the land by much more than the value of the investment itself.
INCENTIVE ZONING	This instrument allows the developer to exceed the maximum urban indicators allowed on a certain plot, in exchange for some public utility interventions. It works very well in cities where market demand is strong and the land reserve is reduced, the benefit of the municipality being that of developing public utility objective without a major budgetary impact. Such bonuses are included in urban planning regulations and are implemented in three steps: first, choosing the objectives for which the bonuses are offered, second, identifying the areas where these bonuses are granted, and finally, devising specific policies underlying the density bonus.
FINANCIAL INCENTIVES	Financial incentives can play a major role in urban development and regeneration, involving an exchange of funds between the private and public sectors. For the proper functioning of this system, it is essential to have a well-established regulatory framework and very well-developed tax collection, examples of good practice being the 'initiative areas' in the UK, the 'Integrated Urban Development Framework (IUDF)' in South Africa, as well as Johannesburg, which has been using such a tax instrument since 2004.
NEGOTIATED LAND USE PLANS	Negotiations on land use plans, a common tool in planning, take place between the municipality and private sector companies, accounting for two major directions: negotiating within an active land policy and negotiating in a passive land policy.
URBAN GROWTH BOUNDARIES	Urban growth boundaries set the urbanization limit in a given area and encourage sustainable growth, instead of allowing uncontrolled urban expansion. They are set for a clearly defined period of time (for example, 5, 10 or 20 years). These boundaries contribute to achieving important goals in urban planning, but caution is recommended when using them: They need to be mediated by the real estate market dynamics, so that the municipality does not miss development opportunities in an attempt to stop urban sprawl.
LAND READJUSTMENT	Land readjustment is the practice of reassembling privately-owned land through the involvement of administrative institutions, so that plots can benefit from public services and utilities. At the end of the readjustment process, the municipality returns a smaller plot to each owner (usually 50-60% of the initial plot), but with a higher real estate value. Although the positive impact is massive, land readjustment requires strong local institutions and a solid legislative framework to ensure its effective implementation. Here, the major challenge is to obtain the agreement of all landowners affected by the intervention.
BUILDING OBLIGATION	The building obligations establish the time limitations that guarantee the implementation of building regulations, forcing the landowners to respect the development strategy. This is a very controversial instrument, because of its obvious disagreement with property rights. Tax measures (sanctions), planning measures (de-zoning) and, finally, measures affecting ownership (expropriation) can be imposed on the landowner, as long as the development is not carried out within the set period of time.

PREEMPTION RIGHTS	Preemption is defined as the right, provided by law or contract, to acquire as a matter of priority a property offered for sale. The implementation of a preemption right requires at least four steps: (1) delimitation of the area where the preemption right applies; (2) existence of funds for land acquisition; (3) assessment of the property value by an independent commission; (4) completion of the acquisition by the public authorities.
TRADABLE DEVELOPMENT RIGHTS	This instrument is directly related to urban indicators, a plot being underused when indicators are lower than those allowed by zoning regulations. Under such conditions, unused rights may be capitalized on by selling or transferring their unused parts to areas with higher growth potential. This transfer of development rights works as follows: the owner A (of the issuing area) has a restricted right to use the land through the zoning regulation. Instead of offering owner A compensation for the economic loss caused by this restriction of rights, the municipality issues a development right. This right is valued in cash, is transferable and can be bought by a third party who owns land in a receiving area. Without this right, owner B cannot achieve the desired building intensity.
LONG-TERM LAND LEASES	Land lease is the transfer of right to exploit a publicly-owned land (generally up to 99 years). Based on the land lease contract, the concessionaire may build or is obliged to build according to contractual clauses, having property over the building for the entire duration of the lease contract, in exchange for paying a rent.
STRATEGIC LAND BANKING	Land bank is a public, semi-public or private entity that purchases land for public or private purposes and aims to increase the quality of urban and regional development. They can carry out land acquisition processes, aimed at providing land for public amenities. They can also try to involve other stakeholders into the process.
EXPROPRIATION	Also known as compulsory purchase, expropriation gives public authorities the right to purchase privately-owned land, even in situations where the owner does not want to sell it. To limit potential abuses, usage of this instrument is usually restricted to cases where land acquisition is made in the public interest, mainly for the provision of public infrastructure and services.

B Knowing where your money goes and how it is used counts:
1. It enables you to hold government officials and institutions responsible for managing public funds and ensures that allocated resources are being used effectively and efficiently for the betterment of society; 2. It enables you to actively participate in the democratic process and engage in informed discussions; 3. It helps you find areas for improvement. This knowledge allows you to advocate for change and support policies that better reflect your concerns. DECISION BEARERS

In response to the challenges posed by decline and urban decay, cities have devised intricate methods for urban regeneration. The flash cards you read earlier are tools that can prove very useful in urban regeneration projects

Such projects are seldom undertaken solely by the public sector, due to substantial financial requirements. Even if the government could afford the costs of revitalizing urban areas, the active involvement and support of the community and business sector are crucial to guarantee the long-term success of these efforts. As a result, participation of the private sector becomes pivotal in the successful regeneration of underused urban land.

While publicly funded regeneration projects are key in triggering development in less attractive areas, when given the option of spending public or private funds, decision factors should rather strive for the latter.

The regeneration and rehabilitation of decaying urban areas share commonalities in terms of significant private sector involvement. However, they differ in the institutional and political context, in policy and the regulatory approaches employed, as well as the degree of community participation and the governance structure.

To help interested parties in identifying the sequence of actions needed for a regeneration process, the World Bank created a decision tool[30] that works in four distinct phases: scoping, planning, financing, and implementation.

Each phase includes a set of unique tools that local governments can use to systematically design a regeneration process. In addition to the four phases, the tool defines three major assets that the city can use for urban regeneration. These are land, community, and the environment.

30. Simply put, the tool gives you access to a dashboard that allows you to see relevant recommendations based on answers to a dedicated survey. As you change your questions, the relevant recommendations change. You can click directly on certain blocks and be taken to a single recommendation or click the “Find Recommendation” button to see a list of recommendations relevant to your survey responses.

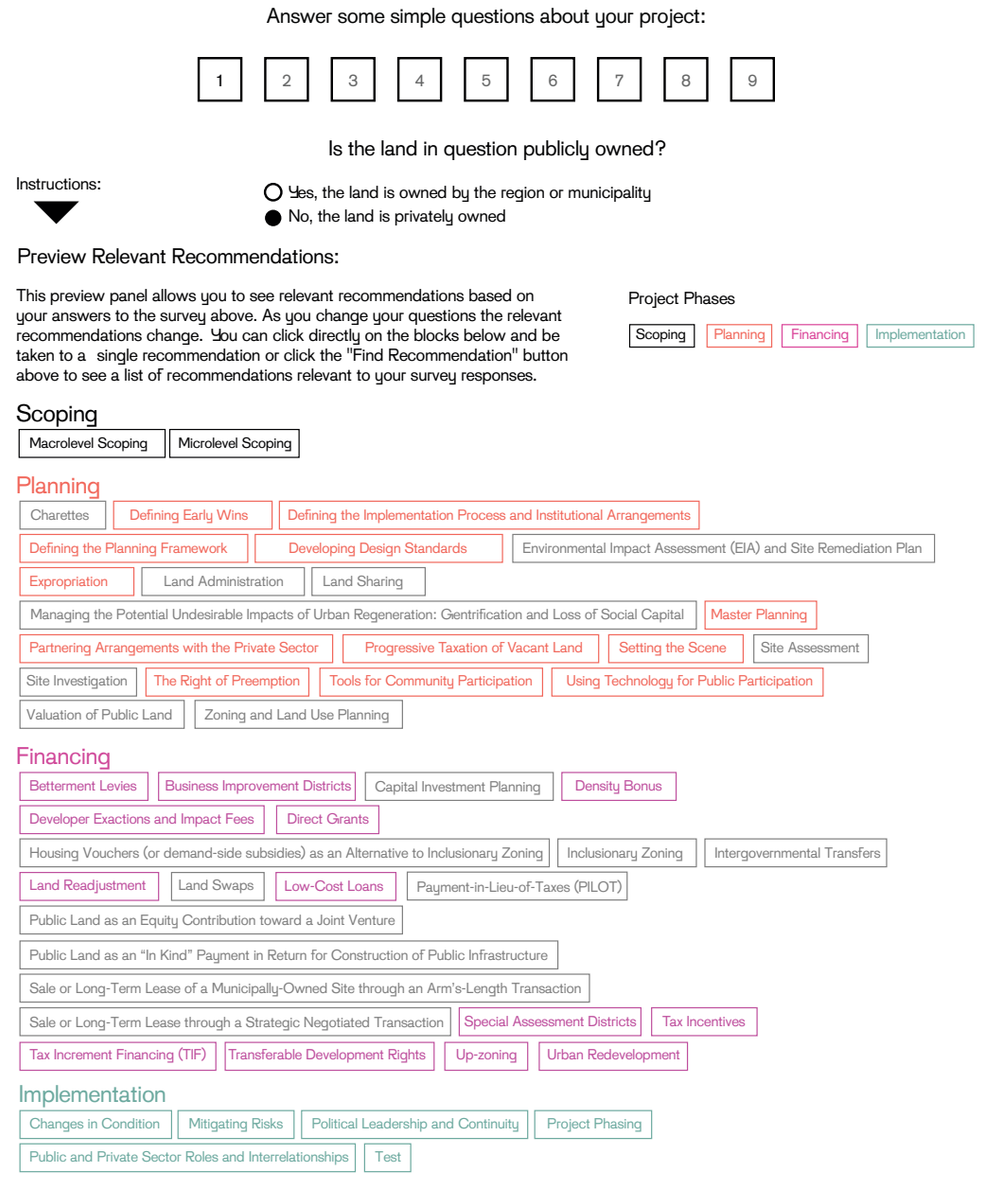


Figure 47. Planning instruments for efficient land management
Source: Gerber *et al.* 2018

Figure 48. The decision tool for regeneration projects
Source: https://shorturl.at/tELRX {26.07.2023}

e.

BRNO REGEN-ERATION

The regeneration project for Brno's New Main Station is a good example of a municipality concentrating on the transformation of critical public infrastructure that is capable of acting as a catalyst for economic development. With its main station located on the Trans-European Network (TEN-T), the city of Brno, in collaboration with Czech Railway Administration and Brno City Architect's Office, launched an international design competition in 2020. It looked for a comprehensive solution for a transport hub capable of improving the quality of transportation services, while also contributing to the revitalization of its vicinity and attracting people and businesses in that area.

A different transport hub

EXAMPLE

Brno Main Station Regeneration Project

The vision was to shape a new entrance gate to the city and a centre for the new district planned to emerge on a former industrial platform located south of the historic city district. The former industrial area has been under scrutiny for quite some time, with an international competition for a transformation master plan organized in 2016 – The Future of Brno Centre Competition. After selecting the winning proposal, the city of Brno cancelled the project, but the ongoing transformation of the train station area is a first step towards the redevelopment of the former brownfield area into a lively mixed-use neighborhood.

The new transportation hub will be developed with the help of EU funding and involves the relocation of the existing railway station. The winning proposal designed by a consortium led by Benthem Crouwel Architects and West 8, also includes the development of offices, a hotel, apartments, a waterfront park and an urban promenade. In addition, the station includes various passenger amenities, spaces for retail and food, as well as two covered public squares, which also provide smooth transfers to local public transportation services. It also takes into consideration future plans for the regeneration of the brownfield area and is designed to create a barrier-free district, unlike traditional railway infrastructure, which typically acts as a barrier in the urban fabric. The estimated cost of the main railway station is of 1,8 billion EUR and the project is expected to be completed sometime between 2032 and 2035.

Figure 49. Aerial view of the winning proposal for the new train station and adjacent waterfront park ►

Source: West 8 Architects

09
DEFINE
the rules of the game

D.

9. DEFINE THE RULES OF THE GAME

M DECISION MAKERS

T DECISION TAKERS

Clear rules are essential for any good game. Always aim for the simplest set of rules when designing your game, so players remain engaged. Every game needs two sets of rules:[31]

1. Individual rules: They state the do's and don'ts for each player, according to her or his own mandate.
2. Collective rules: They govern the interaction between all players, and are indispensable for a good game.

The simplest way to build individual rules is to look at legislation. It explains mandates, obligations and rights of intervention. In short, legislation states what a player is allowed to do and how she or he is to go about it.

When it comes to collective rules, things become a bit more complicated. Collective rules are about productive games that challenge players to come up and negotiate the best possible solution for the challenge they have accepted. This implies four keywords:

- Respect: Each player has the right to take an action that she or he sees fit. The other players must respect that. In addition, each player is allowed to negotiate her or his interests constructively.
- Priority: Players that are not in a position of power deserve priority, so that the game balances out.
- Sequence: Players take turns, according to the script of the game. Results from each round need to add up to a final resolution. In addition, the sequence of moves allows players to observe the game and to think strategically. It can also be suspended for short periods, in order to give players time to think and to form alliances.
- Negotiation: When dealing with complexity and a higher number of players, negotiation is the best way to get results. Hence, negotiation rounds should appear at key stages during the game.

31. *Cf.* Tan, 2017: 82f.

B Your influence peaks at different times in the planning processes. Use it wisely. DECISION BEARERS

10
BUILD
the game room

B.

10.BUILD THE GAME ROOM

M DECISION MAKERS
T DECISION TAKERS
B DECISION BEARERS

This is the playground: players find here scale models, maps, recorded interviews, and photographs. In short, everything they need to play the game. Three rules apply:

1. The game room must fit the challenge: If you want a quick poll, go outside, on a busy street, and engage players through their mobile phones. If you're interested in scenarios, go inside and allow players to explore the data you've prepared, preferably on large touch screens. The bottom line here is that the game room follows the challenge and not the other way around.
2. The game table: People like toys, and scale models are essentially playthings. But scale models need to be flexible, so that they can be modified during the game. When designing models, think Lego.
3. Use an existing app for playing the game, if possible. If not, design it. Starting from scratch takes longer and is more expensive, but is usually worth it. In addition, you become a pioneer, as there are very few working examples of city gaming apps. Keep in mind, however, that your new app should integrate with the existing ecology of games, so that they can be used interchangeably in future projects.

To sum up, here are the building blocks of your game room:

- The game board: At its most basic, this is a table with a map of the intervention area. Context is key here, with surroundings, geography and land plots being essential. The layout of the map depends on the game topic.
- The scale model: Models range from highly abstract to finely detailed. Depending on the players and their imagination, you might dispense with details, or, on the contrary, add some details to your scale models.
- The rules: You'll need two sets of cards, or a set of cards and a screen. Individual rules are best printed on cardboard, so that they can be explored during the game. Collective rules can also appear on a screen. If you decide to go full digital, both sets of rules can be displayed on your mobile phone.
- The information cards: They provide concise and comprehensible information on key topics.
- The game diaries: This is where a reporter records all the important moves made during the game.
- The game app, if needed: If your challenge requires some modeling, then an app might prove helpful. However, we recommend adapting an existing app, if possible. As your game evolves, you might decide to go full digital in the future.

f.

CLUJ FURBAN DIGITAL GAME

Participatory urbanism

Furban. Digital Game Room

EXAMPLE

Future Urban (FURBAN) is one example of a digital game app used as a virtual planner for public spaces. Simply put, the Furban platform offers citizens and administration officials a transparent process to create a public space.[32]

Building the game room is quite simple. The public administration selects the area for redevelopment and sets the goals. A simple 3D model of the area is created and loaded onto the app, along with a set of tools to be used in the planning process. They can be customized by the municipality, who can choose the types of objects they want (e.g., parking spaces, trees, flowers). After that, the users can start designing the space as they wish. In addition to design options, the tool also provides statistics summarizing the design choices, thus giving insights into the needs and preferences expressed by users.

The residents in Floresti, near Cluj, were able to engage in the design process for the regeneration of the commune's central area. The initiative was a pilot project of participatory urbanism, developed by the municipality of Floresti, Cluj Metropolitan Area, the municipality of Cluj and the World Bank, with the support of the architects in charge of the regeneration project.

32. Andra Spiridon, Chief Product Owner of Furban.

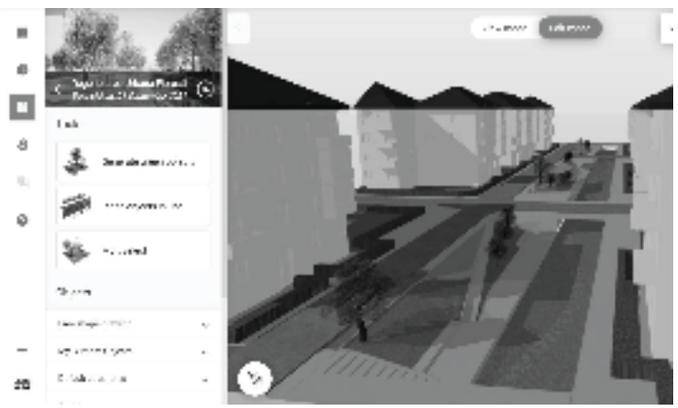


Figure 50. Floresti urban regeneration project viewed from within the Furban platform ►

Source: https://shorturl.at/luwGN {12.07.2023}

11
PLAY
the game

M DECISION MAKERS
T DECISION TAKERS
B DECISION BEARERS

It is time to play the game!

To resolve a complex challenge, multiple play sessions might be needed, but keep in mind that much of the value derives from the act of playing itself.

In fact, the game starts long before the first game sessions. Engaging high-level stakeholders and convincing players to join the play sessions can take a long time. Start early and pursue this step while you design, build, and test the game interface.

Even though it might extend preparation times, involving future players in the game design phase increases their level of engagement. When players take ownership of the game early on, the game leads to higher quality results and the number of sessions might decrease.

But how many play sessions are needed to resolve a challenge? There is no one fits all recipe for this. However, there are some things to factor in:

- The complexity of the problem and the targeted results.
- For longer term results, both planning and implementation should be integrated within a game, thereby increasing the number of sessions. The more wicked the challenge, the longer the process tends to be. An urgent and well-defined challenge might call for a few quick game sessions, while in the case of a master-planning exercise the game can go on for months or even years. But don't overdo it!
- The number of players and the distribution of their powers.
- The complexity of the game rises when there is a high diversity of players and powers. More play sessions will be required to reach consensus, but this can also yield better results.
- The relationship between a player's real-life experience and the role played in the game.
- While keeping players in their real-life roles can lead to more realistic outcomes, shifting perspectives can produce fresher ideas, while fostering cooperation. Shifting gears is lucrative, even if extra play sessions are required.
- The local capacity to run game sessions.
- The presence of trained local game masters, who are well connected to the local network of urban actors. This will allow for the game to be played more often, as opportunities arise.

Keep in mind that playing the game is not so much about the outcomes, but rather about the information and connections created during the game. Regardless of the immediate result, each round generates discourse, highlights shared interests and concerns, and encourages interaction between the stakeholders. Trust the process! There are a lot of small wins on the way, which can be used to guide players towards interesting outcomes.

9. CLUJ "LA TERE-NURI"

An interesting example of how the participatory planning process unfolded through multiple game sessions occurred in Mănăștur, a neighbourhood in Cluj. The civic initiative "La Terenuri – Community Space in Mănăștur" was launched in 2012, in one of the densest housing estates in the city.

Public spaces there lingered in a state of neglect for years, mainly due to land-ownership uncertainties caused by former owners reclaiming their rights over expropriated plots. Nevertheless, the space was used informally by locals as community garden spaces or public gathering spaces. It was these uses that inspired the urban regeneration initiative.

Civic engagement

"La Terenuri" Civic Engagement – Participatory Planning Process

EXAMPLE

At the beginning, several years were spent building a local network of civic agents and understanding the needs of the community. They resulted in a vision for redevelopment, accompanied by the people willing to go on board the transformation process. Due to the increased visibility and attention bestowed on the neglected space, the local administration started to provide sanitation and landscape services, in spite of the uncertain land ownership status. And so, an informal park stated to take shape.

A new funding possibility in 2014 made the expansion of this temporary park possible. New installations and facilities were designed, for people to socialize, play and do sports.

The intention was to incorporate the community's inputs into the planning of the park and to this end, multiple "game" sessions were designed:

Session 1. Learning from Manastur: Building on all the previous work, with the help of architecture students, a first iteration of the urban installations was prepared at a scale close to reality, using materials that allowed for continuous adjustments. Part of the team observed how people started to use the space and engaged with them, using mental maps, sketches and interviews, to better understand their vision and what alterations they would bring to the design and to the spatial configuration of objects. The other part of the team was in charge of integrating people's ideas into the design of the temporary objects. A new round of consultations followed and the team of experts started to analyze the results.

Session 2. Interactive 3D Model: Once a clear planning concept was in place, a new

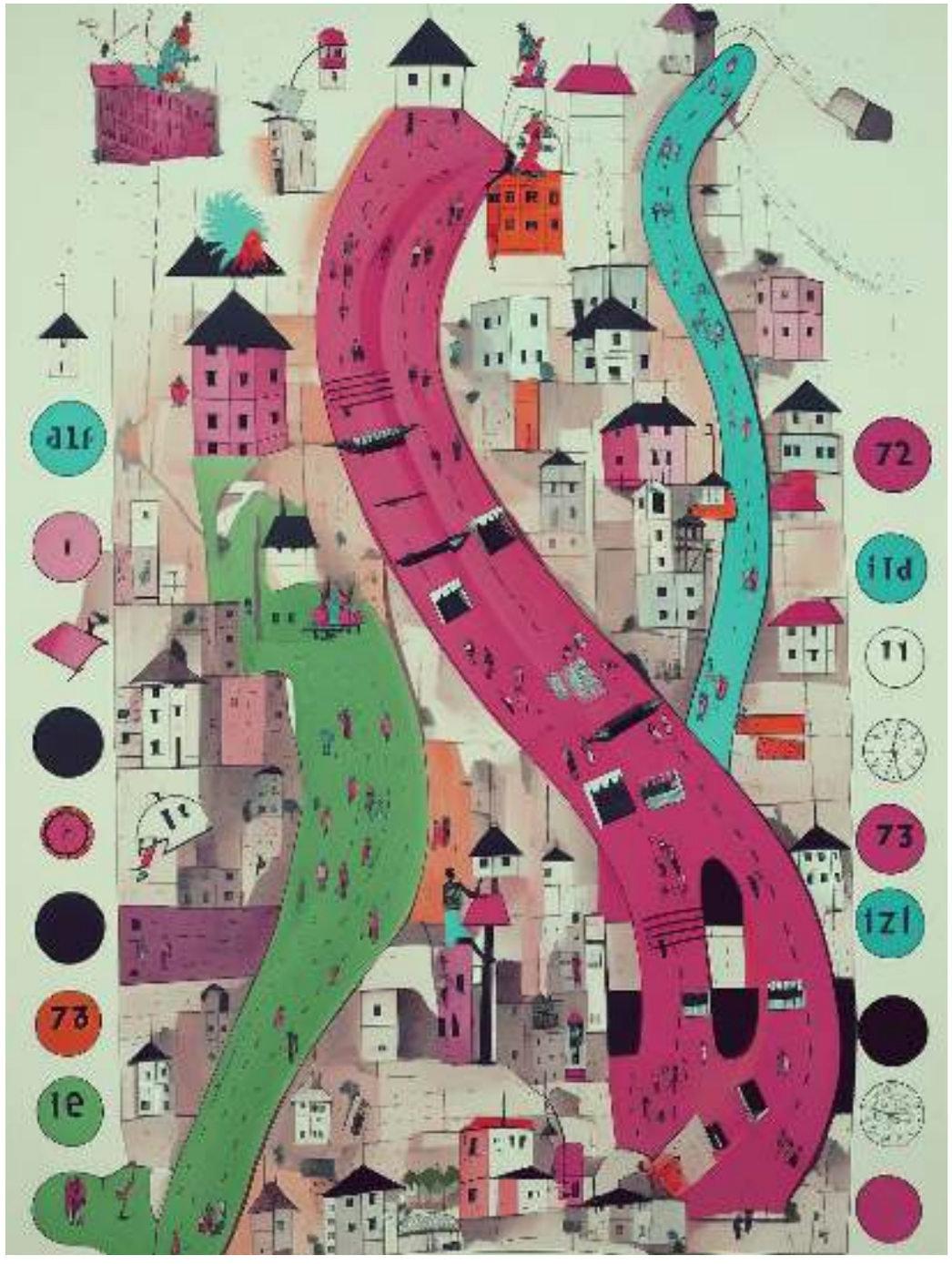
Figure 51. Consultations with the community around the interactive model in Manastur ▲
Source: https://shorturl.at/jpzBR {15.07.2023}

Figure 52. La Terenuri Sports Center ►
Source: https://shorturl.at/vwOSX {15.07.2023}

"game" session was organized. To effectively communicate the ideas, the team prepared a 3D model of the area, onto which they placed the proposed objects (i.e., The Amphitheatre, The Neighbours' Arena, Parkour Installations). The model was intended as a participatory one and people were encouraged to move the objects around into new configurations. At the same time, the team documented people's reactions and inputs, with valuable observations being collected. A negotiation between the various actors, such as children, teenagers, the elderly, started almost immediately.

The participatory planning process was concluded with the materialization of the final proposal. In addition, the process brought the local community together and various other installations have been built as a result. Eventually, the area became the site of an urban regeneration project conducted by the municipality and in 2022, a permanent park and various sport facilities have been inaugurated.

Figure 53. La Terenuri larger area ►
Source: https://shorturl.at/vwOSX {15.07.2023}



12
RECORD important moves

R.

12.RECORD IMPORTANT MOVES

M DECISION MAKERS
T DECISION TAKERS
B DECISION BEARERS

Each game will have some key moments, in which one or more players can affect the course or even the outcome of the game. These are the times when players and organizers can observe power relations forming. They will make or break alliances, just as in real life. Power comes from six main sources:

- Money,
- Legislation,
- Knowledge,
- Time,
- Skills, and
- Network.

Substantial differences between players in any power source will produce imbalances. Too small a difference, and alliances are unlikely to form. Too big, and some players will have a disproportionate incentive to skew the game in their own interest.

As a game designer, you have two options of countering power monopolies: Firstly, trace the six power sources for each player. Designed as cards, they will produce the profile of each player. Then chart the (possible) power relations between players and draw them on a map, for all to see. Remember that these are possible connections: The actual power relations will emerge during the game sessions. Secondly, ensure that the collective rules of the game require that moves made by one player are respected by all others.

Having done this, record the moves that led to the formation of alliances between players, as well as the moves that broke them. These are the most likely moments when they occur:

- For master planning: First, when comparing each player's expectation from the master plan. Second, when readjusting land and redistributing plots. Third, when placing public amenities. Fourth, when defining the areas subject to performance zoning.
- For scenarios: First, when interpreting trends and second, when choosing an optimal development scenario.
- For public-private partnerships (PPPs), including land readjustment and pooling: First, when working out the aim of the partnership. Second, when deciding upon each party's contribution to the partnership, and third, when fleshing out contractual obligations.

Preferably, each of these moments will receive at least a memo, if not a detailed report. The goal here is to provide a rich description of every key moment, in preparation for their negotiation in the real planning and development process. Simply put, key moves become homework for the game organizers and provide the stepping stones for streamlining future negotiations.

13
LEARN

L.

13.LEARN

M DECISION MAKERS
T DECISION TAKERS
B DECISION TAKERS

Let's sum up! The main point to remember here is that serious gaming is a handy solution for tackling a wide variety of metropolitan challenges. In short, you can gamify a real-life challenge when:

1. The problem at hand is interdisciplinary or 'wicked'.
2. There are many stakeholders involved, who have skin in the game,
3. The planning process is unpredictable.

Meeting these three prerequisites opens the door to the game itself. This is when you start to:

1. Read the city: You decipher plans and photographs.
2. Compare the city: Similar cities and metropolitan areas tend to face similar challenges. Compare and contrast by using maps and figures.
3. Understand the city: Use the concept of density to identify fingerprints across the metropolitan area and sort through different intervention types.
4. Find a real-life challenge: There is a large variety to choose from: housing, sprawl, conversions, regenerations, etc. Thoroughly understanding the problem is key here!
5. Ask the right question: 6 'W's and an 'H': Why? Where? What? Which? How? When? Who?
6. Draw a stakeholder map: Good games require many players. Profile each player and draw the network around them. They will interact according to money, legislation, knowledge, time, and skills.

7. Translate information into common language: use cards.
8. Money and mandates: choose or devise instruments that mobilize resources.
9. Rules of the game: Individual rules state the do's and don'ts for each player, while collective rules govern the interaction between all players. They include respect, priority, sequence, and negotiation.
10. Build the game room: You'll need a game table, models, cards, and screens. In short, all the building blocks for your game.
11. Play the game: This means both the internal and the external game sessions.
12. Record important moves: Key moments, when players make or break alliances, need to be documented, in preparation for real-life negotiation.

The end.

This is it. And don't forget:

“Playing a game is the voluntary attempt to overcome unnecessary obstacles.”

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ADDITIONAL INFORMATION

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