Università degli Studi di Ferrara | DA Dipartimento Architettura Ferrara | POLIS

Re-inventing zoning through operational morphology

Innovative form-based codes for efficient territorial subdivisions and enhanced normativity in complex urban systems

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Cycle XXXII

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Curriculum Urban Planning / IDAUP, Topic Urban Planning and Management
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Abstract

This research is focused on studying and analysing zoning, form-based codes and other methodologies into which urban territories can be divided into manageable structural units, i.e. zones in which specific quantitative and qualitative sustainability criteria can be met. It aims to build a theoretical and practical foundation on how to work at unit-level with today's municipal territories, given their spatial structure and other morphological indices. The premise of this research is the growing complexity of land management in municipalities in Europe (with focus on Albania), which have extended the scope of planning to an integrated, comprehensive approach. Therefore, the issues of normativity, appointing indicators of land development, and zoning are most relevant in today's planning practice. Nevertheless, more complex urban realities, like cities in Albania, where homogeneity is difficult to find, call for a more comprehensive analysis of city form, structure, characteristics, to determine the most enhanced form of division into structural units. Therefore, this research draws from a variety of case studies and theoretical approaches on zoning, form-based codes; from a wide pool of spatial typologies; and from an intense research into normativity and development standards, to simulate the indices for 'a unified model of land development' for such complex scenarios.

Aside from the legal/institutional and practical understanding of the above-mentioned concepts, the thesis operationalizes these findings as anchored to theoretical studies on city form, as well as practices of spatial analysis. This unusual 'pairing' is done in order to demystify the 'rigidity' of normativity through integrating concepts of operational morphology, and to facilitate the process of division and scanning of the territory per se, through these advanced tools of spatial analysis. This constitutes a step forward into reducing the gap between morphological theory and practice.

The research is divided into 4 main pillars, which address (1) zoning and form-based codes; (2) normativity and land management; (3) spatial typologies; and (4) urban form and spatial analysis. These components stand almost divided in theoretical review, but are integrated throughout the research through the selected case studies. The final aim is to support the development of a ***unified model of form-based codification for spatial typologies, considering enhanced development standards, liveability and place-making, in terms of land management***

Keywords: zoning; form-based codes; normativity; spatial typologies; operational morphology

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INTRODUCTION

0.1 Background

The territory is a complex of systems that intertwine with each other constantly. Some of them are dynamic, ever changing, such as, for example, the urban systems along the major infrastructure networks, and other more sustainable networks, such as natural systems in suburban, mountainous areas, etc. This relationship among various territorial systems constitutes an interest of study and recognition to planning experts and urban managers, as they lie at the core of the most important discussions currently confronting strategic urban policymaking: Where will they impose the balance between development promotion and development? Are we continuing to convert agricultural and natural land into urban or are we going to keep it intact? And if we are successful in achieving balance, what does this translate to the construction of the territory in Albania? A clear diagnosis of the existing spatial situations, both at macro and detailed level, helps us to come up with more coherent proposals, aiming at sustainable territorial development and resolving the above challenges.

The planning concept in Albania has changed drastically in recent years, with the shift from an urbanist-approach in city planning, to a more comprehensive and integrated approach, which focuses on broader aspects of urban and rural life, rather than only on urban design. This constitutes an emergent need to also change the mentality of perceiving the city as a regular mixture of areas of precise dimensions, capacities and functions, as was the case in the "central planning period". The idea of "building complexes" and "building blocks" functioning as compositional parts of one-another, in hierarchical way, albeit theoretically very stimulating, has long been outdated in the urban realities Albanian cities are facing today. Urban areas are multifunctional. They are also, in most cases, built realities, where property issues need to be met before taking action on idealistic planning instruments. These are problems local governments are facing daily, without being able to change much in the spontaneous city structures that have emerged in the last 30 years. But the issue is more complex, since we are not talking about a mere urban area, but the whole territory, as integrated ecosystems.

Today's administrative and political context emphasizes furthermore the need to carry out this diagnosis. Firstly, in the framework of the territorial reform, new municipalities must prepare planning documents as soon as possible in order to initiate the process of territorial development and integration of new areas under their jurisdiction. Secondly, the challenge of territories multiplied in size is coupled with the responsibility to manage rural and urban areas, with the same priority, and, therefore, requires good knowledge of the territory and the potential offered therein. Thirdly, pursuant to Law 107/2014 "On Territorial Planning and Development", local planners and policymakers need to have integrated and comprehensive access to planning, which calls for the management of the territory as a single and not fragmented entity by urban areas. All these considerations necessitate a multi-layered study of spatial relations.

This thesis tries to tackle the above mentioned issues, through a more thorough evaluation of methodologies in which territories can be divided into small, manageable units, where planning standards and development indicators can be implemented more easily. Thus, the thesis aims at building a theoretical and practical background on how to work at unit-level with today's municipal territories, given their spatial structure and other morphological indices.

The Planning Legislation and adjacent regulations in Albania state that there are many criteria to be met when dividing the territory into structural units. They have to be of the same spatial typology, be bordered by main infrastructural or natural borders, they will have the same future development indicators, thus the same way of intervention, ect. While this criteria is not final, there are numerous ways in which they can be interpreted, leaving the burden, and/or flexibility of decision to the planners and city-governers. The studies currently undertaken about spatial typologies indicate that even the smallest unit, with an area of 10-20 Ha, has a vast mixture of building typologies, thus is not uniform in its spatial structure. So, while spatial typologies are a very reliable way to analyze and draw conclusions on density, intensity, capacity and planning standards applicable in specific areas, mixed spatial typologies make the scenario even more complicated than before.

Hence, there is need to make an essential evaluation of the theoretical and practical ways in which an territorial system can be divided into characteristic units, on which to apply detailed regulations. This can in turn help the process of refining the "lost" city structures in Albania, while also contribute to a more comprehensive and realistic Planning Regulation in the legislative point of view.

One of the most unsettling questions of modern planning, that has emerged in recent decades, especially in the face of housing informality and planning for resilience, is: 'Do standards make planning practices rigid and inflexible? Do they do more harm than good?' According to Kevin Lynch, normative theories of urban design can help us 'to know a good city when we see one', by creating the best urban environment. This is why, throughout city development history, normative planning has been present, in implementation and, in some cases, in theory also. Urban indicators are one of the most common and widely-used tools in worldwide planning practice. It is important to underline that there was a considerable paradigmatic shift that occurred in the planning process, from the 60's and 70's, when the approach was technocratic and rational, to the mid 70's, where planning was seen as a political discourse, and finishing with the 90's, where this approach was taken into extremes (Pissouris, 2013). All these aspects emphasize the relation between forms and codes in spatial planning, and confirm the fact that, albeit it is rather 'refused' by the theoretical discourse of the last decade, normativity is still a very important aspect of spatial planning systems, especially land development.

Furthermore, we can differentiate between 2 conceptually different contexts in planning, namely in Europe and in the USA. In the latter, post-modern planning is focused thoroughly on New Urbanism principles in the last 30-40 years. This movement emerged as one of the most comprehensive theories on planning, encompassing both formal characteristics (following concepts like 'Collage City' by Rowe and Koetter, or

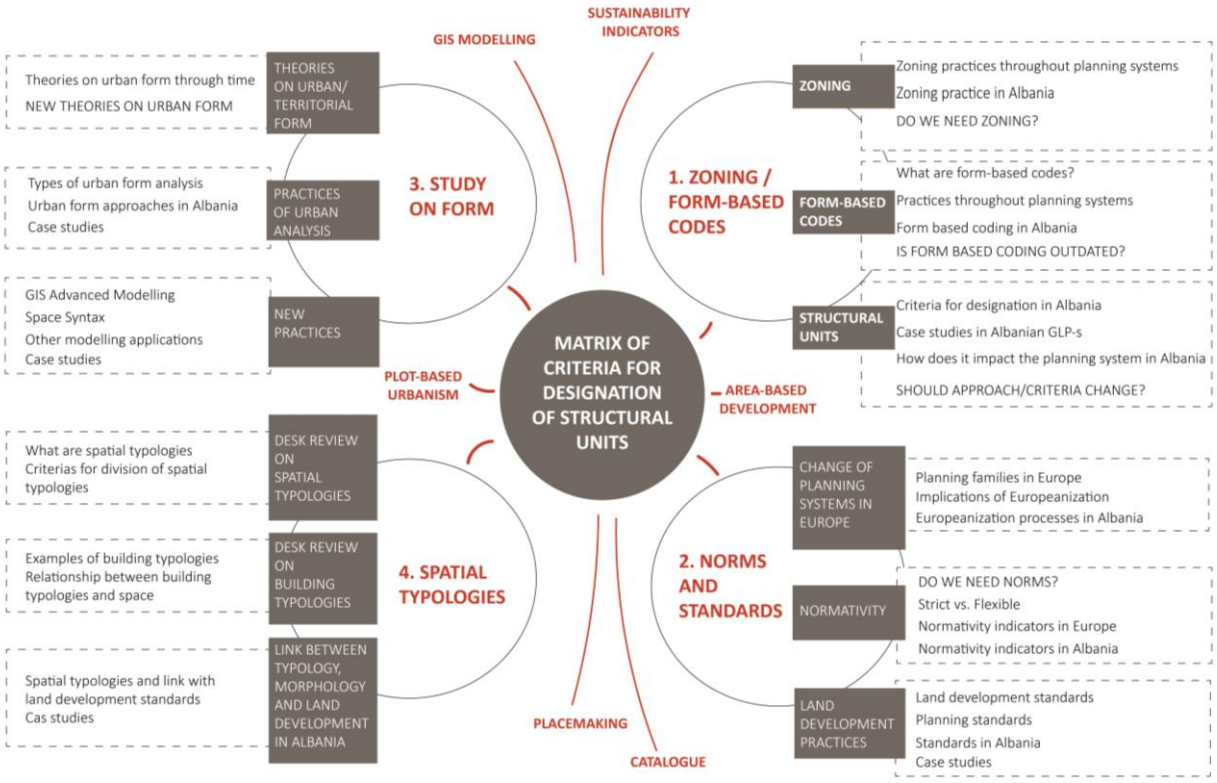
‘Wholism’ by Alexander); and environmental ones, like ‘liveable streets’ from Jacobs and Appleyard, and ‘Urban Quarter’ by Krier. The ‘strength’ of this approach lies in the fact that new urbanists believe it is important to match the physical development characteristics of a place within the appropriate typology for that place (Bohl, 2000). This means to fully coordinate spatial typologies with development standards, in a bilateral way. This can be only achieved in a very ‘unified’ development model, as it is represented by the typical American city. In this case, the principles of New Urbanism argued against the massive suburbanization and expansion of cities.

Obviously, in Europe this was not the case. Not only do European cities have completely different challenges in terms of urban form, but they also don’t refer to an integrated approach to land development. The reason behind this is obvious: planning is considered a process that is closely linked to a country’s history, institutional culture, legislative system, etc. Thus, even though the EU issues specific mandatory directives on sectorial issues, like water management, common agricultural policy, etc, the approach to planning is more flexible. The only unified instrument that regulates planning in EU is the European Spatial Development Perspective, which merely suggests principles for sustainable planning. Land development is even less regulated/unified, with instruments varying from Euclidian zoning and development regulations, to flexible zoning and well-established negotiating processes in land development. This is also linked to the categorization of spatial planning traditions from EU Compendium of Spatial Planning (CEC, 1997) into 4 models: land use planning, urbanist tradition, regional economic development and comprehensive integrated approach. Therefore, it is needless to say that it is challenging to develop a comprehensive model for land development in European countries, as it is suggested by the New Urbanism approach.

0.2 State of the art

The thesis is divided into 4 main conceptual pillars, which can function as different areas of research. Indeed, this contribution tries to bring them together under a common discussion for the first time, by combining legislative approaches to zoning, with practical approaches of normativity, land management instruments and appointment of standards; with theoretical and operational approaches to morphology and spatial analysis.

Figure 1. Conceptual diagram of thesis structure



Pillar 1 Zoning and form based codifications

This pillar contains an analysis of the underlying principles of zoning, as well as the various shapes it takes into different planning cultures and systems. Overall, this part covers the correlation between zoning and land development, both in scope and general objective, as well as in implementation.

A. Firstly, a thorough analysis of zoning in the US is covered, emphasizing the initial purpose of zoning, the evolution from Euclidian to more advanced forms, such as Form-Based Zoning and Smart Code, and concluding with the Transect method.

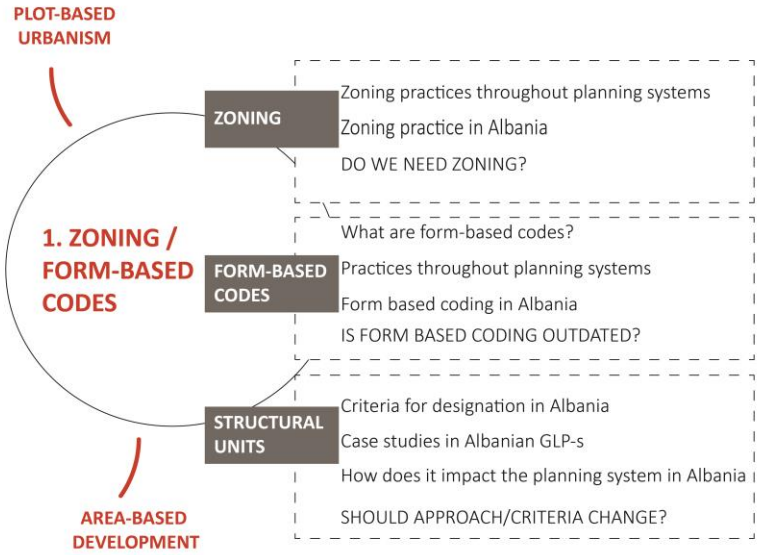
B. Secondly, an overview of the use of zoning in Europe is analysed, by addressing the

method of zoning and principles of land development according to the 5 planning traditions in Europe (EC, 1999).

C. Thirdly, the zoning process in Albania is analyzed in the 3 main planning periods (1945-1990; 1990-2009; post 2009), understanding how the changes in approach and implementation may influence the development dynamics.

D. Fourthly, a theoretical approach to zoning will be evaluated through desk review, to try to tackle the question whether we need planning and zoning; to discuss the issue of flexible vs. rigid planning, and further to address principles of anti-planning.

E. Lastly, 2 main concepts will be addressed in detail: (1) area based development and (2) plot based urbanism. They will serve as a horizontal backbone to the chapter, to address the implementation of development principles in 2 main land management paradigms: making room (flexible zoning) and containment (strict zoning with clear boundaries)



Pillar 2. Land development and normativity

This chapter addresses the approach to normativity, both in principles of benchmarking, as well as in the actual implementation of performance indicators for planning and land development.

A. The discussion first analyzes the levels of normativity used in different planning cultures in Europe. This is done in a comparative way, to develop an overarching set of standards and indicators in land development

B. A great focus is put in the process of appointing land development indicators, the scope of indicators, their expected targets and the way to implement and monitor

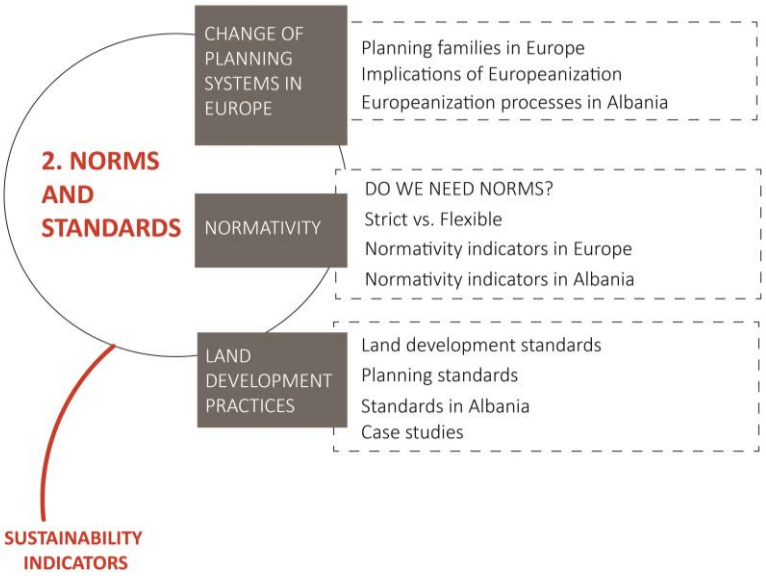
them

C. Moreover, the use of land development indicators is explored in the context of Albania, emphasizing the main changes and their outcomes. Specific focus is put into the use of indicators of distance/setback, FAR, Road coverage, as well as planning indicators, like green areas/inh; school ratios, etc. The focus was to understand if there is a gap between the appointment of the indicator and the realization of the desired outcome in the specific context.

D. A dedicated subchapter is focused on the so-called 'sustainability indicators', which is an array of targets to be addressed at zone and city level, in order to achieve livability goals.

E. Finally, more enhanced indicators of development are analyzed in terms of implementation, measurement, etc.: spaciousness; network parameters; etc.

F. All of the above are studied in inter-relation with each-other (f.e how FAR-coverage-height and spaciousness are interconnected) and how they affect zoning at city scale, and distribution of activities at zone scale.



Pillar 3. Study on urban form and operational morphology

The chapter aims to facilitate the correlation between zones – development indicators and – spatial typologies, by exploring the spatial tools to analyze the territory to better define the afore-mentioned parameters. The focus is 4-fold:

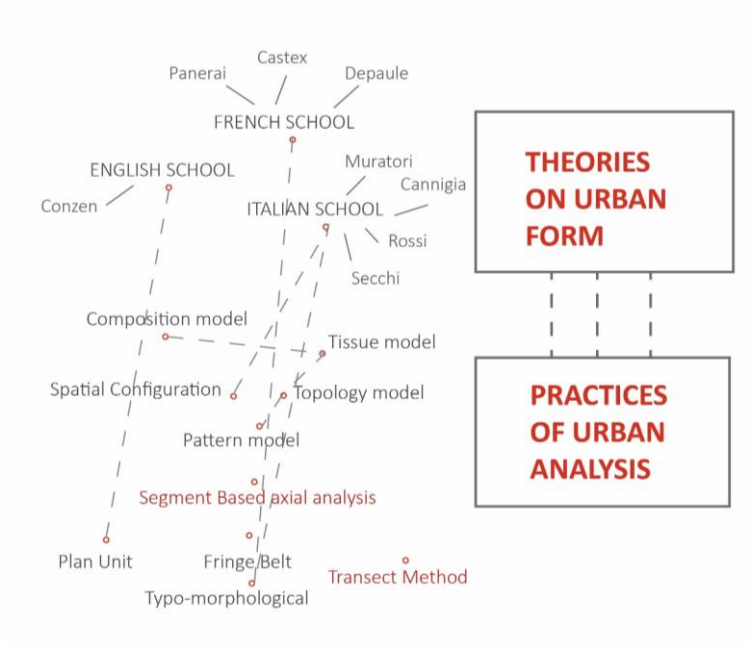
A. Exploring the array of practices of urban analysis used in Europe/ USA, which can be monitored and linked to specific outputs. The study starts with the Conzenian approach to morphology, and continues with the more advanced approaches to spatial analysis

B. Understanding Shifting towards 'operational morphology', as a response to the

challenge of bringing together research and practice in study of form and the correlation to the territory/city

C. Exploring in detail the 'Segment based axial analysis' and the 'Transect method' as two of the most advanced forms of operational morphology

D. Connecting the principles of 'spatial syntax' and 'transecting', together with other spatial analysis tools, in a matrix of principles, with parametric and GIS-based supporting tools.



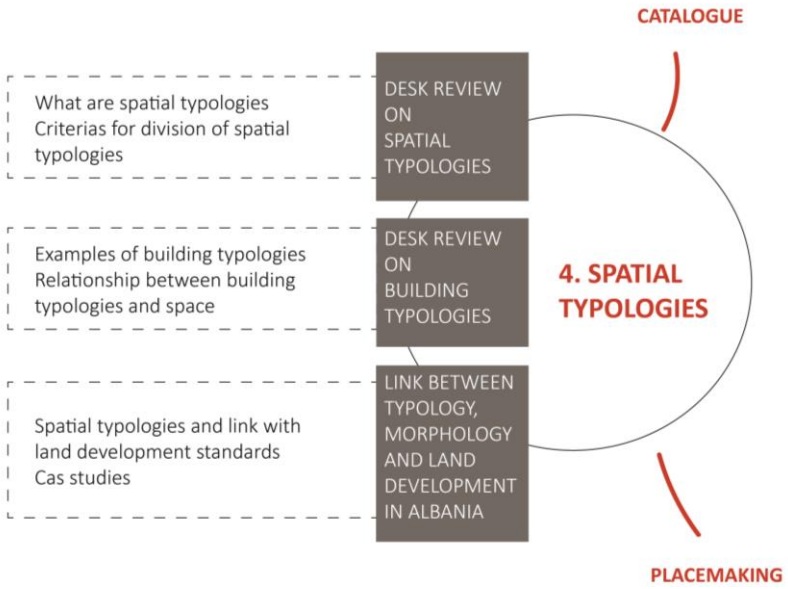
Pillar 4. Spatial and territorial typologies

This last pillar analyzes the first 2 pillars to find correlations between zoning principles at city level, and land development standards at zone-level. The main scope is to understand whether in complex contexts there can be unification of land development standards that can be found in different zones, which in turn can create distinct spatial typologies. The approach is analyzed in two levels:

A. Firstly, the correlation of building typologies with each other and the structural units is analyzed

B. Secondly, spatial typologies are defined and their characteristics are analyzed in terms of land development standards

This chapter is based mostly on case studies, without a theoretical basis to support, due to the applicative character. Albanian municipalities have been taken into consideration, but the results can be extended to more international cases upon refinement of the methodology.



0.3 Problem Statement

The main objective of this thesis is to explore theoretical and practical ways in which planning professionals and city governors can regulate development rights and achieve planning standards in the lowest level of territorial division: the structural unit. Using a variety of tools to evaluate different parameters of development in different sizes of the aforementioned units, and stimulating decision-making in terms of proposed intensity, proposed coverage, proposed building height, proposed building typologies, ect, will contribute to a wide selection of scenarios of development, where land owners profit in different ways, according to the division itself.

0.4 Research objectives and Research question/s

A. Understanding the necessity and challenges of dividing the territories into *structural units*

-Why is it necessary to divide the territory into managing units and how is it theoretically most valuable to do so?

-Which are the practical and applicable ways into which territories can be divided, according to their inherent characteristics?

-Which are the "agglomerated" development indicators and land management instruments used at the level of structural units in the study cases?

B. Reducing the gap between morphological studies and applications in real life

-How can morphology/study of form help solve problems of land management?

-How are these instruments used in terms of spatial typologies and zoning?

C. Using form-based codification methods for sustainable land management practices at different spatial typologies

0.5 Methodological note

The research is broadly based in both theoretical aspects, as well as practical approaches, which facilitate the process of analysing the structural morphology in Albanian cities.

The first part of the thesis will focus on theoretical collections and the evolution of city structures, interpretation in different cultures and main concepts related to city units. Following, there will be a detailed analysis of ways cities in Albania have been divided into subunits, and how this affected their planning process and outcome. This will take both a comprehensive literature review, as well as possible qualitative evaluations, in collaboration with persons involved directly on these processes, or own experience.

Secondly, the thesis will tackle the practical methods of dividing cities or territories into subunits, using digitalization methods, GIS software adaptations, or parametric tools of estimation. Following this part, which will encompass a variety of methods of estimation, an inductive approach will be pursued, which focuses on sample analysis of different units, of diverse character

Thirdly, the theoretical and practical approaches will be merged into a reliable structured methodology, which can be applied in the Albanian legislation, but also put in use in other contexts as well.

The final aim of this thesis will be to come up with a comprehensive methodology to estimate the best way to divide the territory into manageable planning and structural units.

Theoretical basis (desk review):

-Understanding how morphological studies can help city planning in practical terms

-Compilation of best approaches for territorial and urban form analysis

-Relevance of territorial subdivisions into units (zoning and co.)

Case studies (desk review)

-Overall approach: which planning systems rely on land management instruments, similar to the Albanian case (structural units), that can be aided by a morphological study

-Framework of development indicators set by local regulations

-Evaluation of main problems derived by “non-realistic” development indicators

Project samples (site observations, GIS and parametric tools, desk review, etc.)

-Morphological subdivision, meeting morphological analysis criteria, and "realistic" development indicators

-Drafting a toolkit/manual for territorial subdivisions

Questions	description	variables	indicators	data collection methods	data analysis methods
How was the approach to standards in different planning theories?	Study the way normativity has changed throughout planning history in the last 2 centuries: City Beautiful, Garden City, Modernism, Postmodernist Planning, Postmodernist urban design (Formal / Environmental)	Presence of Planning standards Presence of Development standards Main principles of design	level of use of standards / concept of theories / negative aspects / positive aspects	Desk Research on: theoretical overview and case study	comparative analysis of the approach to normativity deductive analysis of the best principles of design in these theories
What are the main characteristics of planning and development standards used in different Planning Systems?	Evaluation of the following planning systems in terms of planning standards : Italy, UK + Overview of legislation in France, Germany, Croatia, Russia, USA, Brazil	Presence of Planning standards Presence of Development standards	number of Standards used / level of governance / level of enforcement of standards	Desk Research (National Planning Legislation/ Structure of Local Plan/ Building Regulation/Code)	comparative analysis of data
Physical analysis theories/instruments influencing planning standards					
Morphology	Analysis on the main morphological approaches and their link to normativity	Layerization methodologies Principles of morphological study	qualitative indicators: conclusion on where to use which theory	Desk research and application of the outcome in sample areas	comparative analysis of 3 morphological schools and the contemporary models of morphology
Environment	Evaluation of the main principles of good environmental quality and the link with standards and regulations	Solar envelope Natural Ventilation Energy efficiency Thermal Comfort Green areas	qualitative indicator: where is each variable most needed	Desk research and application of software	analytical results
Space syntax	Assessment of the importance of space syntax, as a parametric and morphological emerging field, in the designation of standards	Connectivity Integration Visual Entropy	qualitative indicator: in what cases are these variables needed	Desk research and application of software	analytical results

Density	Evaluation of all components of density and the way they can be assessed	Density Intensity Coverage Spaciousness Network Density Height Perceived Density	quantitative and qualitative indicators: way of measuring and where are prevalent	Desk research and application of the outcome in sample areas / application of software	analytical results
The Albanian context from a comparative point of view					
Albanian planning system and indicators	Analysis of the Albanian planning legislation in different periods	Standards in 3 periods: Central Approach / Urbanistic Regulation / New Territorial Planning Approach	no. of planning and development indicators/ comparison	Desk Research (Albanian Legislation + former regulations)	analytical and comparative results
Spatial typologies in Albania	Identification of some spatial typologies which would have different standards	Categorization by: population, urbanity, topograhy, land cover, informality and settlement configuration		Application of the physical analysis tools in the chosen sample cases	Computational data analysis

The methods employed to analyze the indicators are listed below:

- **Zoning**: This instrument is used to assess three indicators: extension of settlements over time, prevailing building typology, and permeability at urban center level. In the essence of zoning is the grouping of areas with common characteristics (similar prevailing typology, similar period of development, the similar permeability, etc.) and for each category zones further qualitative and quantitative analyzes are conducted.
- **Cataloguing**: This method is carried out through on-site visit, in urban and rural settlements, pointing out repeated cases and special cases, observed from above, at street level, and at architectonic detail.
- **On-site survey**: This survey was conducted at both macro and micro level, covering the entire territory under study. 2-3 villages representing each of the administrative units [1] (former municipalities) were preselected for rural settlements, ensuring coverage for **71 villages**, with a focus to photograph and identify specific and typical cases. However, at micro level, 12 areas of the urban-rural boundary are studied.
- **Sample-based analysis**: This method was used for the study at zonal level, and includes a complete inventory of every building and road section of the study area. The study takes 27 samples, with different character of the building density, as detailed later.
- **Analyses on previous map/analysis (desk survey)**: a large part of indicators are computed using the base map and considering the previous analysis of related fields.

[1] In the following sections of the text, the administrative unit shall mean the local government units before the administrative-territorial reform, i.e., communes and municipalities before June 2015.

- **Analysis through GIS software**: many localized information layers in the map have been processed by GIS software, facilitating data processing and (automatic and semi-automatic) calculation of indicators as well as the visualization of results.
- **Spatial Syntax**: The connectivity indicator at urban center level is measured by means of the "Depthmap" software of Axial Spatial Syntax, which is widely used in morphological studies of cities. The results are described in Pillar 4, as an advanced tool of urban form.

Below is an overview of the indicators measured for each level and instruments employed to address them:

Table 1. List of indicators and their analyzing methods

Study level	Study scale	Indicators	Indicator type	Method/Instrument used
Municipality	1:50 000 – 1:100 000	The prevailing building typology	Qualitative	Zoning on GIS / cataloging
		The degree of urbanization	Qualitative	Interpretative analysis
		The main spatial layout	Qualitative	Observation by orthophoto
		The accessibility degree of FUA	Qualitative	Previous analysis (Polycentrism)
		Existing spatial typology	Qualitative	Interpretative analysis
Urban center	1:5000 - 1:10 000	The prevailing building typology (primary, secondary, tertiary ...)	Qualitative	Automatic calculation in GIS
		Connectivity	Qualitative	Axial analysis of space syntax
Urban-rural boundary	1:5000 - 1:10 000	Land use in the urban-rural boundary	Qualitative	Interpretation of previous analyzes of land use + orthophoto
		The length of the perimeters of the urban-rural boundaries	Quantitative	Semi-automatic calculation in GIS
		Existing development indicators on both sides of the boundary	Quantitative	Manual calculations in GIS
Rural settlements	1:5000 - 1:7500	The spatial layout of settlements inside the village	Qualitative	Interpretation from orthophoto
		The main spatial typology of the village	Qualitative	Interpretation from orthophoto
		Process of growth	Qualitative	Interpretation from orthophoto
		Density	Qualitative	Interpretation from orthophoto
		Development indicators (PCR, net and gross FAR, RCR, PPCR)	Quantitative	Manual calculations

		% of buildings without access to roads	Quantitative	Manual calculations
		% of parcels where urban agriculture is developed	Quantitative	Manual calculations
Zonal level	1:1000 - 1:2500	Prevailing building typology	Qualitative	Sample analyses, automatic calculations with GIS
		Development indicators (PCR, net and gross FAR, RCR, PPCR)	Quantitative	Semi-automatic calculation with GIS
		Density (buildings/residents)	Quantitative	Semi-automatic calculation in GIS
		Distance conformity of buildings from one another and the road body	Quantitative	Semi-automatic calculation in GIS
		Road network typology	Qualitative	Automatic calculation in GIS
		Permeability of the area	Quantitative / Qualitative	GIS zoning
		Accessibility of the area (no. of openings to the area, no. of buildings without access to roads, etc.)	Quantitative	Manual calculations
Parcel/building level	1:200 - 1:500	Building typology	Qualitative	On-site observation + GIS
		Building style	Qualitative	On-site observation + GIS
		No. of floors/height	Quantitative	On-site observation + GIS
		Position towards the road	Qualitative	On-site observation + GIS
		Position towards the parcel	Qualitative	On-site observation + GIS
		Land use	Qualitative	On-site observation/ Previous analysis + GIS
		Function	Qualitative	On-site observation + GIS
		No. of residents	Quantitative	On-site observation + GIS
		Building period	Qualitative	On-site observation/ Previous analysis + GIS
		Building quality	Qualitative	On-site observation + GIS
		Type of building extensions	Qualitative	On-site observation + GIS

0.6 Significance of the study

The research aims to finalize with a toolkit on how to better subdivide territories into structural units or zoning units, in terms of land management and development. The toolkit will be a set of guidance that can ultimately be used by planning professionals and local authorities in their planning activities, as well as to improve existing planning legislation.

The research is of international relevance because it is based on a thorough analysis of European case studies, based on the EU-based methodologies on evaluation of planning systems and normativity in European countries. This study takes the cases into consideration, makes a cataloguing of them in terms of normativity and use of land development standards and zoning methods, and evaluates the array of issues that lead to success and failure of such models. Moreover, the thesis tackles the issue of morphology theories and practices, as well as opens the discussion on the importance of zoning and other planning instruments in today's realities.

Of relevance in the broader context, moreover, is the relationship between formal codes and the typology of space, which contributes to better link the architectural approach to urban space and territories, to the policy-oriented approach towards city planning and land management.

PILLAR 1. Zoning and form-based codes

This pillar contains an analysis of the underlying principles of zoning, as well as the various shapes it takes into different planning cultures and systems. Overall, this part covers the correlation between zoning and land development, both in scope and general objective, as well as in implementation.

Firstly, a thorough analysis of zoning in the US is covered, emphasizing the initial purpose of zoning, the evolution from Euclidian to more advanced forms, such as Form-Based Zoning and Smart Code, and concluding with the Transect method.

Secondly, an overview of the use of zoning in Europe is analysed, by addressing the method of zoning and principles of land development according to the planning traditions in Europe.

Thirdly, the zoning process in Albania is analysed in the 3 main planning periods (1945-1990; 1990-2009; post 2009), understanding how the changes in approach and implementation may influence the development dynamics.

Fourthly, a theoretical approach to zoning is evaluated through desk review, to tackle the question whether we need planning and zoning; to discuss the issue of flexible vs. rigid planning, and further to address principles of anti-planning. This is discussed through a

Lastly, 2 main concepts are addressed in detail: (1) area-based development and (2) plot-based urbanism. They serve as a horizontal backbone to the chapter, to address the implementation of development principles in 2 main land management paradigms: making room and containment.

The chapter is then concluded in 3 case studies, addressing the principles of zoning in 2 relatively different contexts: USA, and Albania.

1.1 Zoning: an overview

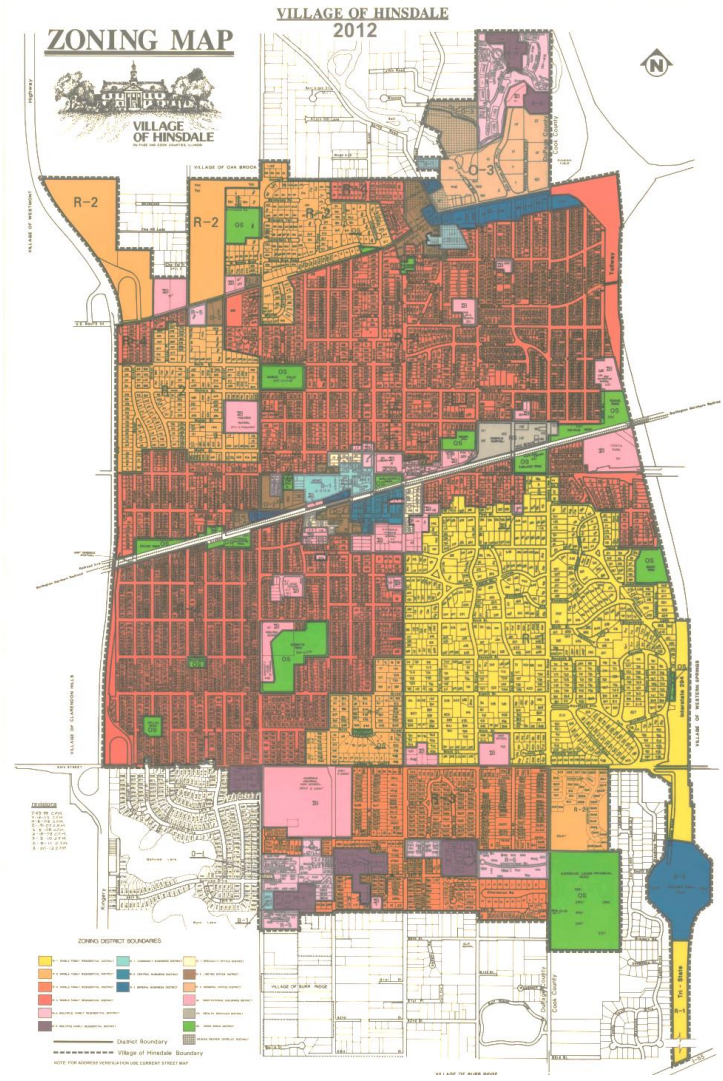
"Zoning is the division of a city or town by authority of law into districts, in each of which there is prohibited the use of the land for any purpose, which though harmless in itself, impairs the public welfare by interfering with the devotion of the district to the use for which it is best adapted. Zoning usually also includes restrictions upon the size of lots, the height and bulk of buildings, and density with which land may be occupied, which differ in the different districts, so as to be appropriate to the uses permitted in each district.… The use of districts almost invariably established by zoning are: respectively, residential, business or commercial, industrial or manufacturing." (Nichols, 1943, p. 145)

Zoning is a widely used land management instrument that separates the land into subunits, with respective regulations concerning the allowed activities on that area (Puentes, et al.,

2006). Of course, the above-mentioned definition from Nichols (1943) should not be translated literally in today's context. It incorporates limitations on the evolution, and the further potential of zoning in terms of land management. Nevertheless, it emphasizes the fact that zoning has exercised enormous power in shaping the built environment. This is true not only in its origins, but for about a hundred years in various planning systems, in the different forms it takes. Most literature on zoning discusses it from a legislative viewpoint, as a form of restrictions on how people can use their property (Minnesota Association of Townships, 2012). This research builds upon this definition of zoning, deeming it as a crucial concept of land management practices, but expands the concept into other forms of spatial divisions, in order to have a more comprehensive view.

Moreover, zoning per se is more widely discussed and scrutinized in the Anglo-Saxon and American legislative systems. However, to fully comprehend the applications of zoning, the research will explore its presence in other European and world-wide contexts, at local-level planning.

Figure 2. Example of a zoning map with segregated land uses



Source: Knight, The Great American Grid, 2018

Indeed, some of the main function of zoning as a land management instrument, as referred

to traditional land use planning theories (Kaiser, et al., 1995) are:

1. Protecting property value
2. Protecting/ consolidating the character of the area
3. Road safety
4. Regulation of competitiveness
5. Fiscal zoning to increase tax base
6. Promotion of moral values
7. Growth management
8. Reduction of condemnation costs

1. Protecting property value

This is one of the most important functions of zoning. Court ruling in US states that zoning that results in a decrease in the value of the land of the residents will consequently adversely affect the development and well-being of the entire settlement. (Kaiser, et al., 1995) Overall, zoning is done to regulate property rights, for the purpose of development and, accordingly, increase of land value.

Nevertheless, this concept should be relevant at an agglomerate level, not merely at parcel, or zone level. This means that zoning can indeed regulate lower densities or non-profitable land uses in specific areas, thus lowering their value, considering that on average property value has increased. The specific cases where zoning negatively affects land values should be addressed by other management instruments, such as impact fees.

2. Protecting/ consolidating the character of the area

Zoning aims at consolidating and protecting the typology and character of the residential areas, by ensuring homogeneity. This can be achieved through architectural regulations or merely density parameters. These aspects are linked with the community lifestyle, as well as proximity to other land uses (i.e. a decision to establish an industrial area (which will be associated with infrastructure connectivity like highways) adjacent to a rural residential area).

Zoning should provide stability for the "neighborhood", and can remain unchanged for many years, if the character of the area doesn't need to be changed. (Kaiser, et al., 1995)

3. Road safety

One of the objectives of zoning, albeit more subtle, is the reduction of traffic and increase of road safety. This is done through the coordination of 'carrying capacity' of the zone, with the perimetral infrastructure servicing it. (Walters, 2007)

In general zoning has no control over the location and size of roads (especially those of regional / national importance). Nevertheless, rules or conditions on the density of resident

populations, setback distances and parking are some of the tools that can be used to reduce traffic in an area, and promote road safety.

4. Regulation of competitiveness

Sometimes zoning aims at regulating competitiveness at large scale, by imposing regulations for profitable, non-residential land uses. This is the case when appointing limitations on office spaces, commercial spaces, recreational activities, etc. If not managed properly, this has the risk of creating monopolies or favoring certain individuals / businesses. Some more subtle regulations of this nature are the following:

- Not allowing the construction of a petrol station / depot as the settlement has sufficient quantities at present
- Not allowing the construction of bars (where alcohol is served) near a university campus
- Not allowing the construction of casinos in the city center

The desire of the planner to provide stability and balance in the delivery of public services is a legitimate aim, although in some cases it can lead to suppression of competition. (Kaiser, et al., 1995) Nevertheless, the degree into which the competitivity is weakened is not so radical, since it always leaves room for competition within areas and between the activities of the same nature.

5. Fiscal zoning to increase tax base

By changing the zoning for a given area, we can have positive fiscal results, which in turn results in the expansion of the tax base (Walters, 2007). This is done through many outcomes of zoning, such as:

- Job creation
- Fiscal tax on the minimum size of the property / parcel
- Advertising tax
- Different local tax for different uses
- Tax on casinos, etc.

The case study 2.2 explores more in detail how zoning can improve fiscal capacities of a municipality through several types of taxes.

6. Promotion of moral values

This function is somehow controversial because of the ambiguous and indefinite nature of morality and ethics. Nevertheless, zoning regulations usually take into consideration the location of religious monuments/objects; and of educational facilities, and condition the presence of inappropriate uses, such as bars, drug stores, etc., in their proximity.

7. Growth management

Growth management is considered an alternative to zoning, or rather an innovative approach to the conventional zoning and subdivision regulations in the US. They are divided into short term and long-term management strategies. (Walters, 2007)

Short-term zoning is also referred to as 'temporary zoning' and aims at reserving / freezing development in certain interest areas, for future use. This strategy is mostly used for areas that are of interest for public or private land uses, but need to be conserved at the time of planning / zoning, because of lack of funding for infrastructure, or because there is no determined land use that would fit the character of the area. These conserved areas may be reassessed after several years.

Long term growth management is related to phasing of development, mostly in peripheric areas, on the urban fringe. In this case, through the zoning process land owners and developers are informed that in the future, these areas will be of residential or commercial land use, and infrastructure will be developed respectively. This limits speculations on land market and, in the same time, allows for flexibility in the orientation of public finances in areas with larger population. (Juergensmeyer & Roberts, 2003)

8. Reduction of condemnation costs

In the end, the zoning process is a local government procedure, and, as such, comes with administrative costs and burdens. In the cases when some of the previous functions is not met, or when zoning has intentionally lowered the value of certain properties, then costly measures need to be taken to regress this. Moreover, zoning puts a burden for development on developers / owners, and for public uses on the municipality itself. Therefore, a careful zoning aims to reduce the costs for expropriation as much as possible, by avoiding land speculation and by implementing other financial instruments of land development (i.e. property tax; land readjustment, etc).

Otherwise, Talen (2011) argues that, while the objective of zoning is more comprehensive in nature, it has failed to be implemented in the expected way. Following is a summary of the intentions and 'failures' of zoning rules as explained by Talen (2011, p.13), accompanied by an explanatory comment that takes into consideration re

Table 2 A few examples of contradictions of zoning rules

Intention	**Outcome**	**How is it looking now?**
Zoning was to address public health, specifically, relief from tuberculosis	Zoning contributed to health problems by spreading people out, increasing their reliance on cars and a sedentary lifestyle	New Urbanism rules (and placemaking in Europe) have addressed this issue
Zoning was seen as progressive because it protected the people who most needed protecting—the poor; reformers believed that "the greatest and most desirable effect" of zoning	Zoning segregated the wealthy away from poor people and did nothing to promote better urban form in poor areas	Flexible zoning, growth management and area-based development aim to minimize the segregation effect

"has been a social one" (Hubbard and Hubbard 1929, 191)		
Zoning was to promote downtowns by limiting skyscrapers that block light and air	Zoning facilitated the low-density spread of cities, which hardly promoted the downtown core	Through the transect method a new form was attributed to cities, graduating in height from center to the suburbs
In New York, zoning was to protect "the high-class private detached house district" at 5th Ave. and 74th St. (Hubbard and Hubbard 1929, 160)	High-rises now surround Central Park— the market would never have sustained private detached houses on 5th Ave.	Zoning aims to promote healthy competitiveness and increase property value, which usually is achieved.
Zoning and subdivision regulation was to produce "striking economies" and land-use efficiencies (Hubbard and Hubbard 1929, 190)	Rules promoted wastefulness and increased land consumption	Zoning rules in Europe have not caused the same sprawl as in USA, due to place-based principles adapted
Subdivison regulations sought to restrict dwellings on alleys	Now, dwellings on alleys are widely seen as a way to increase density and diversity	Subdivision regulations are key to development at plot-level
Deep lots were prohibited because they were believed to be "forerunners of slum growth" (Augur 1923, 16)	Now, deep lots are encouraged as a way of promoting accessory units and therefore increasing density and diversity	Lot size reflects both property arrangement and the existing/expected typology of building in a given area
To promote health, rules promoted "open spaces on the front, rear and sides of buildings" (Baltimore BZA 1925, 29)	What is healthful is compact urban form, which promotes walking, bicycling, and transit use	Rather than zoning itself, the rules attributed to each zone indicate livability and healthfulness of the area

Source: Talen (2011, p.13) and own contribution

1.2 'Zoned' in the USA

This subchapter focuses on the 'origins' of the concept of zoning in the USA, and the legal/contextual background that supported the development of this management instrument.

Efforts to regulate land development in the USA date as early as the colonization period, in the 1600s, mostly aiming at preventing conflictual land uses in neighbouring areas. One of the earliest examples of such regulations is the Cambridge Ordinance of 1632, in Massachusetts, where for the first time it was stipulated that the mayor should give consent to every development in the city. Later on, some restrictions were included, as follows:

- No land in the periphery could be developed, without first developing vacant land inside the city
- All buildings were to be restricted to the same height
- Improved materials were to be used in the roofs, such as slate and board
- If plots were not developed within a given time, they were reallocated. (Juergensmeyer & Roberts, 2003)

Already, these aspects of zoning are more related to land management and control of

competitiveness and the harmonisation of private interests, than enabling good form or a proper city layout. The zoning culture is embedded since its emergence in the legislative systems of the countries that adapt them. Liveability, performance and design principles emerged only later in the process of zoning.

Other rules that were adapted in later ordinances included:

- Prohibition of materials such as wood in
- Prohibition of several uses inside the city, such as horse stables
- Height limitations
- Yard setbacks
- Incompatible land uses: i.e. hand laundry close to residential area, causing noise and pollution (Hammel, 2015)

As regulations were drafted by each local government individually according to recurrent needs, the need to design an integrated Ordinance for zoning was emerging. Indeed, the City of New York in 1916 adapted the first 'districting ordinance', where for the first time the entire territory was divided into geographical districts to regulate the use of land and buildings, the density of population and the height and bulk of structures (Morris, 2009) Similar ordinances quickly followed in other American cities (Juergensmeyer & Roberts, 2003).

Thus, zoning became an integral part of planning practice, mandatory to apply by each local government, to manage the territory in a fair and efficient way.

Alfred Bettman, an advocate for land use, reinforced the concept of city planning as a basic and key guide for city development, by stating[2]:

"The urban plan is a master project for the physical development of the city's territory. It constitutes a plan for the division of land between private and public uses, defining the general locations as well as the extent of new public infrastructures, squares and structures ... and in the case of private developments, the general distribution [of land areas] between different classes of use, such as residential, commercial and industrial uses." (Bettman, 1928)

According to Cheney (1920), once adopted, the 1916 Zoning Ordinance would aim to:

- "Guarantee a definite and safe place for industrial investment
- Protect home neighborhoods
- Stimulate home ownership
- Assure more contented labor conditions
- Remove much of the suspicion and uncertainty from real estate
- Stabilize property values

[2] National Conference on Urban Planning, 1928

- Afford greater security for mortgage loans and thus encourage building
- Form a surer basis for investment
- Provide the city for the first time with a firm foundation for the solution of the problems of: Congestion / Traffic / Paving / Sewers / Public utilities / Housing / Schools / Recreation" Cheney (1920, p.278)

The supremacy of zoning as a local planning instrument was highlighted in the famous 'Village of Euclid v. Ambler Realty' case (Box 1), which stated that the general public interest created through zoning overpowers the private interest on the best use of their property. This case ruled by the Supreme Court legitimized all zoning processes to come, enabling later also the eminent domain (right of expropriation) (Juergensmeyer & Roberts, 2003). Arguably, this is the beginning of the 'rigidity' of zoning, which is discussed as one of the main drawbacks of the instrument in the last 100 years.

Box 1. A short overview of Euclidian Zoning

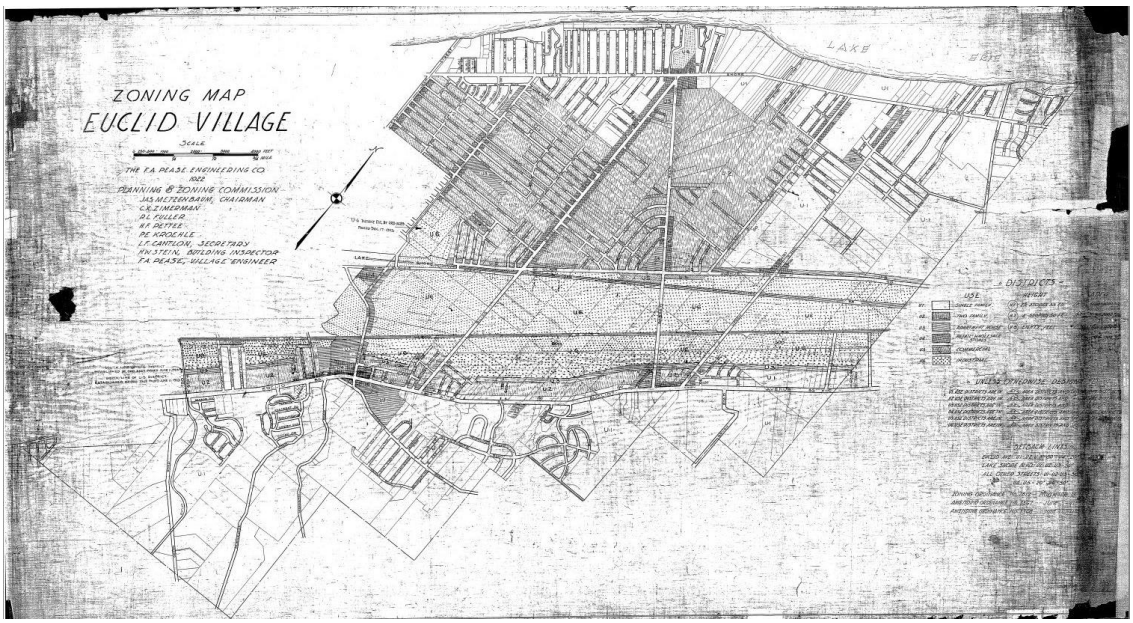
The case of Village of Euclid v. Ambler Realty Co. was heard and decided by the U.S. Supreme Court in 1926. The comprehensive zoning ordinance of the Village of Euclid, Ohio, and the concept of land use zoning and regulation in general, had been challenged by the Ambler Realty Company as unconstitutional. This was a landmark decision. The Court upheld the constitutionality of comprehensive zoning and secured the future of zoning as an important and legitimate exercise of the police power.

The Court held that the zoning restrictions on the use of the land could be supported by valid considerations of public health, safety, morals, and general welfare, made in the interest of preserving the character and quality of the neighborhood. The Court stressed that deference be granted to the local legislative judgment in these matters, where policy decisions were reasonably debatable.

Following the Euclid v. Ambler decision, the general validity of comprehensive zoning as a legitimate exercise of the police power was no longer in doubt. Courts across the nation have since accepted the exercise of zoning powers by local governments. As a result of this case, traditional zoning (i.e., segregation of uses, building heights and setback regulations, etc.) is sometimes referred to as "Euclidean Zoning".

Source: MAT, randolphtownshipohio.gov

Figure 3. The first zoning map in US: Euclid Village



Source: MAT, 2012

1.3 'Zoning rules!' in Europe

Zoning and other similar land use regulations began in the US early in the 1900s, but have spread rapidly in other planning systems. Zoning regulations have been drafted in almost all urban regulations, in one form or the other. Normativity and use of standards and indicators of land development is discussed broadly in Pillar 2, for planning families in Europe. Therefore, this section covers a broad description of the use of the instrument of zoning in European countries, as to demystify the concept that zoning is used more exclusively in the American planning context. The European Commission has attempted to provide a basis for comparative studies in its compendium of planning policies of the EU countries (1999), but even this document pays only limited attention to urban land-use control and emphasizes the difficulties of making international comparisons when each EU member state has its own complicated legal framework and terminology.

Three countries are considered in this chapter: England, Germany and France, as representatives of three spatial planning traditions in Europe. The scope of the chapter is to analyse the urban land-use control that is exercised through zoning or other methods.

The contemporary ***English*** urban land-use control system is unique in Europe (Newman and Thornley 1996). English local governments started designing districts for different uses in their legally binding "planning schemes" since 1909. Nevertheless, it wasn't until 1946, when the Town and Country Planning Act was adapted, that the planning system in England changed drastically from other countries. The main paradigmatic change of the law was that the right to develop land was separated by the right to possess it. Development rights were 'nationalized', and local governments still to this day have the power to negotiate with the developers and respectively give planning permission if they consider the proposed development fit. (Hirt, 2014)

In other words, England does not zone. It lacks a system of regulation plans that, if followed,

in theory guarantee in advance the right of private parties to develop their land. Decisions to allow or prohibit private development are made without a set of predetermined, strict rules that apply to uniform areas, as is common in the United States. (Hirt, 2014)

Instead, decisions for what is appropriate (and therefore permissible) are reached by public officials, after debates and negotiations with the private owners, the developers, and the larger community. The primary question that English authorities address is not whether a proposed development is legal but whether it is appropriate (Cullingworth and Nadin 2006).

In ***Germany***, planning occurs at the federal, state, regional, and local level, guided by federal planning legislation (European Commission 1999; Schmidt-Eichstaedt 2001). The development process is generally limited to areas adjacent to existing urban areas, as there is national or regional permission needed to develop in nonurbanized areas. (Hirt, 2014)

The federal Land-Use Ordinance outlines four general land-use classes: residential, mixed, commercial, and special (like a traditional U.S. zoning code). In Germany, there are two basic instruments of local land-use planning and control: the general or preparatory plan (Flächennutzungsplan) and the detailed development plan (Bebauungsplan, or B-plan). (Hirt 2007a; Cable 2009).

The former is representative of a masterplan, or comprehensive plan. The B- plans are legally binding documents that determine the rules of development. They are however not developed for the whole territory, but just in specific areas that may be as small as an individual city block. These detailed plans also control other aspects of the built environment related to bulk, density, design, landscaping, etc. (Hirt, 2014)

France bases planning on the Napoleonic family, which is used in most continental Europe and is based on codification of public life and detailed rules. In contrast to England, in France permit is granted as long as the private party follows detailed, legally binding, area-based regulations prepared in advance. In this respect, French control of urban development is technically more similar to the U.S. (Hirt, 2014)

The current planning legislation in France guides regional and local planning, outlines the procedures for obtaining permits, and explains that communes shall prepare local plans with a land-use component: Plans Local d'Urbanisme. The zoning system denotes four very broad types of zones: U (urban, already built out), AU (urbanizing, suitable for future urbanization), A (agricultural), and N (natural areas and forests).

One of the most distinctive feature of the American land-use regulatory model, as compared to the European examples, is its high degree of decentralization. Land-use matters in the United States remain an intensely local matter (Fischel,2010) with low degree of intervention at state level.

1.4 Form based codes as an innovative approach to zoning

Form-based codes are a land management instrument used in the USA that falls into the category of zoning, but also differs considerably from conventional zoning. This coding system divides the territory into different subunits based on the typology and density of

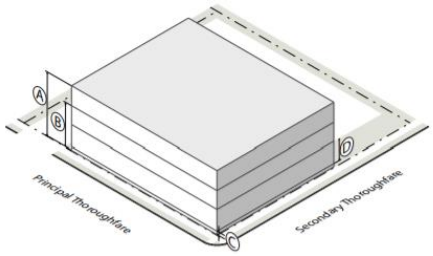
development, as well as the expected urban layout. Zoning usually regulates only land use, and development standards (maximum building height, distances, FAR, coverage ratios, etc.). But form-based codes address issues that are not covered by conventional zoning, such as design of public space and roads, which conventionally would be regulated by subdivision manuals, or public work manuals. Thus, Form based codes bring all these manuals together, in an integrated document that addresses land use, development indicators, provision of public/non-profitable services and subdivision regulations. The integration ensures that these documents are coordinated and coherent with each other. (Marshall, S., 2011) (Dhrami, 2018)

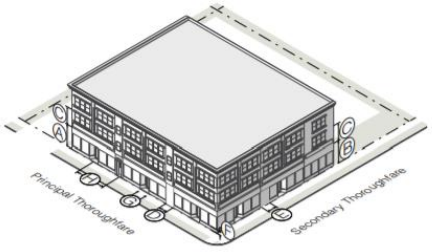
While they seem more restrictive in nature, form-based codes were formulated to tackle the issue of rigidity of conventional zoning: segregation of land-use types, permissible property uses, and the control of development intensity through simple numerical parameters (e.g., FAR, dwellings per acre, height limits, setbacks, parking ratios).

As conventional zoning is usually included in the package of planning regulations, along with subdivision ordinances, building regulations and public infrastructure standards, often it fails to be fully integrated with the city vision for development. This is exactly the issue Form base code aims to improve. (Fischel, 2015)

Form Base Code (FBC) is a relatively new and innovative method of managing growth and shaping development to achieve a specific urban form and mix of uses as preferred by a given community. Unlike conventional zoning, Form-Base Code addresses not only development but the relationship between public and private spaces such as the interaction between streets, blocks, and buildings in terms of form, scale and massing, and the use of frontage areas. FBC creates a predictable public realm by including specific standards for the design of streets and open spaces, and focusing primarily on the physical form of development, with a lesser focus on building use than conversional zoning regulations. (Parolek, et al., 2008)

Figure 4. Excerpt from a FBC: building height and transparency indicators





Building Height

Ⓐ	Building height (max)	
	N-1D	1.75 times the width of the widest adjacent thoroughfare[1]
	N-1C	1.25 times the width of the widest adjacent thoroughfare
	N-2C, N-2E, N-3C, N-3E	3 stories, 44'[2]
Ⓑ	Building height (min)	
	N-1D	4 stories
	N-1C, N-2C, N-2E, N-3C, N-3E	2 stories

Transparency

Ⓐ	Ground floor transparency, front facade (min)	70%
Ⓑ	Ground floor transparency, corner side facade (min)	40%
Ⓒ	Upper floor transparency, front and corner facades (min)	25%
Ⓓ	Ground floor blank wall width, front facade (max)	10'
Ⓔ	Ground floor blank wall width, corner side facade (max)	30'
Ⓕ	Ground floor window sill height, front and corner facades (min/max)	0.5'/2.5'

Source: Unified Development Ordinance of the City of Buffalo, 2016

Form-Based Code typically provides for an appropriate mix of uses and encourages strong relationships between a building and its context, including public spaces and surrounding buildings. Often these standards are presented in both diagrams and words to clearly illustrate the design and development objectives for a given district.

According to Parolek (2008), the typical components of a Form-Based Code include:

- Regulating Plan – An overall master plan or zoning map where different building forms and public streets and spaces are generally defined based on clear community intentions regarding the physical character of a designated area.
- Building Form Standards – Regulations defining the configuration, design features, and functions of buildings that frame the public realm.
- Attractive and Functional Public Spaces and Streets – Design and functional specifications of the public realm (e.g., sidewalks, travel lanes, street trees, street furniture, open spaces, parks, etc.) that interact with surrounding buildings and create an attractive framework for private investment.
- Strategic Building Placement – Buildings are typically required to be placed close to the sidewalk with frontage variations based on types of use (civic, residential, mixed use). The Regulating Plan may indicate a "build-to" requirement or setback range for buildings as well as parking and other accessory uses to ensure appropriate layout in context with surrounding building patterns.
- Creating an Outdoor Room – FBCs typically have minimum as well as maximum building height and building setback requirements providing a rhythm of development and streetscape designs that create a building wall and street enclosure as desired by the community.
- Orientation and Presentation of Building – FBCs typically require buildings to face the street and other public spaces. Front façades are limited to a specified length and broken up into sections forming an attractive building wall. FBCs may also require a certain percentage of window space at ground level to ensure visibility and attractiveness to pedestrians.
- Facilitating Mixed Uses – FBCs typically define the horizontal and vertical mix of uses rather than separating them like many conventional regulations.
- Adequate but not excessive parking – Parking areas are usually prescribed to the side or rear of the building. FBCs typically allow (or require) shared parking and utilization of public parking in determining number of spaces needed.
- Administration – FBCs usually prescribe a clearly defined application and development review process.
- Definitions – FBC often include an illustrated glossary and definitions to ensure the precise use of technical terms.

- Supplemental Components – FBC's may also include architectural standards controlling external architectural materials and quality.

1.4.1 Smart Code, the new frontier of form-based codes

Smart Code is an integrated land development ordinance, created by Duany Plater-Zyberk in 2003, with the aim of having a more 'new urbanism' oriented legal model of city development (Atlas, 2013). Essentially, it is a form-based code that incorporates Smart Growth and New Urbanism principles.

Smart Code is a unified development ordinance, but it addresses development at all scales of design, from regional planning down to the single building. This extended, comprehensive approach, which incorporates integrated ideas of how parts of a city should be linked to each other, in addition to how each part should be developed, stems from the concept of the Rural - Urban Transect. (Center for Applied Transit Studies, 2016)

This makes Smart Code a very innovative instrument compared to separated-use zoning, thereby able to integrate a full range of environmental techniques. The ideology behind Smart Code, as envisioned also by New Urbanism theories, relies on the fact that expected/desired outcomes are based on known/successful patterns of urban design. Therefore, the document is very efficient in terms of preparation and implementation, and was adapted by more than 50 cities in the USA, since its development in 2003.

The Smart Code is a model code, a template, with metrics designed to create a generic medium-sized American city structured into walkable neighbourhoods, which require a mix of land uses and public spaces with a sense of enclosure. Moreover, it emphasizes the need to set regulations on urban form, rather than on land uses (thus, it is a form-based code). The zoning principle within the Smart Code is designed to create harmonious habitats ranging from the very rural to the very urban.

Figure 5. A typical urban-rural transect, divided into zones

Source: SmartCode, 2003, Duany Plater-Zyberk & Company

Box 2. Division of transect zones according to the Smart Code Concept

According to the concept developed by Duany Plater-Zyberk , Transect Zones are divided as follows:

T1 Natural Zone consists of land in natural state, or unsuitable for settlement due to topography, hydrology or vegetation.

T2 Rural Zone consists of sparsely settled lands in open or cultivated state, like woodland, parks and open space areas, with typical farmhouses, agricultural buildings or cabins.

T3 Sub-Urban Zone consists of low-density residential areas, adjacent to higher density zones that include some mixed use, with irregular roads that accommodate natural conditions.

T4 General Urban Zone consists of mixed-use but primarily residential urban fabric with a variation of single-family and row-houses, defining medium-sized blocks.

T5 Urban Center Zone consists of higher density mixed-use buildings that accommodate retail, offices, row-houses and apartments with a tight network of streets and buildings set close to the sidewalks.

T6 Urban Core Zone consists of the highest density and height, with the greatest variety of uses, and civic buildings of regional importance, typically associated with downtown

Figure 6. Example of transect zoning in Handsboro

Source: Handsboro Community Plan, 2008[3]

1.5 Containment paradigm vs. 'Making room' paradigm

Containment has been defined as follows: "Broadly speaking, urban containment programs can be distinguished from traditional approaches to land use regulation by the presence of policies that are explicitly designed to limit the development of land outside a defined urban area, while encouraging infill development and redevelopment inside the urban area" (Nelson, Sanchez, and Dawkins 2004, 342).

Urban containment is advocated as the antidote to sprawl. It can limit the growth of endless cities, increase urban population densities, reduce the excessive fragmentation of urban footprints, lessen car dependency, revitalize public transport, conserve farmland, protect nature, rejuvenate central cities, decrease the cost of infrastructure, save energy, and reduce carbon emissions. (Angel, et al., 2011)

Nevertheless, applications in real life of the principles of containment (i.e. green belts, yellow lines, etc.) have resulted to be unsuccessful for a series of reasons. Containment policies restrict land development outside the designated urban area through encouraging infill and redevelopment. Among the advantages of containment are:

- Restricting "endless" cities
- Reducing of soil fragmentation
- Reducing of car dependence
- Encouraging public transport
- Protecting nature, farmland and resources
- Revitalizing city centres
- Reducing the cost of infrastructure
- Saving energy and reducing carbon emissions

Arguably, the use of containment paradigm may function in mature planning systems, where control over the territory is high and development scenarios are predictable due to abundant data on land and population. (Angel, et al., 2011) Nevertheless, in more complex contexts, in developing countries, such paradigm has proven to not be viable, for the following reasons:

- Urban growth boundaries that are too rigid to accept tight-fitting
- Misunderstood and misused urban infill development
- Unnecessary densification in areas where the provision of services is no longer

[3] Handsboro is the third existing community in Gulfport to make the SmartCode mandatory within its boundaries. Its Community Plan was adopted as an integral part of the City's SmartCode in February 2008. The Regulating Plan depicts the boundaries of the planning area, assigns the new Transect zones, and features new overlay districts such as transportation and retail corridors, density-receiving areas and neighborhood conservation districts.(www.transect.org)

possible

- Overestimation of regulations that, in turn, are not implementable and effective
- Lack of a robust arterial road network, which serves to meet the transit needs

The Making Room paradigm is grounded in the conviction that we need to make at least minimal preparations for the sustainable growth and expansion of cities in urbanizing countries rather than to constrict and contain them. It calls for accommodation and rejects the placement of limits on urban expansion that are likely to fail or, if they succeed, will do more harm than good. (Angel, et al., 2011) The paradigm consists of four key components:

1. Realistic projections of urban land needs;

Needs a very updated and detailed territorial database, based on plots and population

2. Generous metropolitan limits;

Enough to accommodate growth for the next 20-30 years - there will be abundant land for development, the border is not a line but generation and prices will not rise.

3. Selective protection of open space;

Plan of spaces with clear hierarchy; regulation that obliges private property units to be allocated as public; acquisition of development rights and land in the suburbs or imposition of restrictions on private land development for public purposes; legislation on protection and management by institutions and the public

4. An arterial grid of roads spaced one kilometer apart that can support public transit.

It precedes development & has these features: it should cover the entire expansion area for the next 20-30 years; connect through the network hierarchy any part of the territory; 1km spacing to guarantee 10 minutes walking to destination; the width of roads should allow for car, bus, pedestrian, bicycle, emergency and public square; improvement in progress - first buys the right of way from the municipality and then starts investing. (Angel, et al., 2011)

In urbanizing countries like Albania it is crucial to combine both paradigms, taking into account the following:

Prioritizing rigid boundaries while growth rates are high leads to erroneous projections of population and infrastructure needs, or projections to be inconsistent with available space.

- Land prices could rise and land speculation emerges
- People and pressure to relocate to other areas
- Informal settlements can be created (as suggested in the Albanian case)

It is thought that there are empty spaces within the boundary / footprint, for urban fill and growth. However, the facts show that filling occurs and the need for stretching still exists. This brings:

- Sprawl and expansion;
- Leapfrog development
- Informal occupation of public spaces for construction

- Infrastructure scarcity in relation to needs and density

There is a general opinion that strict law and regulations will resolve the situation and will not allow for extension. But cities in urbanization have weak law enforcement systems. This brings:

- Uncontrolled expansion and expansion and informal developments;
- Speculation of suburban land prices;
- Continuous weakening of the legal system - "if it fails once, it will always fail"

1.6 Innovative approaches to zoning?

By now it is clear that zoning is embedded in spatial planning practice, and as such, the term 'innovative' is somehow redundant. While the quest for zoning and the need to subdivide territories into manageable structural units is discussed in a practical/legislative point of view, the following unfolds 3 supportive concepts of traditional zoning: performance zoning, cluster zoning and overlay zoning.

1.6.1 Performance-based zoning

Performance zoning is an alternative instrument to conventional zoning, which takes a more place-based approach to regulations/ ordinances. Rather than having pre-determined development indicators, bulk regulations, density limits, etc., a set of criteria is drafted to control development of territory. This ensures more flexibility in use to owners and developers, given that the performance criteria is met. Neighborhood characteristics and environmental carrying capacity are the base levels for setting performance standards (Stockham, 1974). This 'solution' may be considered the ultimate response to the 'rigidity' claim towards conventional zoning, and especially, towards normativity. Setting performance indicators, i.e. the expected outcome, without forcing development standards, i.e. a rigid input, is as close to 'innovative' in zoning as a planning system can go.

Indeed, the advantages are numerous:

- Locational flexibility and design flexibility
- Promotes natural resource protection and can limit adverse impacts on neighbouring properties;
- Sets achievable performance standards related to the given situation, and the carrying capacity of the site.
- Avoids incompatible land uses without segregating them
- Allows more freedom to developers to be creative and flexible to market changes
- Gives incentive to better performance, rather than just compliance to regulations
- It has a rational approach to land use control, rather than an imposed, arbitrary one

Aside from the advantages, there is a list of limitations to performance zoning, which are

mostly related to the effectivity of use. This alternative was proposed as early as the 70s, in response to Euclidian zoning, and not many counties / municipalities have applied it so far, partly due to the following limitations (Stockham, 1974):

- Changing zoning districts to performance zones takes time to
- Needs skillfull administration and available technology
- Requires additional technical expertise and cost to evaluate and monitor than required under conventional zoning;
- Is not efficient in areas that lack services, because the carrying capacity of the area does not allow for anything other than low-density
- Allows developers to choose the typology they want, despite the existing surrounding typologies

1.6.2 Cluster zoning

Cluster zoning is a zoning method in which development density is determined for an entire specified area, rather than on a lot-by-lot basis. Within the specified cluster zone, a developer can exercise greater flexibility in designing and placing structures, as long as the total density requirement is met. Cluster zoning, which is also called conservation-oriented development, allows for the total number of homes in a given piece of land to be clustered or concentrated more densely onto one or more portions of the land; typically, double the density is concentrated on half the acreage. Such a strategy allows for the development of smaller (less expensive) homes on smaller (less expensive) lots, thus providing alternative housing choices for multiple community population groups and providing the opportunity to preserve remaining land for public and neighborhood use. (Farr Associates, n.d.) Developments in cluster-zoned areas often incorporate open, common areas for use by community members and/or the wider public. The landowner and the community decide the use of the preserved open space during the subdivision review process; and uses can include parks, nature/jogging/walking trails, active recreation, and community gardens, among others. Benefits: For all residents, including older people and younger people with disabilities: Cluster zoning provides two primary benefits for residents: Walkable/bikeable residential neighborhoods; and Access within the neighborhood to green space, trails, parks, gardens, and other amenities in which to walk, exercise, relax, recreate, and socialize.

For the community: The protected open space can be designated to provide significant green buffers between neighborhoods. (Shoup, 2009)

Higher density allows smaller, lower-cost housing units to be included within a neighborhood—providing greater housing choices, which is a "livable community" response for the diversity of residents that typically comprise a community. Greater protected open spaces protect the environment, habitats, natural resources, and ecosystems.

1.6.3 Overlay zoning

Overlay zoning is a regulatory tool that creates a special zoning district, placed over an existing

base zone(s), which identifies special provisions in addition to those in the underlying base zone. The overlay district can share common boundaries with the base zone or cut across base zone boundaries. Regulations or incentives are attached to the overlay district to protect a specifi c resource or guide development within a special area. Natural Resource Protection Overlay districts can manage development in or near environmentally sensitive areas, such as groundwater recharge areas (e.g. to ensure water quality and quantity), special habitat (e.g. species or feature protection) or floodplains (e.g. prevent flood damage). (Smith, 2019) Common requirements may include building setbacks, density standards, lot sizes, impervious surface reduction and vegetation requirements. Structure requirements could include building floor height minimums and flood-proofi ng to high water level. Development Guidance Overlay zones may also be applied to protect historical areas or encourage or discourage specific types of development. Land within the historic overlay district may be subject to requirements that protect the historical nature of the area (e.g. materials, façade design, or color). A community might use incentives along a transit corridor to encourage higher development densities, target uses or control appearance. (Read & Mowery, 2018)

1.7 Evolution of the zoning concept in Albania

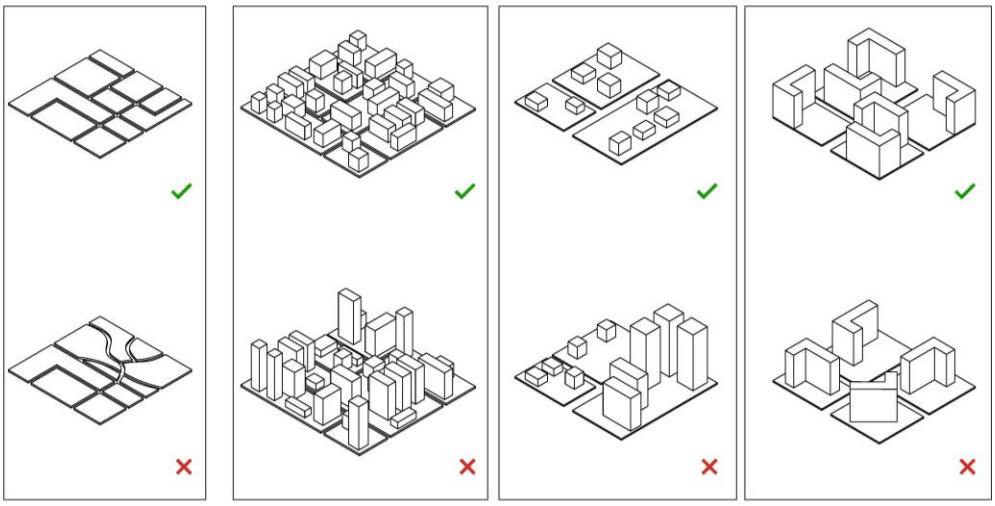
Following is a brief description of the way national legislation in Albania addresses normative issues on planning and land management in general, and how these are linked with zoning. National regulations on spatial planning [6] state that each local government has an obligation to draft its General Local Plan (GLP), which defines all proposed interventions, development scenarios and investments for the next 15 years. Accordingly, it divides the municipal territory into structural units, which constitute the smallest scale where land development standards and norms can be applied. For each structural unit, the GLP determines a number of standards, as follows:

- Existing situation: land use categories, FAR, PCR, PPCR and RCR, existing population
- Proposed land use categories and subcategories / proposed functions / allowed, prohibited, and conditioned activities
- Proposed Spatial Typologies / proposed Interventions in the unit / proposed phasing
- Proposed Development standards: FAR, PCR, PPCR, RCR, max. height (in storeys and meters), min. development plot area, min. distance
- Proposed Planning standards: Projected population, No. of users, Parking area, Green area
- Use of innovative instruments (when applicable): use of Transfer of Development Rights, of Bonus FAR, of Detailed Local Plan, etc.

In regards to spatial typologies, the regulation specifies the following criteria for the categorization of spatial typologies in the territory.

- Unified scheme of street network and public spaces
- Homogenous structural typologies and volumes
- Homogenous building heights
- Same placement in relation to the structural units

Figure 7. Criteria for the categorization of spatial typologies, according to national legislation



Source: "Planning and Land Development in Albania, Technical Manual", 2015 prepared by Co-PLAN and the Ministry of Urban Development, under the USAID, PLGP Project.

The GLP provides with zoning of the existing spatial typologies for the whole municipal territory. Nevertheless, it does not provide pre-determined spatial typology categories, and the link between the existing spatial typology zoning, and the division into proposed structural units, is not fully articulated. Structural units can have one or more proposed spatial typologies, respective to their character.

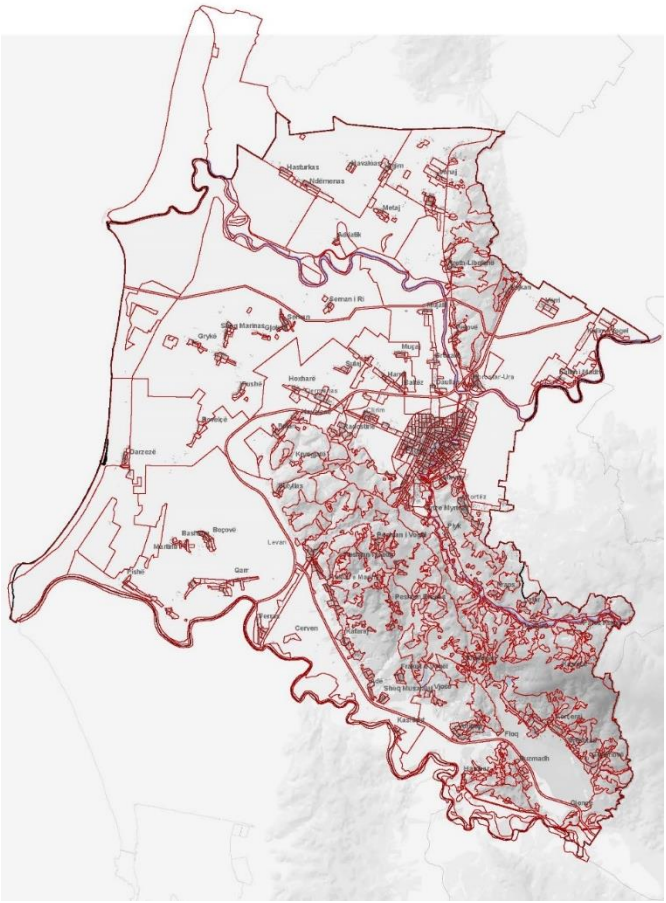
In this framework, the challenge for planning experts stands in the integration of the aforementioned criteria into the structural units in urban areas, where all other "filters" of decision-making take place. This is even more relevant for large territories, where decision should be made for thousands of structural units of different sizes and characters. Can spatial typologies be a starting point for designing enhanced and realistic planning and development indicators? Or is the opposite the case? Indicators determine the spatial typology of the structural unit.

Drafting a comprehensive methodology on how to study spatial typologies can help to draw quantitative or qualitative conclusions, applicable in more generalized contexts. This is the very goal of this research.

Can we find traces of this concepts in the Albanian planning legislation? Having a strong "urbanism oriented" approach towards city development, Albania has traditionally adapted regulations on urban scale, such as norms for public space, norms for commercial areas, intensity conditions, etc. In terms of land development, the concept of division of territories

into urban groups, blocks, complexes, and neighbourhoods, where each was part of the other and contained extra public/private services, was a theoretical way to control the city through form. Nevertheless, these concepts were rarely adapted, especially after the fall of communism: cities became more mixed, unprofitable land-uses were not provided by the financially-week municipalities, and the inner migration processes caused disbalances that were not predicted previously.

Figure 8. Division into structural units, Municipality of Fier



Source: Municipality of Fier, 2015

After 2009, a new law[4] was introduced, which had a more holistic approach to planning, taking into consideration the newly established private property regime, economic and social aspects, larger scale overviews, etc. This was accompanied by a refined model of land development instruments, which encompasses elements of zoning, form/based codes.

The General Local Plan (GLP) is the main local planning instrument, which defines all proposed interventions, development scenarios and investments for the next 15 years. Accordingly, it divides the municipal territory into ***structural units***, which constitute the smallest scale where land development standards and norms can be applied. The structural unit is the equivalent of a zoning area. For each structural unit, the GLP determines a number of standards, as follows:

[4] Law No.107, dated 31.7.2014. On Territorial Planning and Development

- Existing situation: land use categories, FAR PCR, PPCR and RCR, existing population
- Proposed land use categories and subcategories / proposed functions / allowed, prohibited, and conditioned activities
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- Proposed Planning standards: Projected population, No. of users, Parking area, Green area
- Use of innovative instruments (when applicable): use of Transfer of Development Rights, of Bonus FAR, of Detailed Local Plan, etc.

As it is obvious, the GLP contains a unified document of regulations (ordinance) that addresses proposed land use, typology, development standards and planning standards, as well as indications on innovative instruments,

Nevertheless, the GLP does not provide pre-determined spatial typology categories, and the link between the existing spatial typology zoning, and the division into proposed structural units, is not fully articulated. Structural units can have one or more proposed spatial typologies, respective to their character.

In the Albanian context, studies show that it is very difficult to link spatial typologies and urban form with development indicators, such as FAR, PCR, etc. This is mostly because new development rarely occurs in unbuilt areas. The most predominant typology of areas in Albanian cities are the ones with a mixture of tower typologies, with longitudinal buildings and single houses. In these cases, FAR values vary from 2.5 to 4, CPR from 50-80% and density 20-50 buildings per ha. These values indicate considerable gaps, which means that 'unified models' are hardly adaptable in these contexts. (Dhrami, et al., 2016)

The issue of normativity in city planning can be regarded as challenging, nevertheless it is unavoidable to ensure provision of public goods and fair distribution of value captured from land development.

Smart Code is a very easy instrument to help draft land development regulations. Nevertheless, conventional zoning cannot be substituted in the whole territory. Given that Smart Code is supposed to be implemented in existing or potential walkable neighbourhoods, all areas that do not fall under this category, cannot be successfully addressed by Smart Code (i.e. industrial areas, military areas, suburban areas outside the city, etc.)

These models encourage repetitiveness in urban form, and are based on the assumption that whatever density/typology/land use works for a city, will work for another one as well. This is very difficult to replicate in the Albanian context.

The concept of the urban-rural transect addresses in an integrated way the question of 'where the city ends'. Transect studies help define the border between urban-rural, and the differences between urban, suburban, peri-urban areas. Nevertheless, transect concepts don't take into account polycentric tendencies in cities, especially in terms of land value.

Even though the land development system in Albania is based on a wide array of standards,

if they are not co-related to a given typology (spatial and building typology), then the outcome will be oriented from the developers, rather than from the city. Thus, models of typologies of space and building should be introduced more thoroughly in the Albanian legislation, both as mandatory or non-mandatory.

The division into structural units (as used in Albanian legislation) is by far the most successful method of zoning for the Albanian context, which, if used wisely, can be both flexible, as well as easy to implement. Nevertheless, there is significant lack of capacities of local authorities to implement the division of territories into structural units in a 'smart' way. This can cause, at the best, loss of large opportunities for development in certain areas, where the division of structural units, the appointment of unrealistic standards, etc., prevents development instead of encouraging it; and, at the worst, stepping back to the patterns of informal development, or corruption. Therefore, the situation calls for more 'standardized' models of division into manageable zones. They cannot be 'borrowed' by other models, but designed locally according to these enhanced models, and implemented in a timely way, through a series of trials and revisions. This way, the territorial dynamics and the citizen needs can be fully articulated in planning documents, and respectively implemented.

1.7 Can Smart Code be smart enough?

In the beginning of this chapter, a list of the main functions of zoning is described, based on the conventional zoning ordinances. Nevertheless, to be considered form-based codes, zoning regulations need to fulfil additional criteria, agreed upon by practitioners and researchers of the field. These are listed as follows[5]:

1. The form-based code should be enforceable:

An efficient form-based code should be integrated to other planning instruments, such as general local plans, planned unit developments, development strategies, etc., that control development on the same property. The formulation should be such, that it allows constant updating and easy dissemination and use by both, city governors and citizens.

2. The form-based code should promote good urbanism:

In the USA, new urbanism principles are the forefront of good design, since the early 70s. A form-based code should promote good form, pedestrian use of spaces, walkable neighbourhoods, appropriate parking facilities, etc.

3. The form-based code must be simple and easy to use:

It should be understandable by all stakeholders, from land owners, to developers. Users should easily find the object of their interest. Administrative procedures should be very clear and specific. To support flexibility and effectiveness, a clear problem tree analysis

[5] Based on official data from Form-Based Codes Institute at Smart Growth America

should be formulated, defining the main development goal of each area. Also, the length of the document must be comprehensive, yet not overwhelming. The most important element though, is the fact that these manuals are technically clear, and very easy to follow and go through the permit approval process.

4. The form-based code should be written to allow for predictable results without sacrificing variety in the size and shape of urban spaces and the design of buildings:

The code should be clearly describing the desired outcome and the reason for it. Moreover, users should understand how to implement the design.

1.8 Case studies on zoning

Case study 1: Houston, repelling the Z-word

Houston is the fourth-largest city in America, with a population of 2.3 million people spread across more than 600 square miles. Yet, Houston is the only city in USA that hasn't applied any zoning regulation.

Figure 9. A single-family house living among town houses in Houston

Source: AICP

Under the city's development code, no parcel of land is restricted for any particular land use, and in many cases there are no density or height restrictions either. But what most Houstonians in the know understand is that the city is not entirely without zoning-type regulations.

Some operationalized alternatives are:

Deed Restrictions: Developers can create land-use restrictions on private land, thereby preventing retail within a residential neighborhood, for instance. The city helps enforce these rules.

Density: Inside the 610 Loop, higher densities have historically been permitted. Recently, those higher density areas have been extended out to Beltway 8.

Tax Increment Reinvestment Zones: This tool allows certain areas within distinct boundaries to retain property tax revenue for uses in that district.

Airports: Houston adopted airport zoning regulations for the communities around its three airports.

Buffering Ordinance: New rules restrict tall buildings to "major activity centers" by limiting their height, setback requirements, and construction styles.

Historic Preservation: With enough votes, residents can create a historic district, ensuring certain building restrictions for their neighborhood.

Lot Size: The city restricts lot sizes, but a vote by neighborhood residents followed by council approval can reduce lot sizes.

(Urban Edge, Kinder Institute for Urban Research)

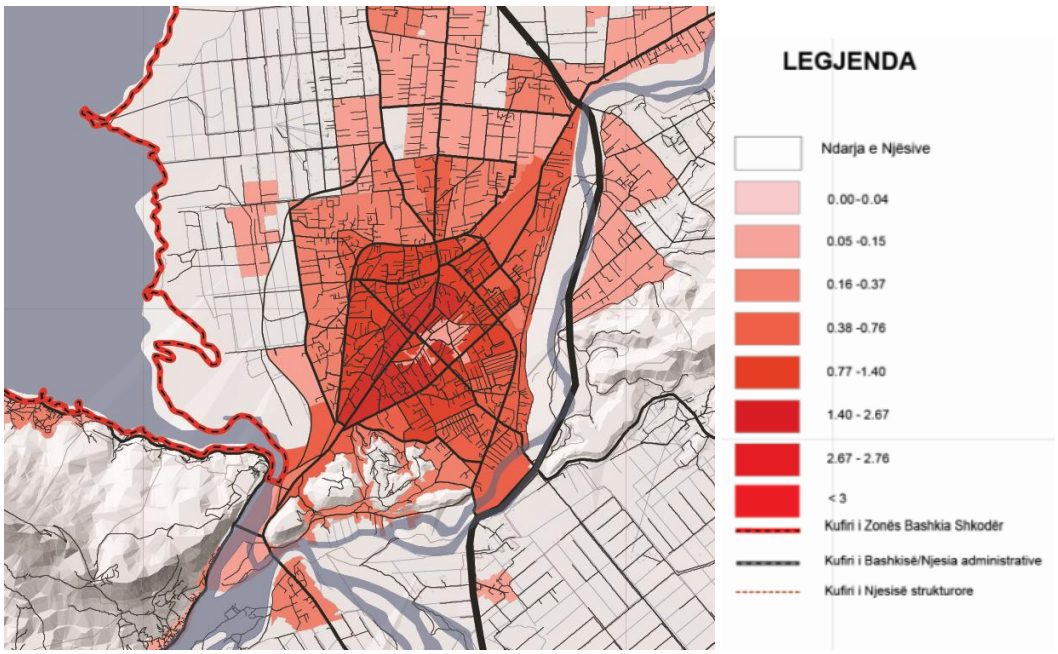
Case study 2: Division into structural units – Albanian case

Can we find traces of this concepts in the Albanian planning legislation? Having a strong "urbanism oriented" approach towards city development, Albania has traditionally adapted regulations on urban scale, such as norms for public space, norms for commercial areas, intensity conditions, etc. In terms of land development, the concept of division of territories into urban groups, blocks, complexes, and neighbourhoods, where each was part of the other and contained extra public/private services, was a theoretical way to control the city through form. Nevertheless, these concepts were rarely adapted, especially after the fall of communism: cities became more mixed, unprofitable land-uses were not provided by the financially-week municipalities, and the inner migration processes caused disbalances that were not predicted previously. (Dhrami, 2018)

After 2009, a new law[6] was introduced, which had a more holistic approach to planning, taking into consideration the newly established private property regime, economic and social aspects, larger scale overviews, etc. This was accompanied by a refined model of land development instruments, which encompasses elements of zoning, form/based codes.

Figure 10. Example of division of territories in structural units Fragment from General Local Plan of Municipality of Shkodra, map of distribution of proposed FAR per structural unit

[6] Law No.107, dated 31.7.2014. On Territorial Planning and Development



Source: Municipality of Shkodra, assisted by Polis University, Metropolis, Arizona State University, 2016

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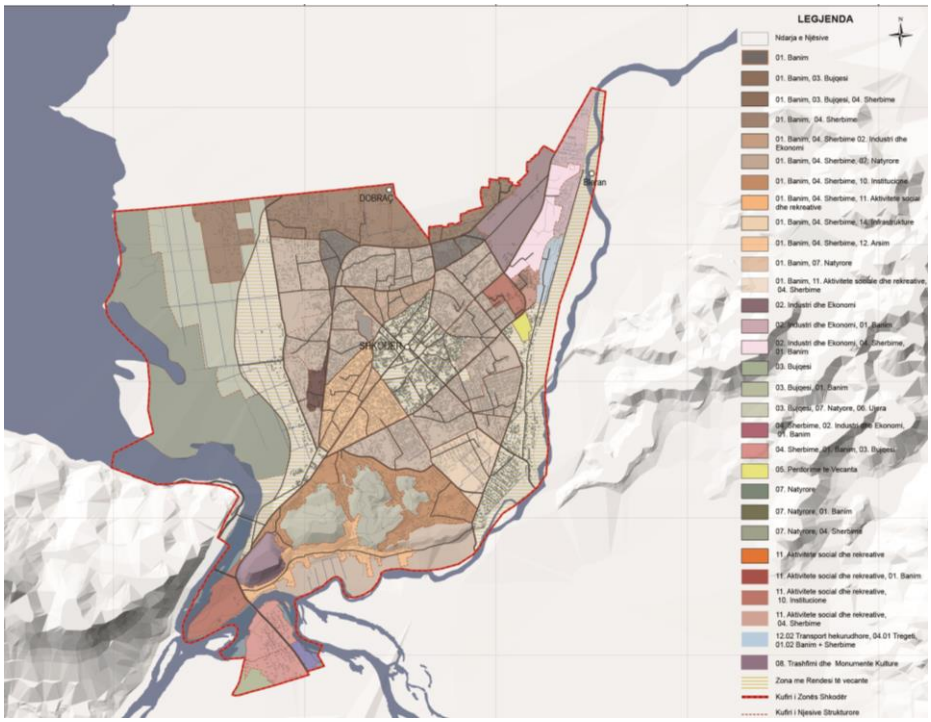
Use of innovative instruments (when applicable): use of Transfer of Development Rights, of Bonus FAR, of Detailed Local Plan, etc.

As it is obvious, the GLP contains a unified document of regulations (ordinance) that addresses proposed land use, typology, development standards and planning standards, as well as indications on innovative instruments,

Nevertheless, the GLP does not provide pre-determined spatial typology categories, and the link between the existing spatial typology zoning, and the division into proposed structural units, is not fully articulated. Structural units can have one or more proposed spatial typologies, respective to their character.

Figure 11. Fragment from General Local Plan of Municipality of Shkodra, map of 3 main proposed subcategories of land use per structural unit



Source: Municipality of Shkodra, assisted by Polis University, Metropolis, Arizona State University, 2016

In the Albanian context, studies show that it is very difficult to link spatial typologies and urban form with development indicators, such as FAR, PCR, etc. This is mostly because new development rarely occurs in unbuilt areas. The most predominant typology of areas in Albanian cities are the ones with a mixture of tower typologies, with longitudinal buildings and single houses. In these cases, FAR values vary from 2.5 to 4, CPR from 50-80% and density 20-50 buildings per ha. 7 These values indicate considerable gaps, which means that 'unified models' are hardly adaptable in these contexts.

Replicating the Urban-Rural Transect to Shkodra city

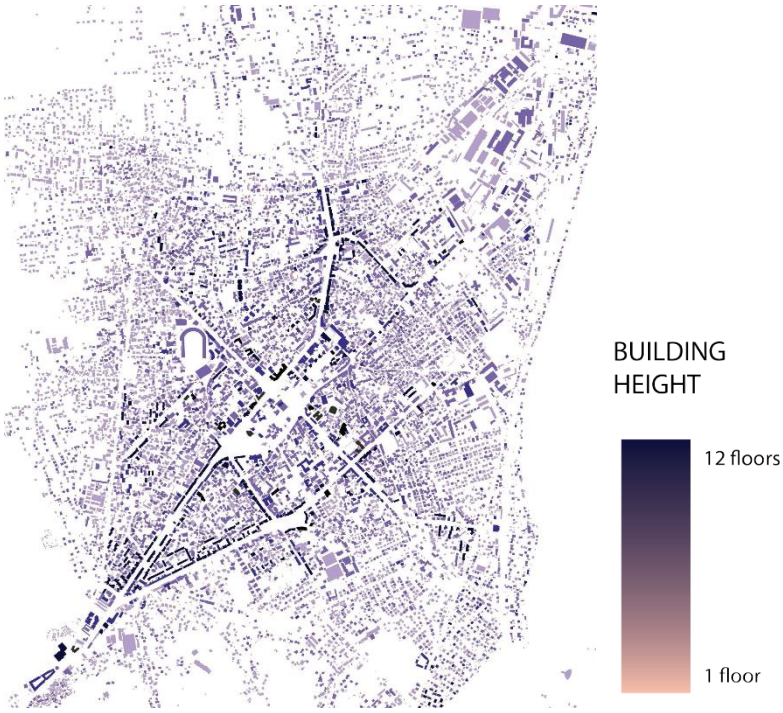
The Albanian legislation doesn't propose any land management instrument resembling the urban-rural transect. Nevertheless, the GLP of Shkodra provides with some principles similar to the form based codes: the division of the territory into structural units is done in a way that ensures more flexibility in setting standards. The proposed land use for each unit is mostly mixed, with indications of main categories. There is obvious tendency to limit the areas of informal expansion and to protect agricultural land. Anyway, the adaptation of the transect concept in the city of Shkodra would be very difficult, as illustrated in the following

[7] For reference, see 'Territorial Typologies in Albania', Policy Document, Planning and Local Governance Project, USAID, with the contribution of the author, Toto, R., et al.

part.

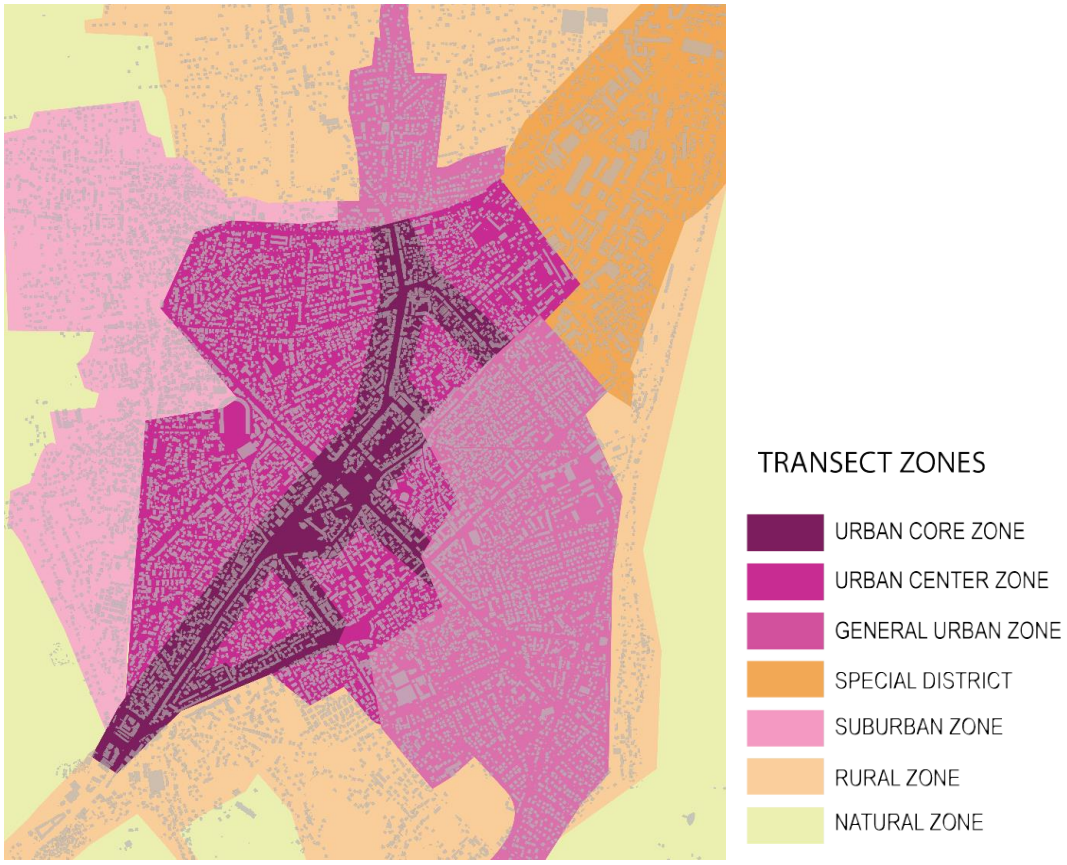
The image below shows the layout of Shkodra city, as framed by the buildings. The only information visible is the height. Given only this attribute, and disregarding the actual development indicators in the area, or the existing division into structural units, this study tries to divide the territory into T-zones, as designated by Smart Code (in 7 main categories).

Figure 12. Map of building height in the city of Shkodra



Source: Data from Municipality, 2016, prepared by author

Figure 13. Simulated division of the city of Shkodra into T-sections, as indicated by Smart Code



Source: own contribution

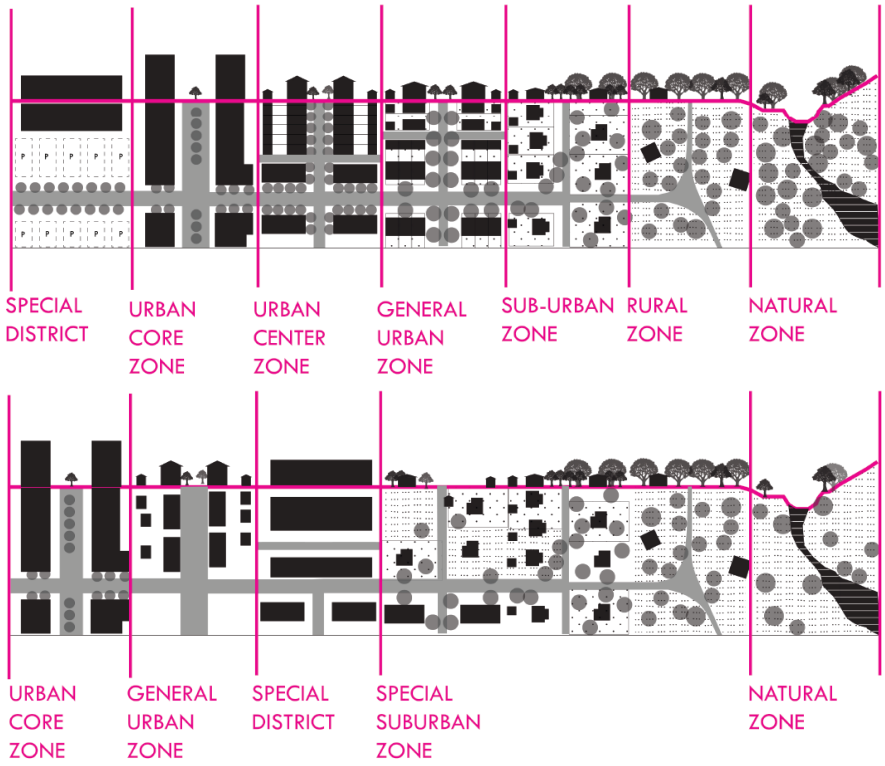
It is clear that, given the existing typology of the city, and the development dynamics (both in the center and in the suburbs), it is very difficult to have a gradual transition from one zone to the other. This is true with many Albanian cities, where development pressure has led to high rise development in the core, and sprawl in peripheral natural and/or agricultural land. In terms of using the Smart Code as a managing instrument in this context, the effort would be pointless.

The issue of property relations is also very delicate in this perspective: if you designate a 'sharp' border between two consecutive T-zones, and appoint high FAR to one, and lower FAR to the other, in order to create a 'fair' urban environment in terms of density, then properties in one of the T-zone will profit more. This situation is emphasized in the scenario of Shkodra (and any other Albanian city, for that matter), where there is obvious discontinuation between T-zones. Then the different development parameters would create major disparities, and in turn, speculations in real estate. In other words, this would replicate the problems of the 'containment paradigm' (a.k.a. the use of yellow line as border of urbanised area), but in larger scale – not only for the division of urban and suburban, but for every unit inside the city.

Following is an interpretation of the characteristics of each of the Transit Zones that can be

replicated in the context of Shkodra:

Figure 14. Comparative diagrams between the ideal transect as proposed by Smart Code, and the transect zones as can be found in Shkodra city



Source: Duany Plater-Zyberk & Company, 2003; and author's contribution

The transect in Shkodra can be divided into 4 main categories (out of 6 provided by the Smart Code model) and 1 category of special use. This means that all zones ranging from T2 to T4, which contain mainly single houses, row-houses, low density, medium density, open spaces, etc., are merged into one entropic urban-agricultural-natural composition.

The urban center differs in typology from the 'typical center', in terms of building typologies. Medium density row houses are substituted by longitudinal buildings, mixed with single family buildings, and towers.

One other identifying element, is that the special district, which is supposed to be secluded from the residential areas, is situated very close to the center of the city in the case of Shkodra.

As far as the T1: natural zone goes, in Shkodra's case this mostly encompasses areas prone to flooding, and without any rendimental agricultural potential.

This overview shows what is also obvious from site observations: the shift from natural to urban core is not fluent.

Thus, it is very difficult to fully identify the transect areas in the urban center of Shkodra, based solely on the principles of typological and formal characteristics specified in the Smart Code. If we take into consideration the fact Transect Zones in the Code are given specific development indicators because of their inherent character, and are sub-categorized in a very detailed way in various Sub-T-Zones, then the discussion for Shkodra becomes very complex.

PILLAR 2. Land development in norms and standards

This pillar addresses the approach to normativity, both in principles of benchmarking, as well as in the actual implementation of performance indicators for planning and land development.

The discussion first analyses the levels of normativity used in different planning systems in Europe. This is done in a comparative way, to develop an overarching set of standards and indicators in land development

A great focus is put on the appointment of land development indicators, the scope of indicators, their expected targets and the way to implement and monitor them

Moreover, the use of land development indicators is explored in the context of Albania, emphasizing the main changes and their outcomes. Specific focus is put into the use of indicators of distance/setback, FAR, Road coverage, as well as planning indicators, like green areas/inh; school ratios, etc. The focus was to understand if there is a gap between the appointment of the indicator and the realization of the desired outcome in the specific context.

A dedicated subchapter is focused on the so-called 'sustainability indicators', which is an array of targets to be addressed at zone and city level, in order to achieve liveability goals. These indicators are subtly tackled in 'performance zoning', and are mostly related to density and environmental factors.

Finally, more enhanced indicators of development are analysed in terms of implementation, measurement, etc.: spaciousness; network parameters; etc. All of the above are studied in inter-relation with each-other and how they affect zoning at city scale, and distribution of activities at zone scale.

The pillar concludes with 2 case studies: one that explores the correlation of indicators with each other and the spatial layout produced, and an evaluation of the use of development and planning indicators in Albania.

2.1 Normativity in different planning systems

According to the Plurel Report on National spatial planning policies and governance typology (2010), most theorists agree that there are 5 distinctive legal families in Europe, the Anglosaxon, based on the common law, the Napoleonic, the Germanic, the Scandinavian and the Eastern European families. Their approach to planning is different according to their historical background, but there are tendencies towards comprehensive planning, mixing the integrated approach (Scandinavian family and Germany), with land use planning (Anglosaxon Family), regional economical approach (France) and the urbanist tradition (Spain, Italy and Greece). (ESPON,2007)

The case of Albania is similar, struggling from a deeply urbanist approach, with sovietic influence, to a comprehensive territorial approach, which is still very week and unconsolidated. The Albanian culture of planning derives also from the theory of the socialist city by Engels, so it is of interest to study the Russian city planning today as well. Being part

of the Balkans, Albania shares common cultural values also with countries of the Eastern European Family, and other non-European neighbouring countries. Therefore, the case of Croatia and Macedonia are considered as well. The Italian and English legislation are considered more thoroughly, due to the specificity of their systems.

So, the following brief study will contain the cases of:

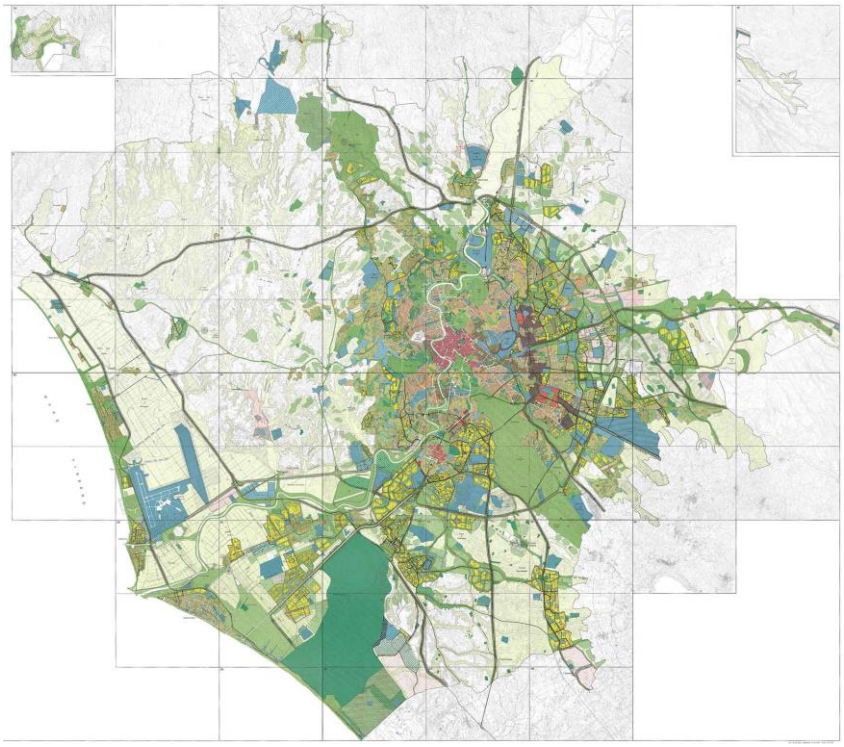
- From the Urbanist tradition: Italy (Napoleonic Family)
- From the Land Use approach: UK and Ireland (Anglosaxon Family)
- From the Comprehensive Integrated Approach: Finland (Scandinavian Family) , Germany (Germanic Family)
- From the Regional Economic approach: France (Napoleonic Family)
- From Balkans: Croatia (Eastern European Family), Macedonia (not a EU-member)
- Others: USA , Brazil and Russia

2.1.1 Italy

In Italy the competence to draft legislation on urban planning and regulations belongs to the 20 Regions. This legislation comprises 3 elements: Planning issues, Building Control Issues, and Environmental Matters. The regional administrative level drafts guidelines on urban development, by designing a Structural Plan, which than is adapted by the provinces, and the communes. The latter provides with a Building Regulation and a sustainable building code, thus the Regulatory Plan (PCR Italy Country Report, 2011).

Nevertheless, there are mandatory laws that are drafted in national scale, as f.e the Law on Building Quality. This law states principles and standards on energy efficiency, the satisfaction of physical and psychological needs, as well as ecological impact requirements (PCR Italy Country Report, 2011). Thus, environmental performance is crucial in the urban development legislation of Italy.

Figure 15. Land Use Plan in Italy



In the Italian legislation there is a distinctive difference between the urbanistic standards and the building standards:

-urbanistic standards: minimal amount of public space, that should be accounted for in the general and implemented plans.

-building standards: density, height and distance

The main objective of the urbanistic and territorial planning consists on the definition of land use, in relation to three main characteristics:

- land use destination (type of activity in the area)

- intensity of use (quantity of the activity)

- form of use (conformity of space to the activity)

Regarding “urbanistic standards”, which in this thesis are referred to as planning standards, the decret 1444/1968 determines the minimum amount of facilities in local and territorial level. Locally, every inhabitant has the right to have 18m2 public space. The following table shows other parameters applied locally, according to the area of the city. F.e. in territorial scale, there should be 15m2 of territorial parks, 1,5 m2 of health care facilities and 1,2 m2 of university facilities per person. The division of the city into different areas, where different planning standards are applied, is specific for the italian case. The way the areas are divided is according to the urban form, the type of future expected intervention in them, and the land use (as shown below). This is helpful in understanding how different parameters are applied in different typologies, in the same city. Nevertheless, the rigid way of distribution of these areas highlights the fact that Italy is still under a strict urbanism oriented way of planning.

Figure 16. Planning standards in Italy according to typological zone

		SCOLASTICI	COMUNITARI	PARCHEGGI	VERDE	tot
		mq/ab	mq/ab	mq/ab	mq/ab	mq/ab
ZONA A	CENTRO STORICO	C/2	C/2	C/2	C/2	C/2
ZONA B	AMPLIAMENTO	C/2	C/2	C/2	C/2	C/2
ZONA C	ESPANSIONE	4,5	2	2,5	9	18
ZONA D	INDUSTRIALE		*	*	*	10% Sup tot
ZONA E	AGRICOLA	*	*			6
ZONA F	SERVIZI SUPERIORI	1,5 scuola superiore	1 ospedali	15 parchi		17,5

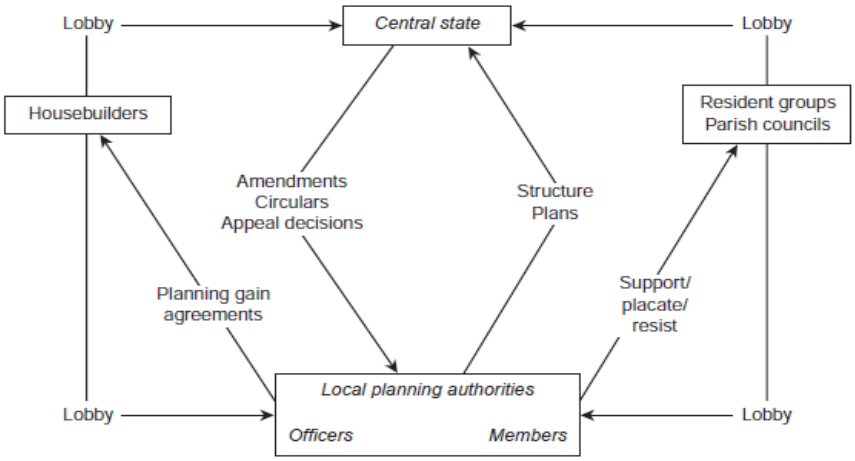
Source: PLUREL, 2011

As for development standards, or as called "building standards", they vary in type and have a specific terminology. They are designated in the level of the Regulatory Plan and serve as regulation instruments for the small scale interventions.

2.1.2 United Kingdom

The planning system in UK is represented by the Town and Country Planning Act (1947), through which municipalities control land use and new developments, because of the distinguished role of land owners in the UK, where they are entitled to partecipate in the planning process. So, it is carried on by a continuous public negotiation between stakeholders, and is a responsibility of the local planning authorities (LPA). New developments require agreement from various agencies as regards to Building Regulations. The Local Development Framework is the document that comprises the development strategies of the cities, followed by the Unitary Development Plan. It is up to the Neighbour Councils to develop detailed standards, Supplementary Planning Documents, or Supplementary Planning Guidances, on more detailed issues of city development. Usually the UDP doesn't give precise standards of development, because of their negotiative nature. On the other hand, planning standards are often part of the Local Plans (Gilg, 2005).

Figure 17. Scheme of the agents interacting in the planning process in UK



Source: Short, 1987

Essentially, development and planning standards haven't changed much in UK. Every new development application must be submitted for revision and decisionmaking to the planning authorities. The four main actors: the central state, the local authorities, the house builders and pressure groups begin to negotiate on the request for the new development.

Usually this system favors large scale projects, which have high profitability and big negotiation processes. When the decision is not accepted, it is appealed, making the process too long and bureaucratic. Nowadays questions are being raised about the efficiency of this decision making methodology, and whether it is appropriate to maintain the same (Gilg, 2005).

The planning culture in UK suggests that there are no specific development standards, but each town drafts a supplementary guideline of principles that need to be addressed in all new developments. Some issues that can be addressed are as follows:

- neighbourliness: sunlight and daylight, sense of enclosure
- privacy and space between buildings: distances, window position
- infilling of gaps: not acceptable for conservation and historic areas
- public recreative space
- playgrounds
- private and semi-private gardens
- porches
- internal structure of buildings, flats
- parking, landscaping and recycling
- sustainability: micro-renewables, living roofs
- flood risk / sustainable drainage
- energy saving

This emphasizes how the urban legislation in UK, although not obligatory, still provides with numerous principles and qualitative standards for sustainability in neighborhood level, focused mostly on the environmental performance of the areas.

2.1.3 Germany

The spatial planning system in Germany is defined by the federal structure, with the three levels of federal, state, and local government, where the planning levels are legally differentiated (Pahl-Weber, Enkel, 2008). Namely, the federal level makes decisions on the overarching principles of spatial planning through guidelines, the state level makes these guidelines more concrete, and the local level provides with the final specifications.

The main legislation that frames the attitude towards normativity is the Federal Building Code, specifying mostly safety parameters for buildings, the Land Utilization Ordinance and Plan Notation Ordinance. The local planning instruments are in 2 forms: the preparatory land use plan, and the binding land use plan. The latter, optionally, can include elements such as:

- minimum lot sizes and alignment
- maximum dwelling number in residential buildings;
- areas of public use (pedestrian, parking etc.);
- reserved sites for special housing purposes and other special uses;
- gardening, landscaping measures and possible recovery action plan for ecosystem loss

2.1.4 France

While plans in the UK are not legally binding instruments, in France, the 'Plan Local d'Urbanisme' (local land use plan) and the attached zoning ordinances are mandatory. Nevertheless, the situation in France is not that restricted as in urbanism oriented countries: The local authorities engage in negotiations with developers for different matters. Quantitative issues, such as floor numbers, site coverage, as well as other liveability standards, such as minimum dwelling size, green area provision, are often subject of these negotiations.

So, the approach to normativity is not so rigid. Nevertheless, the number of planning and development standards is high, and are used both as analytical indicators and as norms. For example some indicators (Plan D'Urbanisme de Marseilles) are:

-Prohibited Land Uses

-Occupations and land uses subject to special conditions

-Conditions for access to lanes open to public

-Minimum size of building lots

-Location of structures from the roads and public rights of way

-Location of structures from the divisive boundaries

-Implementation of the construction in relation to each other on the same property

-Footprint of buildings

-Maximum height of buildings

-External appearance of the buildings and layout of their surroundings

-Obligation of making parking clearances

-Load factor, etc.

2.1.5 USA

As already mentioned here, city planning in USA differs strongly from the European countries, due to the spatial configuration of the territory, and the availability of land in the US. The main instrument in urban planning is the Zoning Regulation, which is drafted for each city. Furthermore, each city has its own design guideline, to ensure the appropriate aesthetic and environmental values in the neighbourhoods. Hence, the planning standards are often substituted by planning principles. The development standards used in the USA are simple and specific:

- Lot size
- Floor Area Ratio
- Plot Coverage ratio
- Yard area
- Height
- Alignment / positioning

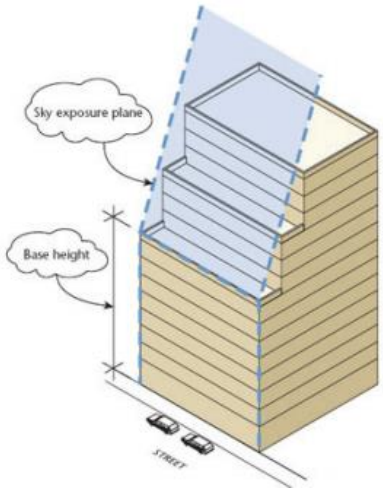
Some concepts, like Development Rights, bonus FAR, etc, which are adopted also in the new Albanian legislation.

The environmental aspects are taken into consideration, when introducing the Sky exposure plane, or sun access angle plan, to ensure the standard for insolation in a building. These concepts have shaped the most prominent high buildings in the skyline of some important cities.

Another contribution of the USA planning practice is the incentive zoning, which uses the given standards to ensure provision of public spaces and amenities. This is also applied in the Albanian legislation, nevertheless, it is not yet implemented.

In conclusion, we can understand from American cities that their planning is based on simple parameters, principles of qualitative and sustainable design, and innovative instruments of land management and public financing. This is an example that needs to be considered, because of its many successful applications.

Figure 18. Concept of Sky exposure plan



Source: Dinic, 2010

2.2 Summary of planning and development standards

In this context, planning and development standards are addressed as follows:

Planning standards are a desired outcome, or a minimum standard, for utility provisions, infrastructure facilities, and space provision in a city. Utilities comprise all services, while infrastructure implies the street network, as well as green areas; space provision is related to the amount of open space per person, and similar indicators. In other words, planning standards are about what a city should offer to the inhabitant.

Development standards are the desired outcome, or a maximum standard for developing an area, by building residencies or facilities. Basically, they are the restrictions that the inhabitants come across, when they want to impact the city. Some such standards are the coefficient of land occupation, the building intensity, the coefficient of public space, the building height, etc.

Following is a list of some of the main indicators found in the revised planning systems.

Table 3. Summary of development indicators and their main advantages/ disadvantages

Abbr.	Indicator	Unit	Description	Advantage	Disadvantage
Indicators of the physical system					
CS	covered surface	m2	total building footprint	important indicator to determine how much ground is covered	
H	building height	m	existing building height		too specific as indicator at area scale
H max	max. Building height	m	maximal allowed Building height	used very often to determine skyline and to integrate different indicators	accounts for an average number of floors, and in specific cases can be obstructive to permit
NoF	no. of overground floors	floors	no. of overground floors	easy to use and important to calculate gross used surface	
h	height of floor	m	height of floor		too specific as indicator at area scale

MhF	mean height of floor	m	mean height of floor	if the information is detailed, can replace NoF in combined indicators	
V	Built volume		Built volume	accounts for built space in a more realistic way, especially for non-uniform typologies: industrial, commercial, etc	difficult to measure in complex typologies
US	used surface	m2	net surface of the building and service spaces	useful for specific typological analysis	cannot be mainstreamed in all regulations
GUS	gross used surface	m2	sum of the surface of all the floors, including outer walls	very important indicator of built space, used commonly and easy to calculate	does not represent reality 100%
NoR	no. of rooms, spaces	no	number of rooms or spaces in a building	easy to determine based on building typologies, can help in understanding livability conditions	rigid if applied as development indicator
MV	mean volume of space/inhabitant	m3/inh	mean inhabitable volume per capita	measures livability in space	rigid, inefficient to measure and use as indicator
Indicators of the territorial system					
TS	territorial surface	m2	general surface of an area	very important indicator in an area	
FA	functional area	m2	area dedicated to building, after taking out the surface for public streets and buffering areas (also known as buildable plot)		can be misused/misinterpreted as territorial surface
OS	Open Space	m2	functional area not covered by any surface	very important indicator in terms of	
MinL	min. lot of intervention	m2	the minimum surface where there can be a direct building intervention	very important to link development to a proposed typology	difficult to determine if there is no data on property
Indicators of the social and antropological system					
Inh	inhabitants	inh	no. of persons settled in a territory		
RP	resident population	inh	the registered population of a city	if available is the most accurate	the data is not always available at area/ building level
PP	present population	inh	the population present during the census		usually is not available at zone level
TP	theoretical population	inh	the product of gross useful surface to a fixed ratio, f.e 100m3/inh	determines easily livability criteria for residential use.	the measurement of volume is not effective
FP	future population		the population proposed by the local plan	effective in implementing specific investments for an area	if not compatible with carrying capacity, can be misused
NU	number of users		no. of persons using the structures of the area	important in determining services that are needed by users	relatively difficult to calculate
Em	number of employed persons		persons working in the area	important for determining services, i.e parking in specific areas	difficult to determine
Combined indicators					
TD	territorial density: TD = V/TS	m3/m2	volume that is possible to construct in each m2 of the area	flexible to include all categories of land use, even those that do not have standard floor height	difficult to calculate for all areas
LD	land density: LD= V/FA	m3/m3	volume that is possible to construct in each m2 of buildable land	flexible to include all categories of land use, even those that do not have standard floor height	difficult to calculate for all areas

TCR	territorial coverage ratio CS/TS	m2/m2	ratio of the total covered surface, to the territorial surface	Commonly used Very useful indicator at area level	
LCR **GSI**	land coverage ratio ground space index GSI = CS/FS	m2/m2	ratio of the total covered surface, to the surface of the lots that are influenced by the intervention	Commonly used in all planning systems Easily implemented and monitored	can be misinterpreted as TCR
TUI	territorial use indicator TUI=GUS/TS	m2/m2	max. useful surface constructible for every m2 of territory	Very easy to implement and monitor	
FSI (FAR) **LUI**	floor to area ratio floor space index FSI = GUS/FS land use indicator	m2/m2	max. useful surface for every m2 of buildable surface	Commonly used in all planning systems Easily implemented and monitored	Should be combined with other parameters to give expected outcomes
CI	crowding indicator CI=Inh/GUS	inh/m2	Number of inhabitants per unit of space	commonly used/ makes areas comparable	
VIC	Volumetric indicator per capita	inh/m3	Mean built volume for person		too specific for every land use
HD	Housing density RP/US	inh/m2	ratio between the resident population and the built surface	commonly used/ makes areas comparable	
TRD	Territorial residential density RP/TS	inh/m2	ratio between the resident population and the territorial surface	determines density for all users in the area	too specific to distinguish with LRD
LRD	Land use residential density RP/FS	inh/m2	ratio between the resident population and the functional surface	determines density only for functional area	too specific to distinguish with TRD
OSR	Open Space Ratio OS/FSI	m2/m2	ratio of unbuilt space to total built area	useful to take into consideration / connected to FSI, GSI, H	
NL	Network length	m	length of internal Network, plus half of an external Network , which contributes equally to two demarcating samples	easy to calculate if the digitalized road network is in line form	difficult to determine required target
DD	Dwelling density	dwelling / ha	Number of dwellings per territorial surface		not effectively linked to other indicators
ND	Network density ND = NL/TS	m/m2	Network length per territorial surface	easily calculated, possible to identify perceived density	
T	Tare		Difference of base land area between two levels of scale, or the difference between net and gross.	important indicator to consider when determining FSI, GSI	too complex to implement
PPCR	Public Plot Coverage Ratio	%	Public coefficient: ratio of public plot area on total surface	easy to calculate	
RCR	Road Coverage Ratio	%	Infrastructure coefficient: ratio of road area to total surface	easy to calculate	difficult to correlate to effectiveness

Source: own interpretation

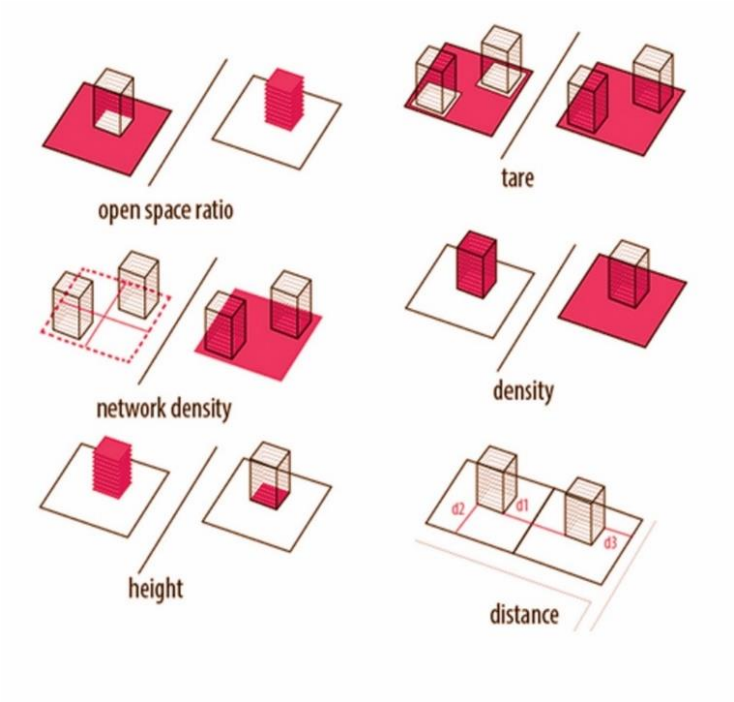
In summary, there are a variety of development indicators that can be considered as both efficient and sustainable enough, to provide for the best performance / liveability indices at area level.

They are as follows:

1. FAR (FSI)
2. GSI

3. H
4. OSR
5. Density
6. PPCR
7. RCR
8. Network density
9. Setback distances
10. Tare

Figure 19 Representation of main development standards



Source: own contribution

As indicated above, aside from development indicators, planning standards are crucial to ensure liveability at area and city level. Most indicators use population as basis for

Table 4. Representation of main planning standards and ways of measuring them

Topic	**Indicator**	**Measurement / Unit**	**Targets**
Green Space	area of public green per capita	Sqm per inhabitat	4m2/p; 9m2/p ; 26 m2/p
		Ha per 1000 inhabitants	4 - 5 Ha/1000 p
Public space	area of public space per capita	Sqm per inhabitant	2m2/p
	public space to total area ratio	%	depending on typology, +10%

Parking space	Parking area per capita	Sqm per inhabitant	2 m2/p; 2,5m2/p; 6m2/p
	Parking lot per capita	1 per x no. of household	1 lot per household
Commercial facilities	Built area per capita	Sqm per inhabitant	5m2/p; 3m2/p
Elementary school	Minimum plot area	Ha	0,8 ha
	Built area per capita	Sqm per inhabitant	4,5m2/p
	Distance	1 every x meters	1 per 500 meter
	No. of students	1 per x no. of students	1 per 20-32 pupils
Kindergarten	Minimum plot area	Ha	0,2 ha
	Built area per capita	Sqm per inhabitant	4m2/p
	Distance	1 every x meters	250-500 m
	No. of students	1 per x no. of students	20-32 p
Sport facilities	area per capita	Sqm per inhabitant	3,5 m2/p; 1,6 m2/p
Social service facilities	Built area per capita	Sqm per inhabitant	2m2/p
	No. per area	1 per x area	1 per residential block
Residential space	Built area per capita	Sqm per inhabitant	min. 18m2/p up to 35m2/
Healthcare facilities	Minimum plot area	Ha	0.07 - I Ha
	Inhabitants	1 per x no. of inhabitants	1 per 1500 p; 1 per 9000 p

Source: own contribution

2.3 The Planning system in Albania

Below is a brief explanation of the main characteristics of urban planning and development and planning standards in Albania from the 50's onwards.

Land use planning systems in Europe, despite the many different practices, have common roots. Most European countries, under the pressure of high industrial and urban development, have drafted the first planning legislation in the early twentieth century. These legislation were initially related to housing and health reforms, and were related to the physical improvement of cities. Of course, then the purpose of planning has widened, not only as a result of political changes, but also the direct effects of war, economic impacts, and so on. In the years 1960-1970, planning procedures have integrated more opportunities for civic involvement, collaboration with the private sector, and concern for environmental protection.

Despite these general trends, spatial development and planning in different countries, there are various characteristics, and are conditioned by several factors. This is what are called Spatial Planning Traditions (CE, 1999). In Albania in the last decades, two of these traditions are distinct:

Urbanist Tradition

The Urbanism Tradition has a very architectonic approach, and addresses urban design issues, urban landscape and building control. This has been a very pronounced feature of the Mediterranean countries, where regulations were settled through zoning and strict codes. There are a large number of bylaws and rules, but the systems are not very consolidated, and have not received much support for policies or the public at large. Therefore, these approaches have been less successful in controlling land use and development. Like other traditions, Urbanism also distinguishes government tendencies to push control over planning and expand spatial planning issues.(ESPON, 2011)

Comprehensive, integrated approach

Integrated approach is a concept that basically means "managerial framework". According to this tradition, planning is carried out through a formal hierarchy of plans, from national to local level, by coordinating public responsibilities with other sectors, but mainly focuses on spatial / territorial development. The Netherlands is a typical case of this approach. The tradition of inclusive planning is based on mature systems, relying on responsive and sophisticated institutions, and plenty of political engagement in the planning process. Public sector investments are quite frequent by implementing the planning framework. There are 2 subcategories in this approach:

The Nordic countries, which follow this tradition, have created a great deal of confidence in public sector investment, and rational planning. Local authorities have played an important role, regardless of the division of responsibilities with the central government.

Planning systems in Europe are constantly changing towards more comprehensive planning models due to the Europeanization process, which emphasizes the role of ESDP (European Spatial Development Perspective) and other European reference frameworks. Following these tendencies, many countries are changing their traditional style of planning, shifting from urban-oriented culture or regional economic tradition to comprehensive and integrated approaches. This change, in some cases, addressed the need for more flexible practices in land management, while in other cases it emphasized the importance of more normative instruments in planning at the local or regional level.

2.4 Normativity in planning and land development in Albania

The need for planning and development standards in a city is as controversial as the meaning of the city itself. Do they do rigid and inflexible planning practices? According to Kevin Lynch, norms of urban design norms can help us "know a good city when we see it", creating the best urban environment. That is why, throughout the history of the city's development, normative planning has been present, under implementation and, in some cases, even in theory. Urban indicators are one of the most common and widely used tools in worldwide

planning practice. Thus, they can help to understand the gap between theory and practice in urban development. It is important to underline that there has been a considerable paradigmatic change that has occurred in the planning process from the 60's and 70's when the approach was technical and rational until the mid-1970s where planning was seen as a political discussion and ended in the 90s, where this approach was taken to the extreme All these aspects point to the connection between forms and codes in spatial planning and confirm the fact that, although somewhat overwhelming in the theoretical discussion of the last decade, normativity is still a very relevant subject for the European environment.

For the Albanian context it is even more important. Having a strong "urbanistic" approach to the development of the city, Albanian legislation has regularly provided rules and regulations on urban scale, such as public space rates, trade zone rates, intensity conditions, etc. This has been the land management structure since the collapse of the communist regime in 1991, until 2009 (and later in 2014) when a new planning law was drafted, namely the Law on Territorial Planning and Development. This law had a more holistic approach to planning, taking into account the newly established private property regime, economic and social aspects, larger scale summaries, etc., than a strict physical design. Thus, as the legislation system was changed to examine a number of issues evolving into a dynamic spatial development process, it needed to change the old land planning regulations and standards before the 90s and development rules.

Despite the entirety of the urban planning plans that were designed for Tirana during the first period (1950-1993), it is not the focus of this study. This is because in the period of Centralized Planning, decisions on the form of the city were not related to the needs of the market, the demand for housing or the trend of business development.

The Urban Approach emerged in the early 1990s when the new Law was drafted, namely Law 7693 "On Urban Planning" in 1993, which was followed in 1998 by a more detailed Law on City Planning: Law 8405 " On Urban Planning ". The law focused solely on the state of the buildings on the ground, as this was considered a major issue in the development of the city. The law was followed very soon by the Urban Planning Regulation, which would serve as a framework for all development. Among the planning instruments used was the General Regulatory Plan, Partial Settlement Plan, Yellow Line, Suburban Area and Master Plan. These instruments were solid but easy to implement and the hierarchical division between the powers was clear and easy. The only problem with this Law was that he did not consider many of the democratic processes that were taking place in Albania. Two of these were: informal developments that spread in the suburbs of the major western urban areas and the privatization of property by the public in private ownership (Political Guide and Policy Maker 2, 2012). This led to the depreciation of the yellow line concept, due to the informal spread of buildings and chose a new approach that would take into account the needs and role of private landowners.

Concerning planning norms, specific standards for different types of cities were implemented. The cities were grouped according to their population, from Group 1, with less than 1,000 inhabitants, to Group VI with more than 200,000 inhabitants. Each of the groups has different elements and zoning regulations should be taken into account during the regulatory plan. (DCM 722, On the Approval of the Urban Planning Regulation)

Eventually, access to planning by urban approach was completely standardized and technocratic. Of course there was a clear standard approval as a means of controlling development and achieving a high quality of space. However, it is not difficult to know that this approach was outdated. In a period where the city is dynamic and has mixed use areas, you can not base your vision of development into a rigid concept of modular units. Time proved that these standards, although they had to be applied easily, were not only ignored in most cases, but even when they were implemented, they did not meet the reality of the city.

Finally, the Comprehensive Planning Approach, originally legitimated by Law 10191 "On Territorial Planning" (2009), was an attempt to implement a postmodernist viewpoint towards planning in Albanian culture. It was based on Comprehensive European Planning, combined with several urban approaches.

The planning of current instruments is based on: Policies, Plans and Regulations. They are classified into 2 categories: General and Sectoral, and at several levels: national, regional, local. The instrument dealing with issues at a smaller scale is the Local Country Plan, which is designed for the areas in which each city is divided, according to its Local Plan.

2.4.1 Planning standards in Albania as compared to other countries

The approach to urban planning and regulations can be framed into three different periods:

1. The Central Planning Era (1950-1993)
2. The Urbanist Approach (1993-1998; 1998-2009)
3. The Comprehensive Planning Approach (2009-2013; 2013 -)

The Central Planning Era refers to the communist regime, when the planning process, as well as all other fields of governance, were under the influence of the soviet system, both in architecture and urban design. The main planning instrument at the time was the Regulatory Plan, which was rigid and standardized in its application in different cities. The planning and development standards were precise and the main attitude towards the city was functionalist and quasi-modernist, with a strict division into living neighbourhoods, working areas, central area, etc.

Faja and Alimehmeti (1983) have published the most comprehensive professional books about urban planning of the time (Urbanistics 1 and Urbanistics 2), where they show how good “communist” planning is developed, and give successful examples of the implementation in the field of planning.

At first, they give an introduction of the development of cities and the birth of urbanistics, from ancient times, both in Europe and in Albania. Then they make a classification of the cities according to their population, and introduce different thematic studies that can be conducted, from regional to economic ones. Following, they make a descriptive summary of what a regional and a city plan should contain, with regulations specified for cities, as well as for villages. Next, there is a description of all the zoning areas and their characteristics, and determine all the standards related to residential areas, from the indicators of density,

distances, parameters of solar exposure and ventilation, to the position of buildings in relation to topographic features. The main units of the city, the group, block, complex and neighbourhood, are explained in graphic and quantitative detail of their components. Finally, the books contain a detailed representation of the standards for street networks, green area, the design of facilities, and other detailed planning norms.

This approach encompasses all possible elements of a city, as perceived during the communist regime, and these books are a valid documentation of the planning thought and culture of the period. The implementations were successful, under a strict controlling and monitoring regime.

Even after the fall of the communist regime, the legislative changes according planning and design issues were applied almost a decade after, in 1998, whilst the cities were undergoing the greatest expansion and migration rated the country had ever seen. It comes as a surprise, therefore, that even when the law of urbanistics was finally drafted in 1998, there were not many substantial changes in the way the cities were perceived....

The Urbanist Approach emerged during the beginning of the 90's, when a new Law was drafted, namely the Law 7693 "For Urbanistics", in 1993, which was followed in 1998 by a more detailed Law for City Planning: Law 8405 "For Urbanistics". The law focused solely on the situation of the buildings in terrain, as this was regarded the main issue in city development. The Regulation of Urbanistics came shortly after, which would serve as a framework for all development. Among the planning instruments used, there were the Main Regulatory Plan, the Participial Urbanistic Plan, the Yellow Line, the Suburban Line and the Masterplan. These instruments were rigid, but easy in their application, and the hierarchical division between the competencies was clear and easy. The only problem with this Law was that it overlooked many democratic processes that were happening in Albania. Two of these were: the informal developments that were spreading in the suburbs of the main western urban areas, and the privatization of property from public to private ownership (Politikndjekës dhe Politikbërës 2, 2012). This led to a devaluation of the concept of the Yellow Line (building boundary), because of the informal spread in buildings, and opted for a new approach, which would take into account the needs and role of the private owners in land development.

Nevertheless, this Law, which was changed many times until the finalization in 1998, and the Urbanistic Regulation set a number of specific norms and standards for planning and land development. At local level, these were drafted accordingly to the Regulatory Plan. Such were f.e. the usage coefficients, the built intensity, the height, nr. of floors, ect. Some standards, such as distance, were unified and standardized for all territory.

Some of the main indicators used in land development were:

- building intensity, i = built surface/ area of the block

- coverage ratio, PCR= building trace/ area of the block

- height: no. of floors or meters

- no. of underground floors

- building density (f.e. 2,6)

- gross built percentage

- no. of blocks / area

- space of occupancy of building (f.e. 2 m from the building)

- length of building in the street (f.e. 33 m – 37 m)

- facade line (placing all buildings in one line) (Regulation of the Urbanistic Study for the Center of Tirana, 2004)

As far as planning norms goes, specific standards were implemented for different types of cities. Cities were grouped according to their population, from Group 1, with less than 1000 inhabitants, to Group VI, with more than 200 000 inhabitants. Each of the groups has different elements and zoning regulations to be considered during the regulatory plan. (VKM 722, For the Approval of the Regulation of Urbanistics)

The Regulation also determines the morphological structure the cities should have, by specifying the units of a city:

A residential group is the smallest unit, with 1000 inhabitants, a surface varying from 1,5 to 5 ha. It has a built surface of 4,5m2/person ; open space 10m2/person (of which 4 m2/person is green space) ; net residential territory of 14,5 m2/person and playground surface of 1.3m2/person

The residential block has 3-4 residential groups, and a population of 3000-4000 inhabitants, with a surface varying from 6 ha to 30 ha. Additional to the residential group, a block should have: area for social services 2m2/person ; sportive terrain 0,5m2/person and road and square areas of 1,5 m2/person, with 0,5 m2/person dedicated for commercial activities outside the residential buildings.

Following, the residential complex has a population of 6000-8000 inhabitants and a surface of 16-20 ha. In this unit there should be an elementary school, and also an organized greenery (park), of 1,5 m2/person. The other paramteres are a little higher than the residential block.

Finally, the neighbourhood is compound of two residential complexes, and it should contain commercial services, social services, kindergardens, two elementary schools, one highschool, a neighbourhood park, sport terrains for all ages, health and administrative service, concert hall, library, ect.

The regulation also defines the distance of buildings from different categories of streets, the parking space, the types of greenery and their surface for different purposes, ect. It specifies also three types of density: the gross density, the net density and the building intensity.

To conclude, the approach to planning according to the Urbanistic approach was thoroughly standardised and technocratic. Obviously there was a clear approval of standards, as a mean to control the development and achieve a high quality of space. Nevertheless it is not hard to aknowledge that this approach was outdated. In a period where the city is dynamic and there are mixed use areas, you can not base the development vision on a rigid concept of modular

units. Time proved that these standards, although were meant to be applied easily, not only were disregarded in most cases, but even when they were implemented, they didn't meet the reality of the city.

Finally, the approach of the Comprehensive Planning, first legtimized by the Law 10191 "for the Territorial Planning" (2009), was an attempt to implement into the albanian culture a postmodernist view towards planning. It was based on the European Comprehensive Planning, combined with some urbanistic approaches.

The current instruments planning is based upon are: Politics, Plans and Regulations. They are classified in 3 categories: General, Sectorial and Intersectorial. The level varies between: national level, integrated level, local level and interlocal level. The instrument that addresses the issues in a smaller scale is the Detailed Local Plan, which is designed for the areas in which each city is divided, according to its Local Plan.

At this point, it is important to make a consideration about the changes in the legislation from 2009 to 2013. The main changes are related to the Uniform Regulation for the Control of Territory Development (nr.502) and the Uniform Regulation of the Planning Instruments (nr. 481). The Decisions supporting these changes are respectively no. 314 and no. 312. These decisions are merely orienting, because each Local Plan can apply it's own regulation, with different standards.

From this experience we can make two substantial comparisons. First, the contrast between the Regulation of 1998, and the Decision no. 502, according Development Standards, applied in specific cases of Regulatory Plans. Secondly, the contrast between the Decisions no. 502 and 314.

Following, is a list of indicators from the Regulation of Urbanistics and Decision no. (CoPlan, 2015)

1. Indicators that are found in the Regulation of Urbanistics, and are also obligatory for Decision no. 502:

- existing category of land use
- proposed category of land use
- general number of expected population
- PCR
- Built Surface
- Max. Intensity
- Min. road coverage ratio (equivalent to the street coefficient)
- Min. public plot coverage ratio (equivalent to the green area coefficient)

- Spatial typology
- Maximum height (floors, meters)
- Allowed and prohibited land use

2. Indicators that are optional according to the Decision no. 502, but obligatory in the Regulation of Urbanistics

- proposed subcategory of land use
- max. Density (inhab/ha)
- max. Building density (buildings/ha)
- max. allowed intensity for parcels
- distance

3. Indicators that are obligatory according to the Decision no. 502, but were only optional for the Regulation of Urbanistics

- the expected form of intervention (densification, conservation, ect)

4. Indicators that were obligatory for the Regulation of Urbanistics, but are not applied in the Decision no. 502

- area/inhabitant
- net density (inh/ha)
- residential area (ha)
- built area for residential buildings (ha)
- mean height of floors
- planned building area (m2)
- part of surface of unit for residential area (%, m2)
- part of unit for social buildings (%)
- part of unit for business (%)

5. Indicators that are obligatory according to the Decision no. 502, but were not used in the Regulation of Urbanistic

- Gross area
- Min. no. of parking spots

6. Other indicators that can be applied according to the Decision no. 502

- Percentage of residential area in relation to the built area
- Percentage of gross residential area for each use
- Max. Human density (users/ha)
- Development Right transfer / Conditional Intensity

So there are a few differences, mainly on the application of terms, such as distance, some measurements of density, etc, and the emerging of the concept of development right transfer, conditional intensity, gross area, etc.

The main difference is in the planning norms. The Regulations of the Territorial Planning Law don't include any standards for planning facilities, by allowing the local governments to apply them in their local plans. Nevertheless, by not giving any orientation, this issue is not fully addressed locally, and there are no controlling measures taken to ensure that the city has the right indicators of kindergarten coverage, green areas per inhabitant, or healthcare facilities...

The new Regulations of Development Control (314) and Planning Instruments (312) have made substantial changes to this approach. The city is compound by units, which are divided into residential group, block, complex and neighbourhood. The parametes of each of these units are the same as according to The Regulation of Urbanistics. It is stated that each residential area must have:

- a standard for net residential area (area/person)
- green area
- educative facilities (kindergarden, elementary school, highschool)
- public, religious, social, health, administrative structures, of local level
- sport territory
- public parking
- space for commercial services

Each of these elements are provided with a specific table of standards, for three categories of cities: under 10 000 inhabitants, over 10 000 and over 100 000 inhabitants.

Following, there are standards for street parking, minimal standards for educational and health facilities, standards for sport territory in city level, standards for each type of green area and for buffering areas.

The development standards haven't undergone any particular changes. The only indicator that is specified, is the distance:

3 stores: 6,6m (3,3 m from plot boundary)

4 stores: 8,8 m

5 stores: 11,1 m

6 stores: 13,3 m

7 stores: 15,5 m

.....

more than 15 stores: 32,5 m

According to Decision no. 502, the distances needed were the distance from building to building, the distance of the building from the plot boundary and the distance from the street. Article 40 states different cases, according to the position, the height of the adjacent buildings, the presence of roof, the location in slopes, ect.The rule applied mostly was that of the 45 degree angle.

In addition, the Regulation of Urbanistics of the Law of Urbanistics of 1998 stated different rules about distances:

- for buildings located against each other, with width less than 20 m: 1 store – 4 m; 2 st–6 m; 3 st – 8m ; 4 st – 10 m; ....12 st – 26 m.

- for buildings with width more than 20 m: 1 st- 6m ; 2 st – 9m; 3 st – 13,5m; ....12 st–30 m.

- for two buildings of different height, the distance is calculated with interpolation

- for buildings beside each other, without windows, the distance can be more than 1 m, or fully attached.

If we compare these three cases, the resulting distances in the new regulation seem more sporadic, and less argumented than the other models...

Nevertheless, the new regulations offer more specific standards, especially planning norms, to be applied in city level. This may encounter some problems in the implementation in different cases, because they lack of realism and seem outdated, anyway it is a good reference for the designers of the local plans, and for city planners.

The evaluation of existing indicators is crucial to understand the processes of development that have occurred in an area, and what is expected to happen there in the future. This approach helps to compare the results that derive from a thorough analysis of the sites, with the standards that have been implemented, and sometimes applied, according to the existing legislation and urban planning practices. Eventually, this will lead to conclusions regarding indicators that work fine, others that need to be improved, or others that need to be better represented (the measuring unit may not be proper).

This evaluation contains two parts:

1. The evaluation of existing development parameters.

The evaluation, obviously, can be measured in different ways, according to many types of

indicators. To further help the comparison, this analysis will be conducted according the standards applied by the Uniform Regulations of Development Control (VKM 502, 2011), which are implemented in each unit of development.

- percentage of built surface for each land use
- percentage of gross built surface
- overall intensity
- coefficient for land utilization, for buildings
- coefficient for land utilization for streets
- coefficient for public open spaces
- building height (meters and no. of floors)
- density (buildings/ha)
- human density (users/ha)
- population
- distances between buildings
- distances of buildings from the plot boundary
- no. of parking spaces in street

2. The evaluation of parameters proposed for the area, according to the Local Plans

This analysis helps to compare the expectations of the local authorities for the development of an area, with what is proposed according to the spatial typology analysis. It is the same as in the above section, but of course, the parameters are the maximal or minimal ones allowed.

Therefore, the planning and development indicators needed are:

- percentage of built surface for each land use
- percentage of gross built surface
- maximal intensity allowed
- maximal coefficient for land utilization, for buildings
- minimal coefficient for land utilization for streets
- minimal coefficient for public open spaces
- maximal building height allowed (meters and no. of floors)
- maximal density (buildings/ha)
- maximal human density (users/ha)
- expected population
- distances between buildings
- distances of buildings from the plot boundary

- minimal no. of parking spaces in street

Following the amendments applied to the Uniform Regulation of Planning instruments (DCM 312), as explained above, the approach has changed.

The main changes relate to the spatial typo-morphology categorization (the concept of building groups, blocks, complexes, and neighbourhoods), which is in contrast to the concept of subdivision in spatial units of different characters, that was formerly applied; the definition of the elements of a living area (residence area, social area, green area, sport area and streets and squares), etc.

This approach has led to the designation of specific planning standards, for the residential blocks, concerning:

- green space
- sport territory
- area for school/kindergarden facilities
- commercial service
- public parking
- constructed space
- open space

All the above indicators are standardized, and expressed in m2/person.

This Regulation specifies also the standards for kindergardens, middle school, highschool, health services, green areas (general public greenery, secific public greenery, special greenery), buffering areas of different purposes, etc, in city scale. Overall, this new approach is more urbanism-oriented and "borrows" many elements from Law nr. 8405 for City Planning (1999).

At this point, the question arises: which of these indicators can be used further, and which is outdated?

- the density of buildings/ha is a standard that does not need to be applied any longer. The question of quality of space is not related to the number of entities in it, but rather on the availability of the open space in between.

- the open space coefficient, although it is stated in the Regulation, is not used in any case, because it is not easy to be controlled. It can be substituted by the Open Space Ratio, and thus be an important component of the design of the spatial unit.

- the green space indicator (9m2/person) in city scale is important to be maintained. Nevertheless, it is not fulfilled in most cases. Considering the importance of green areas in the health qualities of the city, especially the largest cities need to have a criteria for green area for each subunit, with a surface that is indicated by each Detailed Local Instrument.

- the street coverage is a standard which is not usually measured by surface, but by network length. Since the minimum width of an inner road in an area is 3,5 meters, as set by fire-

safety regulation, there is no point in measuring this standard by surface. A standard for network length can be sufficient.

- the distance is another issue that should be addressed in this case. Normative systems suggest that distances are applied only for buffering purposes and are not usually set as standard between two buildings. This is because the tendency in normative planning is to see the entire block or unit as a whole, and not see the individual parcels. Nevertheless, setting proper distances contributes in better health features, and in better privacy. But it is not necessary to put the distance as a national standard: each local plan can address the issue differently, combining with other instruments of planning.

2.5 Performance indicators

2.5.1 Density

"At first glance, the concept of density is wonderfully appealing to planners. It is an objective, quantitative, and, by itself, neutral term. However, a second and third glance reveals that it is a very complex concept. Some of the complexity is inherent to the nature of the phenomena associated with density, but part of the complexity stems from the different ways in which density is defined and used in different countries and different disciplines."(Churchman, 1999)

Following this stream of thought, density is one of the main standards to be determined in an area, but in the same time, one of the most difficult. The way it is expressed is crucial in its successful understanding and application. This section will deal with ways to measure density and how to calculate it, by focusing also on disentangling the concept of density itself.

Pont and Haupt (2009) argue that, "although the concept of density in urbanism is frequently used to describe the relationship between a given area and the number of certain entities in that area", from 1985 there have been conducted 56 studies on "measuring urban form", of which only 4 discuss directly the concept of density. The approach to density is different. Unwin (1909) states that "Nothing is gained by overcrowding" and claims that the best density is less than 30 dwellings/hectar. On the other hand, Hoening, focuses on the concept of open space, by arguing that a spaciousness of at least 1 is needed for successful urban design. Jane Jacobs, on the contrary, explains that a better quality needs a better coverage (over 60%), and a no. of 250 dwelling per ha. These approaches, despite being controversary, give an insight on how the density can influence the spatial configuration and living quality of a space.

We can therefore recognise 7 density measures, applied and standardized differently in different periods (Pont & Haupt, 2009):

1. The population density

It is measured according to inhabitants/hectare, and is not commonly used any more. The

most distinctive norms were applied by Howard, in 1899, where a district had less than 75 inh/ha, and by Le Corbusier, arguing that there should be 1000 dwellers/ ha.

2. The dwelling density

It measures dwellings/hectare, and is used in some theories of New Urbanism, by Unwin, Van Eesteren (55-110 dw/ha) and Jacobs.

3. The land use intensity

This indicator is applied in different forms. The most common is the Floor to Area Ratio (FAR), applied in New Zork Zoning Resolution (1961), which is specified as a maximum idicator per lot.

The Floor Space Index (FSI), is the same, but implemented by the planning system in the Netherlands (2003).

The "ausnutzungziffer", applied according to the Building Ordinance in Berlin, varies from 20-300, and equals FSI*100.

Finally, the Land Index, measured as 1/FSI, was applied in Grand Britain since 1949. Essentially, this index evaluates the three dimensional space occupied by buildings in a specific area.

4. The coverage

The coverage deals with the occupation of the plot by the building's footprint. It is expressed as Ground Space Index (GSI), in the Netherlands, but mostly it is found as "coverage" = GSI*100, in the New York Zoning Resolution, by Cerda (who argues that a plot should be used less than 50%), in the Building Ordinance of Berlin (optimal 0,10-0,60) and by Jane Jacobs, who argues that higher coverage is better (0,6-0,8).

5. The building height

The building height can be measured according to the height in meters, or the amount of stories. The most commonly used method is the latter: in London (1667), from Baumeister (1880), and in the Ordinance of Paris (1902), where the maximum height allowed was 7 + attic.

6. The spaciousness

This concept is rather new and it was first explored by Hoening, in 1928, under the term "Weitraumigkeit". Later, it was used also in the New York Zoning Resolution, as Open Space Ratio = OSR*100.

This representation of all dimensions of density shows that density is indeed the main contributor to development standards, as applied by the planning legislation. FSI, GSI, L and OSR are interdependent in the following way:

L=FSI/GSI	OSR=(1-GSI)/FSI	GSI=FSI/L	FSI=GSI*L
L=1/(1/FSI-OSR)	OSR=1/FSI-1/L	GSI=1-FSI*OSR	FSI=(1-GSI)/OSR

L=(1/GSI-1)/OSR	OSR=(1/L)*(1/GSI-1)	GSI=1/(L*OSR+1)	FSI=1/(OSR+1/L)

Pont and Haupt (2009) propose a way to analyze different samples of urban density, according to these four parameters: the spacematrix. This helps evaluate the parking performance, the daylight performance, etc, and compare them to each case.

Another concept related to density, is the network density, which is analogue to the coefficient of street coverage, applied by the planning legislation in Albania. The morphological analysis, explained in the former chapter, helps to evaluate the main entities of ground plan, namely the lots, the islands and the network (Heeling, 2002). This leads to a multivariable definition of density, which is dependent not only on what happens inside the lot, but also how the lots are connected. The four variables needed to calculate the basic indicators (Pont & Haupt, 2009) are:

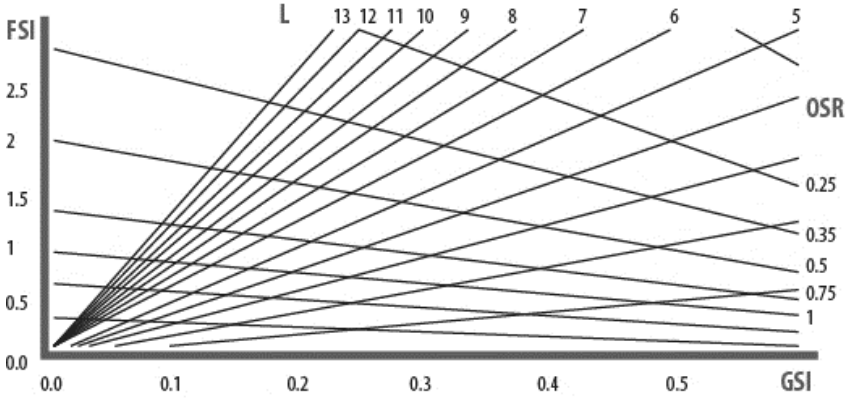
-Base land area (A): referres to the boundary of the study area, which can vary according to the case, from building, to lot, island, fabric, district, etc.

-Network length (l) : is measured as length of internal network, plus half of an external network , which contributes equally to two demarcating samples

-Gross floor area (F): the area on enclosed spaces + the area of underground spaces + the area under the roof

-Built up area (B): the footprint of the building, excluding overhangs and underground areas.

Figure 20. Spacemate, correlation between FSI, OSR, L and GSI



Source: Haupt, Pont, 2009

These help evaluate three basic indicators: Network density (N), FSI and GSI:

-**The network** density is calculated as network length per km2 of area: N = l/A

-Building intensity (FSI)= F/A (m2/m2), for each aggregation. This is similar to the intensity concept applied in the Albanian context

-Coverage (GSI) = B/A for each aggregation. This is similar to the coefficient of land

utilization in the Albanian regulations, but it is not expressed in percentage.

From these three indicators, Pont and Haupt (2009) explain the derivation of other standards:

- **Building Height** L= FSI/GSI

- **Spaciousness** (OSR) : amount of non built space. OSR = (1-GSI)/FSI

- **Tare** (T): This parameter emphasizes the different characteristic of density in different scales. Tare is the difference of base land area between two levels of scale, or the difference between net and gross.

- **Mesh and profile width** (w and b): the mesh size is calculated as the street to street distance in a square grid, using the formula w=2/N

Therefore, the profile width is the combination of mesh size and tare, using the formula

b= 2*(1-root(1-T))/N

This analysis, and the use of spacematrix, sets new objectives in determining development standards for different zones.

At this point it is important to go back to some main concepts of density, as explained by Alexander (1993). The way density affects people's lives is expressed by three concepts: density, perceived density and crowding. We dealt with the first in the previous part. The perceived density and crowding are based on the evaluation of density by people. Perceived density is defined as an individual's perception and estimate of the number of people present in a given area the space available, and the organization of that space (Churchman, 1999), while crowding is the subjective perception of individuals for a negative density.

This perceptions are studied using the so-called location density measures (Hillier, 1996):

1. Axial line integration: space syntax research method, which analyses the accessibility of the network and the possible distributions of the density

2. Entrance density: measures the number of entrances/100 meters

3. Floor area accessibility: valuates how accessible the area is from distance and integrates network accessibility and plot density.

4. Ambiterritory: the so-called no-man's-land, where the private and public domain overcross, measured in a distance of 10 meters from the street, the building, or an entrance (Ståhle, 2007). This is mostly the case of modernist suburbs, with isolated freestanding buildings

5. Public open space proximity: the closeness of open spaces, greenery and public spaces. It is calculated that the optimal distance for everyday green space use is 300 meters (Grahn and Stigsdotter, 2003) and for recreational forests 1000 meters (Hörnsten and Fredman, 2000).

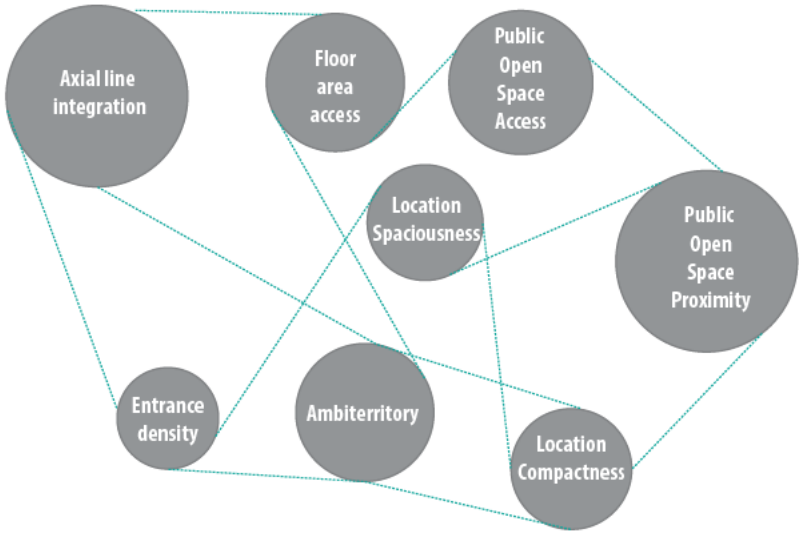
6. Public open space accessibility: the sum of all public open space within reach, multiplied by a factor from a "sociotope map" (Ståhle, 2006).

7. Location spaciousness: Ratio between the accessibility of public open space accessibility (6), to the floor area floor area accessibility (3).

8. Location compactness: Derives from multiplying public open space accessibility (6) and floor area accessibility (3), measuring layouts that are inefficient and spread out.

These elements should also be considered when evaluating the density and environmental features of an area.

Figure 21. Elements of perceived density



Source: Hillier, 1996

2.5.2 Environmental aspects

This section focuses on the environmental performance qualities of a site, their quantification methods and the way they can be taken into consideration when determining development standards.

Today, the environmental optimization has taken an important value among planners in the process of urban design, with the objective of achieving human comfort and reducing energy demand. This is related, among others, with three important phenomena: the Urban Heat Island (UHI), the Wind field and Profile, and the Urban canyon effect (Salah, 2009).

-The Urban Heat Island is an area of land with higher temperature than the surrounding area. This phenomena is directly linked with the density and population, but is also affected by the geometric features of an area, the radiation balance, ect.

- The Wind field and profile is a phenomena related to near-surface winds, which, due to the UHI, the urbanization and ther local factors, have an irregular flow. The main influence on the wind distribution in urban areas, is the underlying rigid surface, so the air coming from the rural to the urban environment must adjust to many boundaries like those, reaching speed

in a higher altitude.

- The Urban Canyon effect is a phenomena that occures beneath roof level, in a smaller scale. They are air flows, affected and caused by the height, length and width of street canyons (Karatasou, Santamouris & Geros, 2006).

Daylight and sun exposure are two of the most important parameters that affect the development strategy, and therefore standards, of a specific site. These can be summarized under the concept of "solar envelope". "The solar envelope is a set of imaginary boundaries, enclosing a building site, that regulate development in relation to the sun's motion -- which is predictable throughout the seasons for any place on Earth" (Knowles, 1974). Deriving from this concept, are also:

-The solar rights envelope (SRE): "the maximum buildings volume that does not violate the rights of any existing buildings, during a given period of the year" (Sarkar, 2009).

- The solar collection envelope (SCE): "the lowest possible locus of the considered building's envelope, which are not shaded simultaneously by the existing neighbouring buildings" (Sarkar, 2009).

The volume remaining from these two envelopes is the solar volume (SV), "which is the maximum buildable volume that can be designed, to have proper solar access in the surrounding buildings" (Sarkar, 2009). It is based on 4 conditions:

-"the north face of the volume is generated by the solar angle at noon, during winter solstice

-the south face is defined by the solar angel at noon, during summer solstice

-the west and east faces are generated by daily values, depending on the number of guaranteed hours of sunshine, in different seasons" (Knowles, 1981).

This parameter affects the way we perceive space, in terms of sustainable design, since the quality is not determined by distances, building intensity, or coverage, but by a parametric evaluation of the proper volume...

The second parameter, that is of interest to our subject, is the natural ventilation. This is an issue that should be dealt with both in micro scale (building typologies), as well as in macro scale (urban morphology). The principle of natural ventilation is simple: "the airflow rate should be large enough to ensure that the maximal concentration of any pollutant is lower than the maximal limit admitted" (Santamouris,2005). According to Saleh (2009), there are five constraints on the natural ventilation parameter:

- the width of air path: to ensure roughness or wake interference flow, the building height should be lower than the width of the street.

- deep street canyons: where the ratio between height and width of buildings is more than 3, the winds in ground level become weaker

- street orientation: when streets are oriented towards the prevailing winds, the ventilation is better. The deviation of streets from the prevailing winds should be less than 30 degrees in this case.

- ground cover ratio: this ratio corresponds to the idea of wind paths, stimulating better ventilation, through porosity and permeability

-building height differentials: high differences between taller and lower buildings create better ventilation.

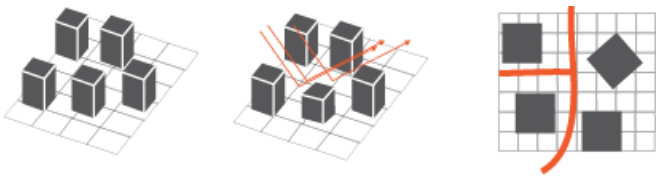
The third parameter of the environmental analysis is the energy efficiency (Saleh, 2009). This implies the importance of saving the heat through “passive energy zones” : areas of a building that can be naturally ventilated and lit (Salat, 2007, 2010). This parameter is mostly affected by:

-The building mass organization (FAR, height, contiguity, compacity)

-Openness to the sky (solar admittance)

-Passive volume (the volume less than 6 m from the envelope)

-Street networks



Finally, the thermal comfort is a phsycological condition, that relates to the thermal balance between the body and the environment (Givoni, 2010). In his study on parametric evaluation of environmental attributes of urban morphology, Saleh (2009) states that the main constraints of thermal comfort are:

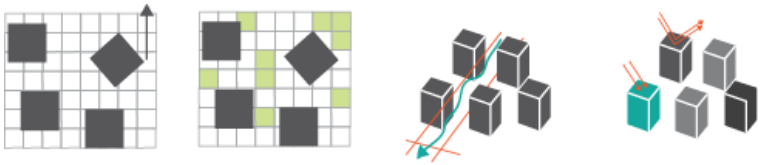
- Orientation of building and networks.

- Presence of vegetation and greenery.

- Aspect ratio (street canyon dimensions).

- Construction materials (reflectance and transparency).

- Openings ratio.



These parameters are important tools to evaluate, or design the environmental condition of a site. The approach towards determining standards for the development of the site, is actually the reverse: given the desirable environmental conditions, evaluated through some

of the above-mentioned parameters, there will be a designation of development indicators.

In this process, it is also crucial to determine the relation between the environmental features, and some development parameters. This will be explained through the daylight analysis:

Another element of daylight analysis is the daylight performance, based on its interdependence with coverage, building height and intensity. The daylight is calculated as "as the percentage of the total floor area that is exposed to the sky" (Pont & Haupt, 2009). It is represented by the parameter DPI (Daylight Performance Index), which is related also to the Daylight Factor (DF), "that expresses the quotient between the light intensity (lux) at a certain point and the light intensity in a non-obstructed situation in 'the open field'" (Pont & Haupt, 2009)

The formulas that link the DPI with the development standards are:

DPI = 200 (1-GSI)/(FSI-GSI)

DPI = 200 h (1/GSI-1)/H , where h = the floor height on the n-th floor and H= the remaining height above n-th floor.

These formulas can also be expressed in Spacemate, and are a good contributor to evaluating whether a proposed parameter affects positively or negatively the daylight performance of the area.The approach to the environmental study can be carried parametrically, with the help of Ecotect Analysis, and Vasari, to make the evaluation of shadow range, sun exposure, wind orientation and solar access...

Finally, it is important to underline the role of green areas, as a means to improve the thermal comfort and environmental conditions of a site. The concept differs from that of spaciousness, considering the bigger impact of greenery in the overall biodiversity situation, as well as in the general public health.

Byrne and Sipe (2010) raise the question whether in today's denser cities, the increase in the amount of local greenspace will compensate the poor access to private backyards. Some theorists suggest this is the case, while others argue about a paradox of urban consolidation, where there is a stimulation of leisure-travel, escaping to the countryside, ect, without the need of additional green space. Nevertheless, they agree that there are three factors to be considered in planning green spaces:

1. the needs of residents living in higher density areas: different groups of people, ranging from children, to older people, teenagers, parents, wealthy people and poor people, have different needs for green space, therefore it should be differentiated among them.

2. no two parks are the same: different features of the parks influence different behaviours in their users

3. influence of built environment surrounding greenspace: the grid street patterns lead moe people to use green areas than cul-de-sacs; the vegetation cover stimulates the use of green spaces. Also it is crucial to link the greenery into a network, via trails, cycleways, ect.

The greenscape can be categorized according to different typologies. Lynch has made a contribution, by identifying "greenbelts, green wedges, regional, suburban and city parks, linear parks, plazas, playing fields & lots and playgrounds as well as 'wastelands' as various types of urban green/open space" (Lynch, 1984). Byrne and Sipe (2010) consider 4 types of

greenery, as most representative: parks, plazas, greenways and streets.

As far as planning standards goes, there have been different approaches throughout the years. This is an overview of some of the standards used in USA, UK and Australia, dating from 1920, to present days (Byrne and Sipe, 2010):

Today, it is questionable whether there should be standards on the distance of the park from each living area. This standards-based assessments are considered outdated, since there are other factors that influence the use of green spaces, other than distances or size. Byrne and Sipe (2010) argue that some of these factors are: safety, cultural differences, aesthetics, time and transport, preferences, etc. The new approach is the needs-based assessment, which accounts not only for the population of a geographic area, but also for the socio-demographic conditions, projected residential densities, facilities and programs needs, etc.

This approach sheds light on the way the green areas have been perceived until now, and on the coherence of the standards applied in the Albanian context, by the new planning legislation.

Figure 22. Scheme of the characteristics of a successful green area

Source: own contribution

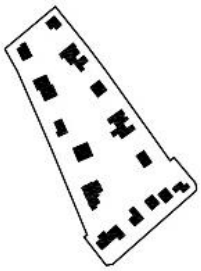
2.6. Case studies

2.6.1 Case study 1

Studying typologies, where layouts are well defined, is a preliminary step towards setting the proposed standards at parcel or area level.

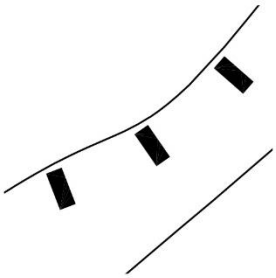
The following example explains how different typological areas have very different standards due to the type of buildings and how they are positioned relative to each other.

Figure 23. Point type, low-rise typology



Wageningen Hoog
Wageningen
FSI_i 0.18
GSI_i 0.10
OSR_i 5.12
L 1.84

Figure 24. Point type, mid-rise typology



De Berg Zuid
Amersfoort
FSI_i 0.33
GSI_i 0.08
OSR_i 2.78
L 4.34

Figure 25. Point type, high-rise typology

Wilhelminaplein
Amsterdam
FSI_i 1.33
GSI_i 0.11
OSR_i 0.67
L 12.00

Figure 26. Strip type, low-rise typology

Amsteldorp 1
Amsterdam
FSI_i 0.88
GSI_i 0.35
OSR_i 0.74
L 2.50

Figure 27. Strip type, mid-rise typology

Zuidwest Kwadrant 1
Amsterdam
FSI_i 1.28
GSI_i 0.29
OSR_i 0.56
L 4.47

Figure 28. Strip type, high-rise typology

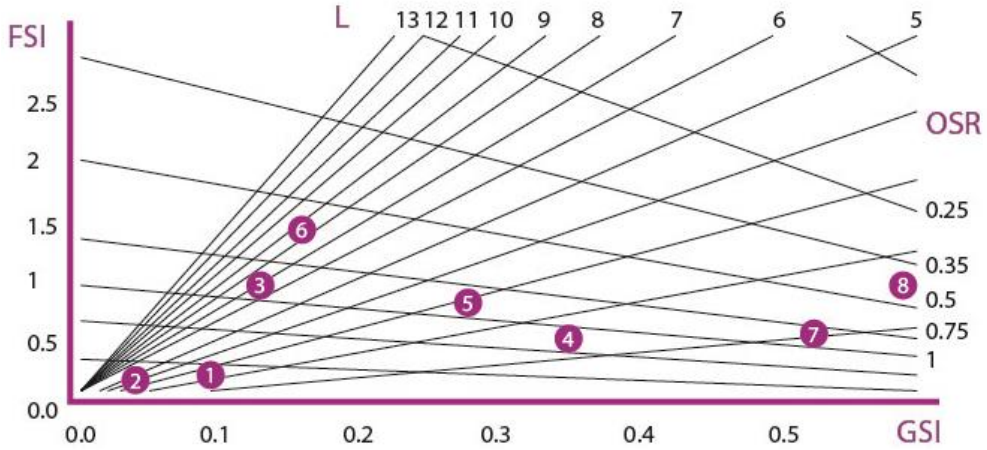
Figure 29. Block type, low-rise typology

Figure 30. Block type, mid-rise typology

Source: (Pont & Haupt, 2009)

This case study brings out the best correlation of spatial typologies with standards. However, in the case of mixed typological areas, as in our municipalities, the methodology used should be more comprehensive and systematic, as discussed above.

Figure 31. The matrix of correlation between FSI-GSI-OSR-H for the case study



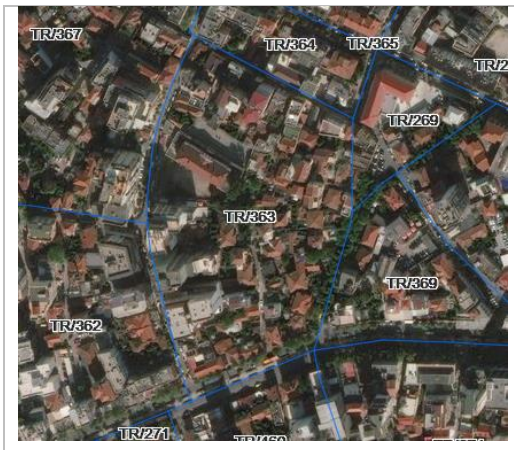
Source: own calculation, based on Pont (2011)

As it is obvious, the correlations of the study areas fall into vastly different parts of the graph, making for a high coverage of various spatial typologies from low to high density.

2.6.2 Case study: Application of development and planning standards in Tirana

This case study gives an overview of how indicators aiming at improving public space and liveability can, in turn, influence the typology of areas and zoning, and vice-versa. Furthermore, it tries to understand how more innovative indicators can be combined, to make for a more successful development at zone level, in the case of Albania.

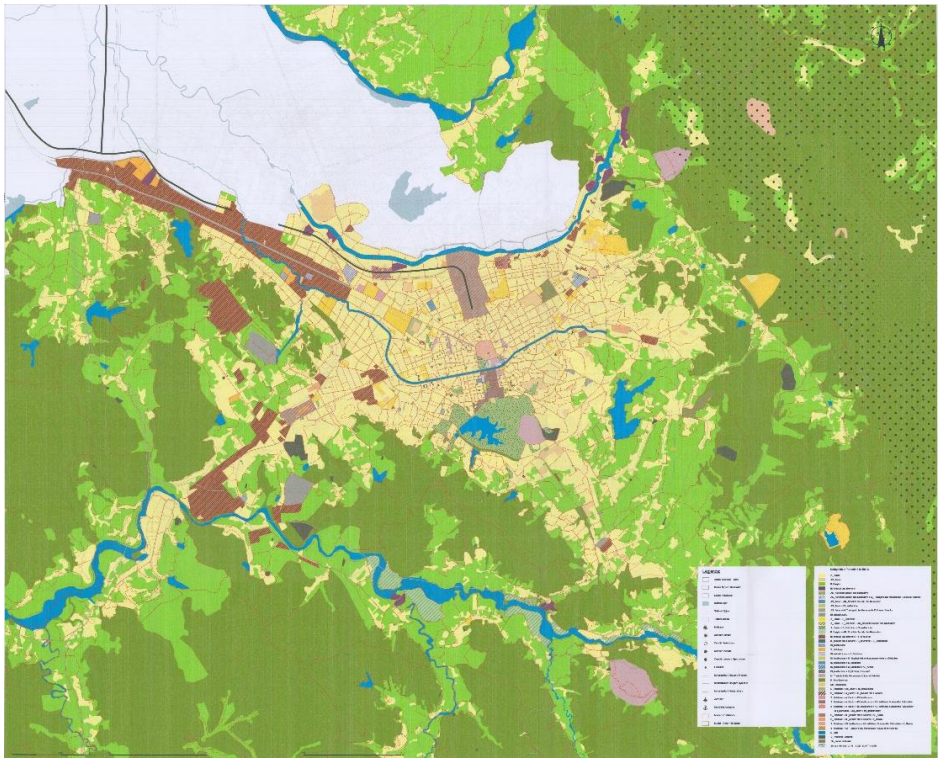
	1. Building complexes of the communist period This typology is represented by apartment blocks, constructed by the state in the period 1945-1990. Some general characteristics of these areas are: the densification of the area after the fall of communism; good access to services, poor quality of public spaces. The typology occupies about 9% of the urban areas in Tirana. Structural Unit: TR371
	2. Historical urban tissue This typology is comprised of villas constructed in the early 20's and 30's, mixed with high-rise buildings, constructed after the 90's. The oldest villas date back to the ottoman period and are part of very small plots. These plots are merged eventually to make room fo high-rise dwellings, which make for a lack of public space. The road network is not regular, but is well-connected with the center. This typology makes up 3% of the urban area in the city. Structural Unit: TR317
	3. Mixed central areas This typology represents a mix of form and function, from villas to longitudinal buildings and high rise buildings. They are characterized by a rapid densification, a quadratic road network and a good access to public services. This typology makes up 5% of the urban area in

	the city. Structural Unit: TR363
	4. Informal areas The informal typology is comprised mostly of 2-3 storey buildings, constructed after 1990. These areas usually have a quadratic road network, poor access to services, and tend to be densified in height. These areas make up 41% of the cities urban area. Structural Unit: TR412
	5. New residential blocks This typology is represened by the new residential blocks, constructed in the periphery of the city in the recent years. These areas are characterized by a linear road network and poor access to services, as well as relatively high density. This typology is found in 6% of the urban area of Tirana. Structural Unit: KA252

To understand this a series of samples have been selected from the General local plan for the Municipality of Tirana, and the approach of this planning document has been revised, in terms of compliance with national standards.

The Local General Plan 'TR030' is the first designed for the municipality after the territorial reform. It was prepared by Stefano Boeri Architetti, UNLAB, IND in cooperation with the Municipality of Tirana and financed by the Ministry of Urban Development and the National Territorial Planning Agency. At present, this plan is the guiding document for territorial development policies in the Municipality of Tirana, and is implemented for the period 2016-2030.

Figure 32. Proposed Land Use, Municipality of Tirana



Source: Tirana 2030, Municipality of Tiranë, 2016

In 2016, the overall Tirana plan shows the future of a polycentric and kaleidoscopic metropolis, which will host in every part of it a balance between city and nature. The vision identified the ten strategic objectives that aim to direct urban development, economic and social development of Tirana in the next 15 years.

TR030 proposes the division and placement into the hierarchy of the territory in three basic categories: urban, peri-urban, rural:

a. The urban territory includes all urbanized areas, almost completely built and comprised of compact urban medium and high density urban areas where urban residential, commercial and tertiary services prevail.

b. The suburban area includes all built medium density areas that consist of informal residential palaces, industrial and commercial buildings scattered in different ways and the presence of the main infrastructure in the city's service.

c. The rural territory includes all areas located outside suburban areas and include urban units (poles) and agricultural and natural areas characterized by the presence of scattered buildings with mainly agricultural and residential purpose

Following is a summary of the main findings from the study of the areas. The GLP proposed a few density measures, such as proposed FAR; coverage; height; public space coverage ratio; road coverage ratio. Moreover, to ensure the development according to liveability criteria, it determines an indicator of Carrying Capacity, which estimates 'the maximum residents that can reside in the area, according to the proposed max. FAR at zone level, in order to have enough space for the public spaces needed for the livelihood.' Furthermore, an indicator of parking spaces and greenery is also determined.

Unit	TR372	TR317	TR363	TR412	KA252
Code	T1	T2	T3	T4	T5
Category	urban	urban	urban	suburban	suburban
Typology	Building complexes of the communist period	Historical urban tissue	Mixed central areas	Informal areas	New residential blocks
Area (m2)	77,100	47,200	33,300	188,400	43,300
Existing FAR	1.99	0.95	1.54	0.42	2.36
Proposed FAR	3.5	2.95	4	0.6	2.5
Existing Land Use categories	A (73%); AS (9%); IN (9%); S (4%); AR (5%)	A (82%); AS (7%); IN (11%)	A (73%); IN (15%); AS (12%)	A (62%); IE (22%); B (12%); IN (4%)	A (73%);B (21%); IN (6%)
Proposed Land Use Categories	A (78%); AS (9%); IN (4%); S (5%); AR (2%)	A (89%); AS (7%); IN (4%)	A (82%); S (5%); IN (7%); AS (6%)	A (97%); IN (3%)	A (70%);B (14%); S (10) IN (6%)
Proposed coverage	45	45	45	30	45
Proposed road coverage ratio	10	10	10	10	10
Proposed public space coverage ratio	10 - 30	10 - 30	10 - 30	30	10 - 30
Proposed height (nr of floors)	10	8	10	3	6
Carrying capacity	5,584	3,556	2,711	1462	2468
Green areas	1,396	8,890	6,778	3,655	6,170
Parking	2,792	1,778	1,356	731	1,234

Source: Regulation of General Local Plan of Tirana and own calculations

From the analysis of the proposed indicators of development, it is obvious that the proposals at zone level for each sample are not realistic and implementable. Often the proposals on

land use categories (in percentage) do not really reflect the reality (the existing land use situation). On the other hand, the PCR and RCR proposals contradict the estimated Surfaces in % for Infrastructure, Education, Recreation and Similar uses as well as the greening areas specified in the passport. In any case, the document becomes speculative as far as the standard you can refer to in each case.

With regard to the proposals, taking into account the carrying capacity indicator, the expected population in the Municipality of Tirana for the next 15 years will increase by an average of 421,000 people, i.e. by almost 50%. This does not reflect the real growth trends of the city.

It is certainly worth mentioning that this assessment considers an ideal situation, where any Local Plan proposal is implemented. This is not realistic in the long run. However, it should be borne in mind that the planning function is to predict the country's socio-economic, territorial, environmental, etc. dynamics as concise as possible, and to precede it with instruments and orientations to enable development and increase prosperity.

Fiscal zoning and the normativity aspect

On the other hand, we can raise the question: Can the changes / proposals on the use of land in Tirana, the financial situation and the taxable base of the municipality, be affected by different zoning methods?

For this purpose, 4 main taxes affected by land use change were studied in the above-mentioned case, simulating a scenario with a plan implemented at 100%

1. Land agricultural tax
2. Housing tax for residential purposes
3. Building tax for business purposes
4. Influence of infrastructure impact on new buildings

The financial resources available in the Municipality of Tirana have followed upward trend in recent years. In 2017, the available resources were about ALL 16.7 billion, up by about 16.2% in annual terms. This performance was largely determined by the increase in local source revenues, the increase in infrastructure impact tax and real estate tax shown in the chart below (Local Finance Portal, 2017).

Though the Municipality of Tirana is one of the only municipalities in Albania that show a positive balance in terms of government dependency, covering most of its revenues, the potential to further improve its performance fiscal policy has not yet been captured.

Based on the methodology and matrix set out above, in the chapter below this study attempts to predict precisely this potential of the tyrannical municipality which can be captured in a hypothetical case when implementing 100% of the Local General Plan. Also, more cases

were taken into consideration, adding suburban and urban areas, where the conversion from agricultural to residential land use is visible.

In order to calculate the tax revenue potential, the case study takes into account the following types of taxes:

1. Land agricultural tax (by estimating IV category of agricultural land) = 3600 L / ha. This tax will be assessed for both the current state of affairs and the plan proposals.

2. Housing Fee = 0.05 * of corresponding Built Area.

3. Service Building Fee = 0.2 * of respective Built Area.

4. Infrastructure Impact Fee: Based on additional built-in, residential and business-related Built Area, where for sale-for-sale buildings is estimated at 4% of the sale value (both for housing and services), while for residential buildings estimated as 8% of the cost of construction.)

The limitations of this method are numerous, because they do not take into account the planning indicators, but this choice is made due to the presence of small areas of services in the areas under study. In each case, the percentage of each existing category is estimated by the authors, from the cartographic base to the GIS, as in the current local regulation these values are not defined.

Below is a summary of the main findings:

Table 5. Table of the change of tax base from land use changes through zoning

Unit	**TR372**	**TR317**	**TR363**	**TR412**	**KA252**	**DA75**	**KA158**	**TR69**	**FA30**
Code	T1	T2	T3	T4	T5	T6	T7	T8	T9
Kategoria e zones	urban	urban	urban	suburban	suburban	suburban	suburban	rural	rural
Area	77,100	47,200	33,300	188,400	43,300	140,900	76,300	115,900	524,700
Existing FAR	1.99	0.95	1.54	0.42	2.36	1.07	0.56	0.51	0.09
Proposed FAR	3.5	2.95	4	0.6	2.5	1.6	2.6	0.6	0.6
Existing land use	A (73%); AS (9%); IN (9%); S (4%); AR (5%)	A (82%); AS (7%); IN (11%)	A (73%); IN (15%); AS (12%)	A (62%); IE (22%); B (12%); IN (4%)	A (73%);B (21%); IN (6%)	A (85%); N (6%); S (5%); IN (4%)	IE+S (83%); A (9%); B (5); IN (3%)	A (73%); B (12%); S (2%); IN (12%); AS	B (92%); A (5%); IN (3%)
Proposed land use	A (78%); AS (9%); IN (4%); S (5%); AR (2%)	A (89%); AS (7%); IN (4%)	A (82%); S (5%); IN (7%); AS (6%)	A (97%); IN (3%)	A (70%); B (14%); S (10) IN (6%)	A (78%); N (16%); B (4%); IN (3%)	IE+S (98%); IN (2%)	A (93%); IN (3%); AS (3%); B (1%)	B (52%); A (46%); IN (2%)
Gain from tax on infrastructure impact	3,428,123,476	8,574,646,667	5,896,235,846	287,841,046	23,340,400	1,141,630,688	0	109,065,810	1,148,780,819
Gain from agricultural tax	0	0	0	-7,941	-1,055	2,029	-1,437	-4,450	-76,605

Gain from property tax (residential)	3,390,254,644	10,718,308,333	6,599,066,808	359,801,308	-1,215,699,500	1,427,038,360	0	662,281,100	2,487,699,950
Gain from property tax (service)	3,579,598,800	0	4,627,368,000	0	4,979,500,000	0	80,682,086,016	0	0

Source: own calculations

As it seems, in the typologies studied there are different models of land use changes. Mainly, the trend has been the expansion of the residential area and the increase in density. Five of the areas ask for a Local detailed Plan, accompanied, where appropriate, by conditional intensity instruments. This means that there is foreseen redevelopment and alienation of most of the existing typologies and, in some cases, of the uses.

From the conducted analysis, it is estimated that classifiable typologies such as urban (including historic areas, state-owned and mixed-use areas) may generate tax revenue of approximately 370,000,000 Euro, based on general plan projections. Of these, the Infrastructure Impact Tax (IIT), which is only once availed during the process of obtaining a construction permit, is estimated at about 150,000,000 Euro. The rest are revenues that would be generated periodically every year. These areas, in terms of interventions proposed by the local plan, gain higher densification, and a small increase in the percentage of services.

Suburban areas, including informal settlements in northern Tirana, and peripheral housing blocks (in Kashar and Dajti) as well as the Tirana-Durrës economic zone, may generate revenues of about 850,000,000 Euro in the first year. The suburban typology is considered as a predominant typology in the whole municipality (about 57% of it), therefore the summarized tax values are considerably higher.

Finally, rural areas, represented by village centers and developed areas along the roads, account for about 12% of the urban terrain of the Municipality of Tirana, and usually undergo very small changes in FAR but major changes in land use: agricultural territory replaced by urban territory at 50%. Thus, taxes generated from these areas by IIT are around 1,800,000 Euro, while other taxes periodically collected amount to 25,000,000 Euro (additional to the existing ones). Of course, in these areas, because of conversion of agricultural land, they lose around 660 Euro each year from agricultural tax.

In conclusion, it can be stated that if the zoning concept of the local plan of Tirana is implemented completely, and if the tax collection system is efficient, the municipal budget can be supplied with a value of 168,931,678 Euro from IIT, which should be used for the necessary investments in the city, in order to develop infrastructure to support new densities. In addition, the municipality would benefit from 1,509,127,142 Euro annually from residential property tax and service property tax. Given that currently the municipality's own revenue is estimated at about 131,000,000 Euro, the calculated values caused by zoning exceed them 10 times.

As a consequence, it is necessary to improve the system of asset registration, tax collection, etc., so that this potential is not untapped. On the other hand, it is important to link the

taxation (purpose, base, etc.) to the territory and concrete investments therein. Transparency in how tax revenues are allocated are the best way to ensure their efficient payment by citizens.

As far as efficient investment planning and budget planning issues are concerned, designing a realistic planning document can be considered the most important step. In the planning document, in the absence of a sound financial analysis as well as a Capital Investment Plan, the link between strategic objectives and implementation is yet to improve.

PILLAR 3 Operational morphology and urban form

The chapter aims to facilitate the correlation between zones – development indicators and – spatial typologies, by exploring the spatial tools to analyse the territory to better define the afore-mentioned parameters. The focus is 4-fold:

Exploring the array of practices of urban analysis used in Europe/ USA, which can be monitored and linked to specific outputs. The study starts with the Conzenian approach to morphology, and continues with the more advanced approaches to spatial analysis

Understanding Shifting towards 'operational morphology', as a response to the challenge of bringing together research and practice in study of form and the correlation to the territory/city

Exploring in detail the 'Segment based axial analysis' and the 'space syntax analysis' as two of the most advanced forms of operational morphology

Analysing case studies where applications of these

3.1 Urban form and the approach towards normativity

"Urban indicators are one of the most common and widely-used tools in worldwide planning practice" (Pissourious, 2014). Thus, they can help understand the gap between theory and practice in urban development. It is important to underline the shift in mindset that occured in the planning process, from the 60's and 70's, when the aproach was technocratic and rational, to the mid 70's, where planning was seen as a political discourse, and finishing with the 90's, where this approach was taken into extremes (Pissourios, 2013). Following, there is an overview of some of the theories on the city, that have changed the concept of planning and development standards, from the middle of the XIX century, to present days.

One of the most crucial moments in city planning history, as well as the first milestone in planning theory, was the Beautiful City Movement, in the XIX century. Following the industrialization period, and the emergence of a new city structure, this Movement focused on the monumental qualities of the city, as well as the rational allocation of space to different purposes. Some representative examples of the large scale interventions of the time were the Ringstrasse of Vienna, "Hausmann's transformation of Paris, Cerda's extension of Barcelona, and, somewhat later , the City Beautiful tradition in the United States. Focussing exclusively on utility and aesthetics, monumental planning was a purely technical matter" (Panerai, 2004), thus standards for the development of urban blocks, were widely used and required. The Haussmannien Block, for example, had a fixed surface, varying from 30000 to 50000 sq. meters, integrating the image of the new bourgeois Paris. The density, height, even the length of different modules inside the block, were standardized and used throughout all new developments. Nevertheless, the attention to city planning parameters was scarce, and the public investments were mostly focused on infrastructural interventions (road and sewage system). The main problem of these interventions, besides the obvious rigidity and the disregard of the existing urban form, was the fact that this breakthrough in planning

theory didn't encompass the social aspect of the city, which was changing in it's own paste.

With the emergence of the Garden City Movement, first conceptualized by Ebeneezer Howard, the purpose of planning seemed to shift from a mere aesthetic expression of the city, to a more social dimension. The emphasis was put on the development of new, self-sufficient cities, as well as a better quality of life. "Even though the concept gained immense popularity, it quickly mutated into an urban design approach, stripped of its original regional potential, as well as its organizational and social principles" (Steino, 2003). As such, following R. Unwin's theory on City Planning in *Town Planning in Practice,* new developments were set to have a density of 20 dwellings per hectare, facades at least 16 meters distanced from each other, streets with a width of 13 m, which would be lined with trees, etc (Hampstead Garden Suburb Trust, 1906). In theory, this radical movement aimed at setting principles and indicators of qualitative living in city scale, but practically it was limited to physical standards, and rather simplicistic planning indicators.

Next, after a transitional period where the traditional architecture was dominant, the modernist movement emerged, as a response to the evident changes in technology (the wide use of cars) and policy making. The period 1920-1930 was associated with a new kind of building block, the *Siedlungen*, housing districts of the new industrial cities (Panerai, 2004). In these projects, where Ernst May was a main contributor, there was a standardization of building height and length, or in some cases, the repetition of the same module, and there was an emphasis on the public, common space, in contrast to the private courtyards. The modernist utopia, as called by Gosling & Maitland (1984), came with ideas, such as the Vertical Block, and the Radiant City, and was dominated by Le Corbusier. The modernist approach was radical and it changed the perception of dimensions and space. The old urban forms were disregarded and the development focused on the power of the modern factory and the vehicles. Therefore, there was a strong disregard of the social dimension.

The approach was strongly functionalist, thus, planning and development standards were determined in city scale, using zoning as a primary instrument. The universalization was the main characteristic of the modernist principles, which were implemented only in a few cases in urban planning. One of them was Chandigarh, designed by Le Corbusier in 1947. It was concieved as a "post-war" garden city, with well-established neigbourhood sectors of 800 x 1200 meters, a population of 3000-20000 inhabitants per sector, where each sector was self-sufficient and provided shops, a school, a health center, places for recreation and worship (Chandigarh Urban Planning Concepts). The rational segregation of functions was the main objective of the urban planner in that time. (Steino, 2003).

Anyway the approach to design during the modernist period can be considered abstract, and even shallow, because of its standardization. Postmodernism, which came as a rejection of the "totality" and the comprehensive nature of planning, presented itself in the following planning models: systems view of planning, rational planning, the New Right and communicative planning (Hirt,2002).

In the systems view of planning, which focused on the acceptance of the settlement as a system, it is argued that there was a need for social accounts for urban units, "to measure the

state of the city by a few simple indices" (McLoughlin, 1969). As far as the projected, desired indicators, they are defined in the planning programme, and are not quantified.

The rational process, represented by Faludi, "goes through the following stages:

1. the systematic analysis,
2. the definition of problems,
3. the programme formulation,
4. the logical production of plans,
5. the evaluation of plans and the monitoring" (Healey, McDougall, Thomas, 1982, as seen in Pissourios, 2013).

Faludi still stretches on the need to "accept the idea of proceeding on the basis of statements concerning the direction into which one ought to move to reduce a tension, instead of objectives precisely describing a world in which that source of tension has been removed" (Pissourios, 2013). Anyway he acknowledges the existence of minimum requirements in physical planning, and the use of analytical indicators of the existing situations (Faludi, 1973).

The New Right approach is based on a market-oriented state, in combination with the authoritarian strong state (Pissouris, 2013). The three grounds on which they operate, are: "improving the performance of market economies, ensuring minimum social standards and maintaining the integrity of the state" (Sorenson and Day, 1981). But these minimum standards are applied uniformly, in all communities with different needs (Pissouris, 2013).

The communicative approach to planning was developed in the 1980s and 1990s by John Forester and Patsy Healey (Taylor 1998). This is a theory that supports participatory planning and decision making, and a deeply bottom-up approach, where all decisions are based on people's perceptions, and not on measurable desirable outcomes.

At this point, we can differentiate between planning as a mere design and physical field, and planning as a multidimensional process. Parallel to the development of the above planning theories, there was the emergence of several postmodern theories regarding urban design and the urban form. They can be divided into 3 categories: theories regarding the formal aspects (Collage city, Wholism), theories regarding the environmental aspect (Livable Streets, Urban Quarters), and a combination of both (New Urbanism).

The theories regarding formal aspects in planning are deeply related to the morphological aspects of the city. Following Aldo Rossi's theory on the supremacy of the architectural form as the main component of the city, Rowe & Koetter (1978) develop the concept of **collage** in urban design, as a way to overcome the false scientific claims of the modernist movement , and in the same time, the undesirable "ad-hocism" of postmodernist planning approaches, such as communicative or advocacy planning (Steino, 2003). Rowe & Koetter's theory is a conceptual view of the city, arguing against grand schemes and total designs, in favor of a more pragmatic approach to urban design, which acknowledges the complexity of power and uses in contemporary societies. This approach is quite important in the way we can read and

understand today's cities, but it remains vague, hence the normative aspects of this pragmatic goals are not explicit.

Contrary to this approach, Alexander (1987) argues that there should be an 'overriding rule' in the urban development process, which will make sure that the outcome is "whole". This guides Alexander's "**wholism**" theory into understanding how every project must be seen as a contributor of a bigger part of the city, by enhancing the quality of the larger context (Steino, 2003). When it comes to the architectural scale, Alexander argues that there should be arbitraty aesthetic rules about the building materials, using a traditionalist design. In his theory, Alexander doesn't specify explicit standards or performance indicators in city or district scale, but bases his arguments on principles and on a specific "language" of the components of the "whole".

Parallel with the postmodern trend towards formal approaches, the environmental theories of urban design see the urban space as a living environment, and emphasize the importance of the community and public spaces. One of the most popular theories of this category is the **Livable Streets** approach, introduced by Jacobs and Appleyard (1987) in an urban design manifesto. The main concern of this theory is focusing on the urban space and its role for public life, rather than buildings, and eventually achieving a good livability, good health and comfort. Specifically, according to Jacobs and Appleyard, 5 physical characteristics are essential in the fulfillment of the livability: livable streets and neighborhoods, minimum densities, functional integration and proximity, positive urban space, and human scale and variation. Livability, in terms of high standards for sunlight, clean air and open space, as well as strict limits for noise and pollution, is regarded as a primary goal in modernist urban planning. Nevertheless, according to this theory, too strict norms can also reduce livability because of the unintended implications of these norms. They therefore plea for 'reasonable' rather than 'excessive' livability standards (Steino, 2003).

Another well-known theory related to the environmental approach towards urban design, is the **Urban Quarters** theory, introduced by Leon Krier in 1981. In search for the principles of a good city life and a good society, Krier goes back to the post-industrial city, as an ideal example of spatial organization, and finds the ultimate solution for all problems of the urban space in the "Urban Quarters". According to this theory, architecture and society should embrace once again the values of craftsmanship and artisan, condemning the capitalist society and the private ownership. These ideas are rather radical, therefore do not apply to contemporary cases. Nevertheless, the idea of the urban quarter remains one of the strongest points in the theory. According to Krier (1981), each quarter must have its own periphery, center and limit. "It should integrate all daily functions of urban life (dwelling, working and leisure) and be dimensioned on the basis of the comfort of a walking man (not exceeding 35 ha and 15000 inhabitants)" (Williamson, 1996). Furthermore, he gives principles on the orientation of the urban quarters, the relationship between the squares, the streets and the buildings, the density of the block in response to the typology of it, etc. These urban components have become a basis for the emerging New Urbanism tradition, which is widely spread and implemented in the USA.

Oposing the vehicle-oriented model of city-planning in the USA, **New Urbanism** emerged in the 80's, promoting healthy neighbourhoods, higher densities and a better social

interaction. At the core of the New Urbanist Movement is the idea that you can match the typological layout of an area with development indicators (Bohl, 2000). The Charter of New Urbanism offers some main principles for city development, in three different scales:

a. the regional scale (metropolis, city and town),
b. the neighbourhood (district or corridor) and
c. the block, street or building.

This emphasizes the importance of planning standards, as well as land development ones, in specific cases of spatial typologies. Some principles that implicate development and planning standards, are:

a. "Appropriate building densities and land uses should be within walking distance of transit stops, permitting public transit to become a viable alternative to the automobile.
b. Many activities of daily living should occur within walking distance, allowing independence to those who do not drive, especially the elderly and the young. Interconnected networks of streets should be designed to encourage walking, reduce the number and length of automobile trips, and conserve energy
c. A range of parks, from tot-lots and village greens to ballfields and community gardens, should be distributed within neighborhoods. Conservation areas and open lands should be used to define and connect different neighborhoods and districts.
d. A primary task of all urban architecture and landscape design is the physical definition of streets and public spaces as places of shared use." (Congress of New Urbanism, https://www.cnu.org/)

It is important to state, nonetheless, that the principles of New Urbanism, despite their wide successful implementation, are not comprehensive enough: they apply mostly to a particular culture and tradition, and to a specific middle class. It is difficult to include more socioeconomic aspects in this scenario, without a strong legislative, financial support from the government (Steino, 2003).

In conclusion, we can state that normativity in planning theories varies according to the period and the focus of each theory. There is a distinguishable shift from rigid and more physical approaches to planning and urban design, which encouraged the use of physical standards of esthetics, function or services, to a postmodern perception of planning, where the situation is guided by principles, rather than strict standards. Furthermore, in the postmodern period, we can differentiate between planning and urban design theories, as two different fields, addressing interconnected issues. It is important to make an evaluation of the contribution of each of these theories, and to emphasize the best outcome and principles of each of them, that can help the process of setting development and planning standards for Albania. The following is a list of principles that can be acknowledged from these theories:

1. the urban environment we live in should offer a good liveability, good health and comfort

2. urban quarters are a concept that can be used in city formation, as a substituent of the rigid urban block, which can be regarded as outdated in contemporary mixed-use cities
3. the smaller the urban quarters are, the more access and public frontage they create
4. perimeter blocks are not preferred, since, in repetition, they encourage social disruption
5. in order for a block to be orientable and of good formal qualities, it must either be created from a typologically classifiable street pattern, or from a classifiable building typology, or have public spaces which have classifiable typology. The three can not occur in the same time because it then leads to chaos.
6. a city must have functional integration and proximity between neighbourhoods
7. the areas need to have positive urban space that encourages people to express themselves
8. human scale and variation are important for the perception of the area
9. buildings should be positioned in such way, as to define/enclose the public space
10. the criteria for qualitative living can be measured in different scale typologies: region/city, neighbourhood/district/corridor, block/street/building

Figure 33 Planning theories approach to normativity (from utter rejection to outright acceptance) – Identification of the theories that contribute to this research

Source: own contribution

3.2 New emerging concepts on morphology and quantitative approaches to spatial form

To understand how morphology affects the planning and development standards, it is first important to outline what morphology means. Essentially, urban morphology deals with the knowledge of the logic of the urban form. Thompson and Bonner (1969) explain that many disciplines study the logic of form, because the morphological dimension is a crucial part of the explanation of how things are and how they transform, paralleled to the living organism. Thus, we can only conclude that studying the morphology means to discover the history itself. Form is also a suggestive word in this case, because "the contemporary city is form-less since one of its main characteristics is the impossibility to define a contour, a clear line that divides the city from the countryside" (Secchi, 2003). The form referred to in this paper, is that of recognisable spatial configurations within the city, not that of the city itself.

Nevertheless, the study of urban morphology is already a well-known and consolidated approach which has been applied to the urban environment (Pinzon Cortes, 2009). The emphasis seems to be on the study of buildings, open spaces and their logic of formation and transformation. However, morphology is often seen as a branch of geography, rather than of urban planning, so, when it comes to designing spaces, the morphological approach is a rarity. As explained by Evans (2005, Urban Design, issue 93), this is because it is perceived as a theoretical study of urban form, whereas the actual creation of urban form, the design, is regarded as unrelated to the former, due to an educational barrier between geography and architecture sciences (with no rational basis, indeed).

Three directions of morphological research have been developed: the Italian school, the French school and the English school.

According to the theoretical analysis carried out by the Technische Universiteit Eindhoven, the italian approach is represented by the work of Salverio Muratori, who is considered as the first analytic researcher of urban form. This approach is often referred to as typo-morphological, because it focuses on typologies. Spatial structures are considered concrete material forms, rather than abstract, as in modernism. The method is applied in 4 scale levels: buildings, district, city and territory. For each of them there are four aspects that contribute:

- the elements of design (building parts, urban spaces..),
- the internal structure of elements (f.e. the disposition of buildings and spaces),
- the relation between form and use, and
- the materialisation, i.e. the formal aspect.

Muratori defined a type as "a construct of conventions and norms that exist in a certain region or town and that evolved over time on the basis of experience". Thus, his theoretical premises, which than became the main points of the italian morphological school, were:

1. Building and environment can not be separated. They should be taken into consideration together in analysis and design.

2. Parts of the city cannot be considered separately from the whole city.

3. The city can only be understood in its historical dimension because it emerges from a succession of reactions and processes of growth.

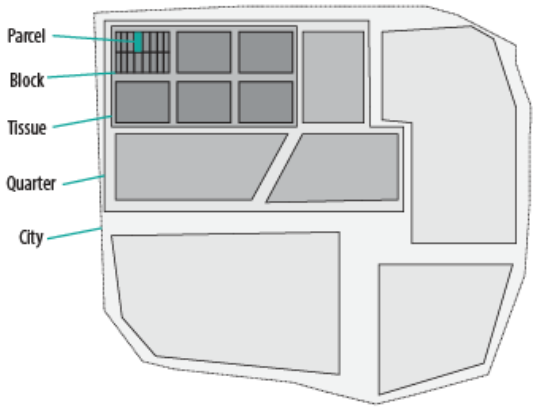
Following Muratori, there were three generations of researchers, who represented the italian morphological school: Aldo Rossi and Carlo Aymonino in the 60's, Gianfranco Cannigia and Gian Luigi Maffei in the 80's and Bernardo Secchi in the 90's. Rossi and Aymonino were known for a strong emphasis on the small scale, on streets and squares, and for their notion of "permanence" in urban structure (Rossi, 1982). Cannigia and Maffei, on the other hand, developed a chain of interaction between 5 scale levels of urban morphology, as a continuation of Muratori's theory:

1. the parcel
2. the urban block
3. the urban tissue
4. the urban quarter
5. the city

These theorists support the idea that first, an archetype should be discovered, which is the backbone of the urban form. Than, the development occures following, expanding this primar form...The main think that can be recognised in today's contemporary cities, is that there is an inherent evolution of form, which can be traced back at the origin of some spatial formations...

This is helpful to the objective of this thesis, because it gives insight on the methodology that can be used to address the morphological study, and sheds light on the issue of expansion, densification of areas and new developments.

Figure 34 Morphological layering



Source: own contribution

The second school of morphology is the French approach. It is represented by the work of Phillippe Panerai, Jean Castex and Jean-Charles Depaule and emerged in the late 60's, as a reaction against modernist architecture. The main scope of this approach is discovering the traces that inhabitants leave in the urban environment, and giving solutions, by understanding the existing, not imitating it.

According to the French morphologists, there are 5 types of spatial analysis:

1. urban structures

2. phenomena of growth (spatial traces of the past)

3. typology

4. urban landscape (as explained by Lynch, Unwin and Cullen)

5. social practices in urban space (relation between behaviour and urban space)

The typological approach is a considerable contribution of the french school in morphological studies. It starts from the existing, not an idealized situation, and for every situation there can be a specific method applied. Thus, general criterias can not be applied everywhere. The method proposes different sorts of type:

1. 'the family', which is represented by a "typical example"

2. 'the base type', which is exemplary for a certain period

3. the 'archetype', an idealized model by which other forms evolve

4. levels, similar to the italian school, which can be cathegorized into parts of buildings, buildings, parcels, groups of parcels and global level

5. variations and transitions to the typologies

This approach is valuable, because it shows that typologies can not be predefined, but are determined after a thorough study of the morphology of an area. Also, the analysis of urban tissues, the incorporation of the third social dimension, and the idea of closed and open

blocks can be a good starting point to approach today's cities (Cortes, 2009).

Finally, the English school, which is known as te oldest, has a more systematic and concept based approach. It is represented mainly by Conzen, and is strongly related to geography, because the main concepts are ground use and function. Conzen has contributed in developing a morphogenetic method for the analysis, emphasizing the cartographic representation and the terminological precision (Arid Regions Geographic Studies, Vol 2). According to him, 3 levels can be distinguished in morphology (Conzen,1978):

1. the city form
2. the urban tissue (the composition of buildings and spaces)
3. the use of ground and buildings

The basis of the analysis are three main elements: streets, parcels, buildings. Conzen uses the concept of "compositeness" to explain the collection of different patterns, and the "plan units" are the configurational parts of a city form. These contribute to the "stratification" of the urban landscape, i.e. layering of the city form. Finally, he uses the term "fringe belt" to describe areas that are in state of transition, or don't have clear urban tissue.

The English approach is widely used in today's morphological studies. It is helpful also in modern cities, whereas the Italian and French approach are more successful in discovering the historic development of form in old cities.

In his study on mapping urban form, Cortes (2009) argues that today, urban morphology seems to have lost importance within the mainstream of approaches to urban design, and is considered merely as a methodology of New Urbanism. This is because today we speak of complexity, non linearity, a new paradigm of architecture...a theoretical approach which is distanced from the specific locations and dimensions of the space Sassen (2001). On the other hand, most of the morphological studies concentrated on historical centers, which has limited its application in today's world (Moudon, 1997). Finally, the morphological approaches, although systematic, can not fit to a specific scientific field, because they are either too historic, or not enough mathematical, or too empirical (Panerai, 1997). Nevertheless, morphological studies help to understand the ratio between built and void, the relation between spaces, etc.

According to the latest studies of The Urban Morphology Lab, the city fabric can by divided into 6 different levels and every level should be analyzed separately in order to have a better understanding of the city fabric as a whole (Salat, 2009):

1. Human beings and activities
2. Street network
3. Parcels
4. Topography and relief

5. Land use and repartition activities

6. Three dimensions of the city, solids and empty

These contribute to planning standards, and to the human dimension of the city. As far as morphological study goes, Marshall (2005) argues that "according to the Figure and Ground theory, the urban fabric can be divided into two primary categories; the built form (the figure) which consist of building complex, outdoor barriers and landscape enclosure components; and the public space (the ground) which consist of the open spaces (squares and piazzas) , courtyards and movement components (streets, paths, …etc)". Consequently, the main vocabulary can be deduced as following:

1- Building complex.

2- Streets and networks.

3- Squares and nodes.

4- Landscape and greenery.

Other definitions cathegorize it as:

1. Plot

2. Streets

3. Open space

4. Constructed space (Levy, 1999)

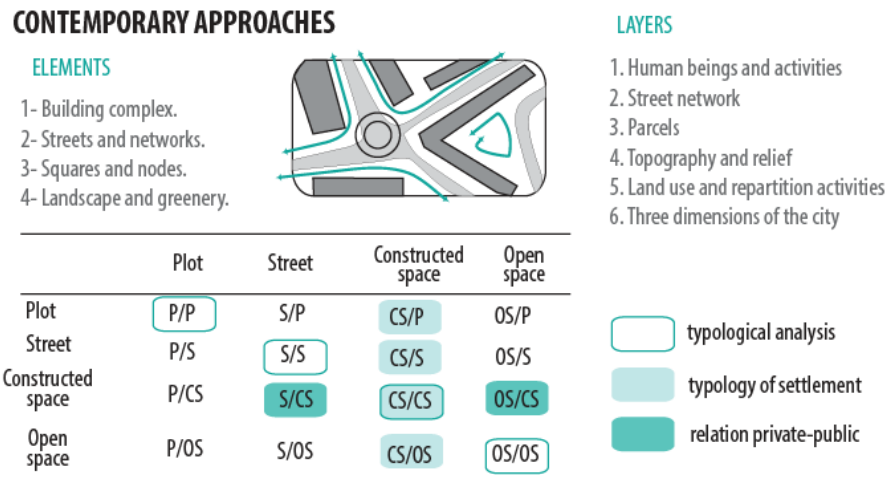
These two structures will be followed also in the analysis of the samples, by emphasizing on some specific characteristics of the morphological approach of the different schools, according to the inherent character of the areas.

How to link this approach to the actual "search" for suitable development standards?

Levy (1999) argues that to understand the relation between building type and urban fabric, we have to use a synthetic model, by examining each relationship one by one: P/OS, P/CS, S/P, S/OS, etc...

Another approach is to "read the table diagonally", by analyzing only the relations: S/S, P/P, CS/CS, OS/OS, which correspond to a typological analysis of the elements.

Figure 35. Matrix of correlations between street/plot/constructed and open space



Source: Levy, 1999; prepared by author

The relationship between the constructed space and other elements defines "the typology of settlement". Finally, the relation between street and constructed space (S/CS) and open space to constructed space (OS/CS) best describes the relationship between private and public, and is often used in regulations, to achieve uniformity and harmony in the urban landscape...

To conclude, we can state that the morphological approach helps discover the various relationships between built and void space. This relationship should not only be seen in a physical and empirical dimension, but, following the logic of the italian, french and english school of morphology, it should encompass many elements by which it is defined, like the typological features, the historical background of a site, the resolution and scale of analysis, etc. Thus, the morphological analysis is the first step towards a realistic and enhanced determination of development standards for an area.

3.3 Space syntax as a qualitative and quantitative tool to interpret urban form

"Space syntax ... is a set of techniques for the representation, quantification, and interpretation of spatial configuration in buildings and settlements. Configuration is defined in general as, at least, the relation between two spaces taking into account a third, and, at most, as the relations among spaces in a complex taking into account all other spaces in the complex. Spatial configuration is thus a more complex idea than spatial relation, which need invoke no more than a pair of related spaces" (Hillier,1987)

This statement by Hillier, the founder of the notion of syntax in urban development, emphasizes the importance of this recent field of study in understanding multivariable relationships in space. The application of space syntax is wide and includes road network analysis, traffic flow, urban spatial morphology, geometric accessibility and many others (Lin, Xu, Shen and Yang, 2010).

The main theoretical axis is based on the fact that the city system is composed of two parts, the built, mainly the buildings, and free space, which is permeable. There are three basic conceptions in Space Syntax Analysis (Björn Klarqvist,1993):

1. "Convex space is a space where no line between any two of its points crosses the perimeter. A concave space has to be divided into the least possible number of convex spaces.
2. Axial space or an axial line is a straight line ("sight line"), possible to follow on foot.
3. Isovist space is the total area that can be viewed from a point." (Min, Yang, 2013)

University College London (2000) has developed the software that produces axial maps, visibility graphs, isovists for different features (area, compactness, magnitude, perimeter, ect), and calculate visibility relations, by producing integration maps, entropy maps, ect.

The variables conserning these analysis are not of interest to this case. There have been numerous associations of space syntax to land use developments, to comparative analysis of grids and street networks (Shpuza, 2007) and to GIS applications. These imply a considerable degree of expertise and computational skills.

What is of interest in this research, is the way space syntax can change our perception of the distance of services to a given area.

-The connectivity analysis shows which areas are more connected, and which are more segregated.

-The visual integration analysis shows how one point is connected to every other point. It is different from the connectivity analysis because it is related to the isovist analysis, how an area is viewed from a point.

-The visual entropy shows the irregularity of the distribution of the structures in an area, by analysing the way the depth is distributed in relation to the space

-The axial connectivity accessibility shows the categorization of roads according to the number of nodes they are linked with

-The axial connectivity choices show the arrange of possibilities to chose one path over the other.

Each of these analysis can be used in different situations. To plan the position of green areas and urban parks, the connectivity and integration maps are important, because they give a more realistic view to the situation, in contrast to measuring just aeral distance or walking distance.

The visual entropy and integration helps also to make a judgement on the level of fragmentisation of the area. To determine standards on open space or compactness, these parameters are important and help the decision making, as well as the comparison between the situation before and after the implementation of a specific standard.

The axial properties are important to understand the fluxes of movement, thus evaluating which side of a block or a subunit is more accessed, how can this be related to the distance of the building from the road, etc.

At this point, this approach to enhanced standards-making process cannot be generalized and can only be evaluated case by case.

3.4 Case study: Axial Connectivity

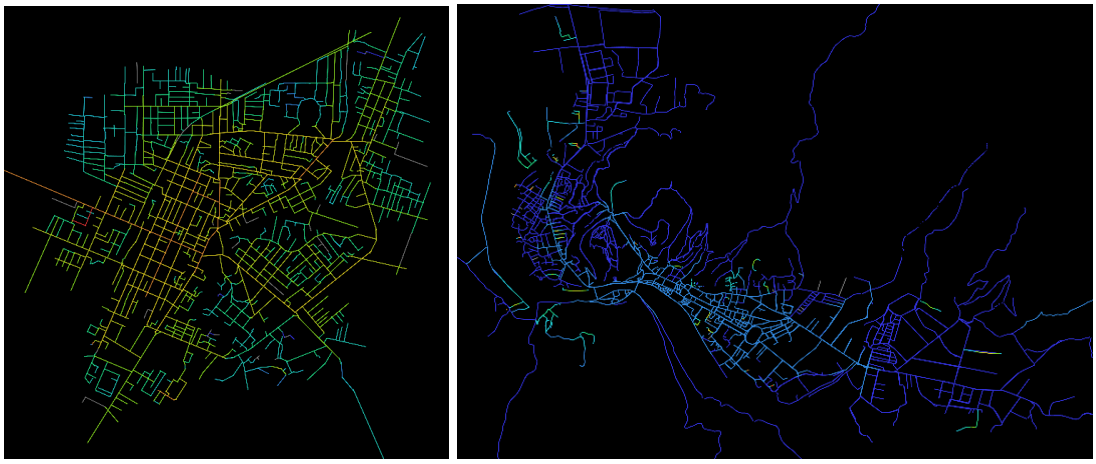
The aspect of connectivity is analyzed through axial space syntax. This method automatically analyzes the number of points of intersection of each line, assigning one color to that number. Lines are determined by the maximum distance that runs between two points without physical barriers between them. In these types of analysis, widely used in morphological studies in the past 2 decades, better accessibility is indicated in red and the weakest is indicated in blue. Basically, this analysis measures the number of axes that intersect at a given axis, and the continuation of this axis, without running into physical barriers.

The analysis conducted for the cities of Fier, Berat, Elbasan and Lushnje shows that we have two categories of results: good and normal axial connectivity for Fier and Lushnje and very weak connectivity for Elbasan and Berat. This is mainly related to the fact that Lushnja, and Fier in particular, have a quadratic network, which links the main axes (the boulevard and the ring road) to their fullest. This comes as a result of historical development of these cities and their location on the flat topography of agricultural plain areas. Lushnja's main boulevard turns out to be the most accessible road in the cities considered in this study, as it is linked with most of other axes of the city. It should be pointed out that this analysis considers the relative accessibility of an axis in relation to all other axes of the same city. Thus, Lushnja has fewer road segments, and consequently its relative accessibility is higher. On the other hand, Berat, with only two main longitudinal axes, running through the city, has weaker connectivity. In the central part of the town, from the Mangalem neighborhood to the stadium, the quadratic network enables a somewhat better connectivity than the rest of the town.

Elbasan, on the other hand, despite the presence of a good quadratic network in a certain part, has fairly low connectivity, due to the lack of uninterrupted longitudinal axes and the generally large number of road segments (contrary to Lushnja's). The best links run along the boulevards, as well as in areas with good spatial permeability. This shows that we can discover some connection between building typologies and connectivity at the city level:

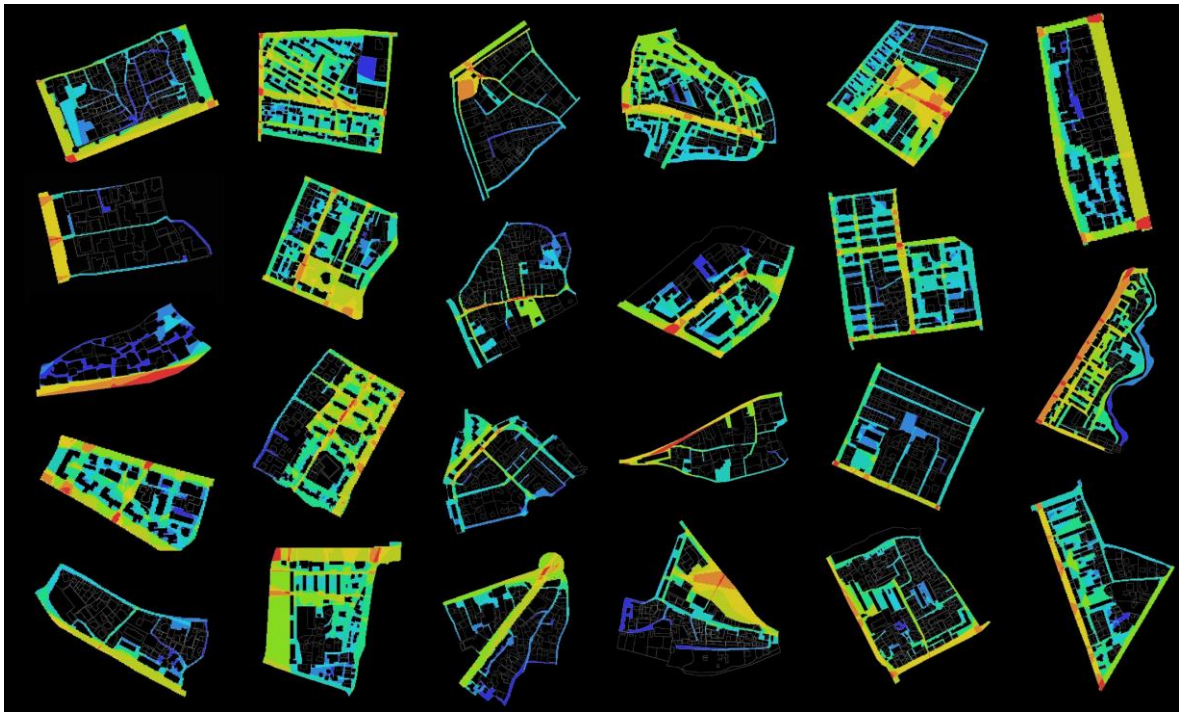
- Areas with longitudinal buildings of various densities offer higher connectivity than mixed areas;
- The regular quadratic grid also provides a better connectivity at town level;
- While they provide low permeability, the areas with villas create good connections and regular quadratic grid when positions in central parts of the town.
- Areas of mixed longitudinal building typologies with villas and towers generally create weak connectivity and little space integration.

Figure 36. Axial connectivity, Fier, Berat



Source: own calculations, using UCL Depthmap

Figure 37 Representation of spatial connectivity of study areas



Source: own calculations, using UCL Depthmap

At zone level, spatial connectivity shows the number of connections from a cell in space to other cells adjacent to it. More concretely in these cases, the rectangular typologies provide for more permeable, useable space, especially in areas with longitudinal buildings. Other rectangular areas of individual housing provide less spatial connectivity, due to the presence of individual gardens. Other areas, of more longitudinal or ramified layout, provide for a more difficult access and less connectivity between spaces.

PILLAR 4. Spatial and territorial typologies

This pillar analyses the first 2 pillars to find correlations between zoning principles at city level, and land development standards at zone-level. The main scope is to understand

whether in complex contexts there can be unification of land development standards that can be found in different zones, which in turn can create distinct spatial typologies. The approach is analysed in two levels:

A. Firstly, the correlation of building typologies with each other and the structural units is analysed
B. Secondly, spatial typologies are defined and their characteristics are analysed in terms of land development standards

This chapter is based mostly on case studies, without a theoretical basis to support, due to the applicative character. Albanian municipalities have been taken into consideration, but the results can be extended to more international cases upon refinement of the methodology.

4.1 Introduction to spatial and building typologies

Spatial typologies are a complex field of study, which is based on two main components: i) how to fully (or almost fully) categorize various forms and relationships among settlements, buildings, areas, spaces, etc., and ii) how to use these categorizations for planning and development issues at local level and further. In essence, a typology is a group of objects (buildings, villages, road segments, individuals, etc.) with one or several common characteristics, the space between them and their mutual relations. Thus, as an example, a group of tower buildings, with a 5-8-storeyed height, comprise a typology. Also, a group of villages lying linearly linked with a main road form a typology. Even an area with quadratic road network is a certain typology. By identifying these groups of features through multi-layered study, we can draw quantitative or qualitative conclusions, applicable to them in a general way.

The criteria for determining the spatial typologies according to the Territorial Planning Regulation should be as follows:

The uniformity of the type and volume of the structures

This means that the structures of a typological division are dominated by a residential typology. For example. areas with detached buildings, cottage type, or area with multi-family tower-type buildings.

The location in a structural unit

This aspect addresses the way buildings are located in relation to the perimeter blocks of the block, the inner streets, and the parcels themselves. Also, the positioning of buildings related to each other is taken: located in row, attached, parallel, perimeter, U-shaped block, L-shaped, etc. This element is very important to further study conformance with the standards of distance, and to provide valid suggestions for development indicators (PCR, RCR, PPCR, etc.)

The road network and the public spaces

The road network constitutes an important criterion not only for the division of typologies but also of structural units. Thus, in determining a typological zone, we should study the shape of the road network and how it relates to free spaces. Quartet, organic, linear, etc. provide different accessibility levels of the areas, and as a result, indicators such as PCR, RCR, PPCR at the structural unit level will be different.

The height

The typological division according to the height of the structures ensures uniformity of the number of floors in order to avoid the problems of shading, privacy, the large difference in height between the two attached structures, and so on. Likewise, altitude unification enables a simpler calculation of proposed development indicators (eg development intensity)

These criteria are not the only ones that can help us to divide typologies, first because they are not exhausting and secondly because they only address urban areas. In terms of new municipal territories, with much larger surface area and diversified urban, periurban, rural, agricultural, natural, etc. there is a need for a multi-tier analysis of typologies.

4.2 Overview of spatial typologies in Albania

In order to have enhanced and realistic standards, it is necessary to make contextualized regulations. This implies that most standards can be applied in local level, rather than national one. This process would help the development of more sustainable cities, but needs a real shift in the way planning and development is perceived by the local authorities.

Nevertheless, in order to do that, we need to distinguish between several spatial typologies. The criteria chosen for the categorization is as follows:

-population size

-urban/rural character

-topography of terrain

-settlement configuration

-land use

-Informality trends

According to the population size, it can vary from under 1000 inhabitants, to over 200 000 inhabitants. The need to have different standards for different size cities is obvious:The density in large cities can be larger, the urban structure more compact and the distance standards lower.

The urban and rural character helps to distinguish between different types of uses that are mandatory, especially commercial activities, green area provision, etc. In cities there is need to have standards for green areas, whereas in villages it is not important.

Topography influences the standards setting in terms of environmental issues. Coastal, mountain, flat and hilly terrains have different needs for thermal comfort, energy efficiency or natural ventilation. Therefore, it is recommended that these types of cities apply different standards according road network, density and distances.

The settlement configuration varies from linear models, to agglomerations, compact, sprawled, dense or satellite patterns. These spatial typologies can be characteristic of a particular area, rather than the entire city. Nevertheless, in local level, the standards applied for the development in each of them are different. Dense areas need planning standards in terms of activity, green area or commercial use coverage, in order to make them more liveable. On the other hand, sprawled areas need development standards, to raise the density and preserve the natural or agricultural land they occupy.

The land cover and land use characteristics are also important to denote, when it comes to setting standards. Usually planning standards are designated only for residential use, whereas industrial, business, administrative sites don't apply to any restrictment or regulation. In local level, this can be improved, through parameters such as green area, buffer zones, or network density.

Finally, the informality trend can also be used to distinguish between three types of informality: low informality, high informality and none. The approach towards developing an informal area has always been an issue of communicative planning, as "standards don't apply to them". Although this type of approach has been usually successful, still the resulting urban structure is not the best. So, in this case, it is recommended to have some non obligatory standards, in order to orient the citizens of the criteria they can abide to, in order to have a healthier environment. In this case, distances are an easily applicable instrument that can regulate the density or crowidng issues.

These spatial typologies, as briefly explained, can be applied in city scale, but sometimes even in neighborhood and block scale. Thus, it is the responsibility of local authorities to draft them in their local plans. Following are some distinguishable cases of study, with diverse spatial typology characteristics, and some recommendations on the standards they can use for a more livable and qualitative environment.

4.3 Methodology of study: complex territories

This analysis will help decision-makers determine the proposed land use, the extent of the urban system's extension, and set development standards at the unit-level structural level. The study of spatial typologies is therefore carried out at these levels:

1. Municipal level
2. Urban center levels
3. Levels of rural settlements
4. City-country border

5. Zone level

6. Building level / parcel

Figure 38. Level of study of spatial typologies

Source: ASIG, 2016

In this methodology, the following concepts are used:

1. **Building typology**: Categorization of the building by form, height, number of families that accommodates, positioning along other buildings, using, etc.. (villa, duplex buildings, multi-household tower residential buildings, parallel longitudinal buildings, etc.).
2. **Road network typology**: The way segments of the same network of roads interconnect at zonal level (in a form of network, spontaneously, radially, organically, etc.)
3. **The typology of spatial layout of villages**: forms of connections among various settlements in the same village (satellite, agglomerate, nuclear, central, etc.).
4. **Spatial typology of rural settlement:** The way buildings are established with regard to infrastructure, relief, each other, etc. (E.g., central, terraced, organic, etc.).
5. **Built Environment Typology**: The dominant building typology at zonal level, applicable to all urban and rural centers (e.g., area with medium density villas, mix area with longitudinal buildings, etc.).
6. **Typology of Spatial layouts at the urban-rural boundary**: The way suburban area of the town and the neighbouring rural area are developed and extend over the territory.
7. **Typology of spatial layout at municipal level**: The way main centers of administrative units are linked at municipal level.
8. **Spatial typology**: Overlapping of building typologies with road network typologies, at zonal level.

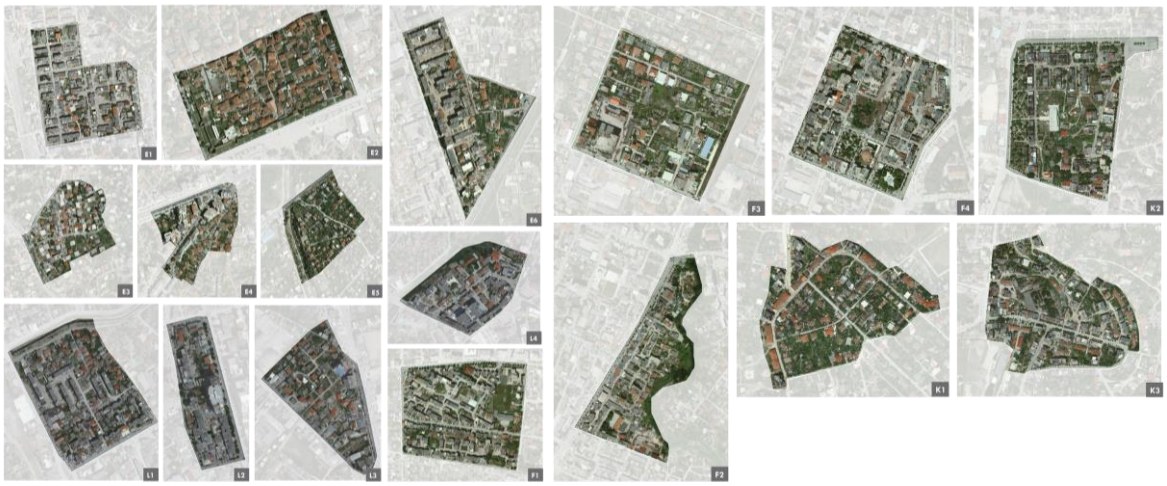
For the selection of samples at city level, several general criteria were considered, such as average building height, prevailing building typologies, road network structure, positioning of buildings in respect to the entire residential block, etc. For each building typology identified at municipal level, 2-7 modules were selected, to serve as representatives. For example, for low density individual housing areas, 2 modules with different road network were more than representative, because their general features, typology, and altimetry were similar. For mixed areas with individual houses and towers, 7 modules were taken under study, because the cases they introduce are more diverse.

Municipality of Berat had greater variety of typological zones, starting from areas of historic neighbourhoods, to mixed central areas, planned suburban areas, etc. Thus, in Berat 10 sample areas were selected. Four areas in Lushnje and Fier were taken under study, based on their typological uniformity and road networks. In Kuçova 3 areas were taken in consideration, while in Elbasan 6 areas, including 2 low-density areas, 1 historic area (the Castle) and other mixed types.

The 27 modules have an area that varies from 1 to 20 ha and their main use is residential. Thus, the typologies of industrial and agricultural areas are not taken into consideration.

Figure 39 Selection of modules in Berat (10 samples)

Figure 40 Selection of modules in Elbasan (6 samples), Lushnje (4 samples), Fier (4 samples), Kuçovë (3 samples)



The research distinguishes between 2 types of indicators: Development Indicators, which control development at zone level (e.g. existing and proposed FAR, density, coverage, etc.), and Planning Indicators, which secure liveability in city/municipal level (green area standards, distribution of health-care and educational facilities, etc.). The following table is a representation of all indicators measured for the study samples, and the methodology used for addressing each of them. Most of the data is available through desk survey, using an updated orthophoto and a well-structured GIS database. Some aspects, like building typologies, relation of buildings towards the plot, the road, etc., and street network typologies were pre-defined, in order to be comparable among the samples. A small number of analysis

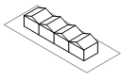
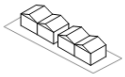
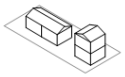
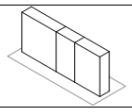
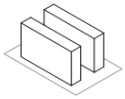
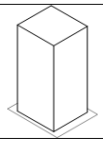
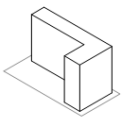
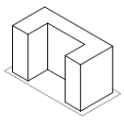
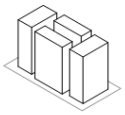
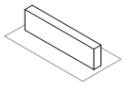
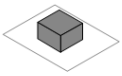
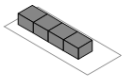
were conducted through a visual survey: the estimation of number of users, the permeability of the areas, the presence of physical and visual barriers, etc. The rest of the estimations was done through GIS software, by using pre-defined formulas and a series of scripts, that allowed for update of the results when changing the inputs. In total, 62 indicators were created and measured for the analysis of samples of spatial typologies. These indicators can be replicated and adjusted to other similar cases. In the given context, the size and shape of the selected modules was such, that it simulates a structural unit. Therefore, the measured indicators, together with some of the recommendations of this research, can be used by local governments under study when drafting their General Local Plans.

Figure 41 List of indicators measured at the level of samples

Source: own calculations

Finally, by defining the typologies of spaces, the research takes into consideration also the various typologies of buildings. For the catalogued samples, the typologies were pre-defined as follows:

Figure x. Building typology categories, according to their formal characteristics

							
Single-family detached house	Single-family row houses	Single-family semi-detached houses	Single-family attached houses	Multi-family duplex buildings	Multi-family attached buildings	Longitudinal buildings	Parallel longitudinal buildings
							
Tower building	L-shaped residential block	U-shaped residential block	Z-shaped residential block	Residential complex	Urban wall	Non-residential detached building	Non-residential attached buildings

Source: own contribution

Level 1. Building typologies at municipal level

By means of the observation conducted on site on rural settlements and urban centers and based on orthophotos and digital maps of municipalities, the following main categories of building typologies were identified:

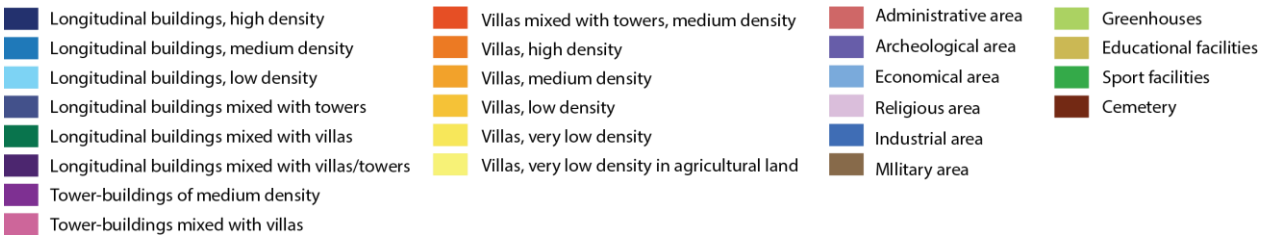
- Areas with prevalence of longitudinal buildings[8],

- Areas with prevailing villas,

- Areas with prevalence of tower-typologies of buildings,

- Other non-residential areas..

Subcategories were created for the first 3 typologies, based on residential density (number and distribution of buildings over the territory) and the extent of mixture with other secondary typologies type. Thus, the list of building typologies observed in the municipalities under study is as follows:



This classification points out that the areas with predominant villa typologies do not generally mix with longitudinal types of buildings, and are easily differentiated by (high-very low) density. A separate subcategory taken into consideration is the one of the villas

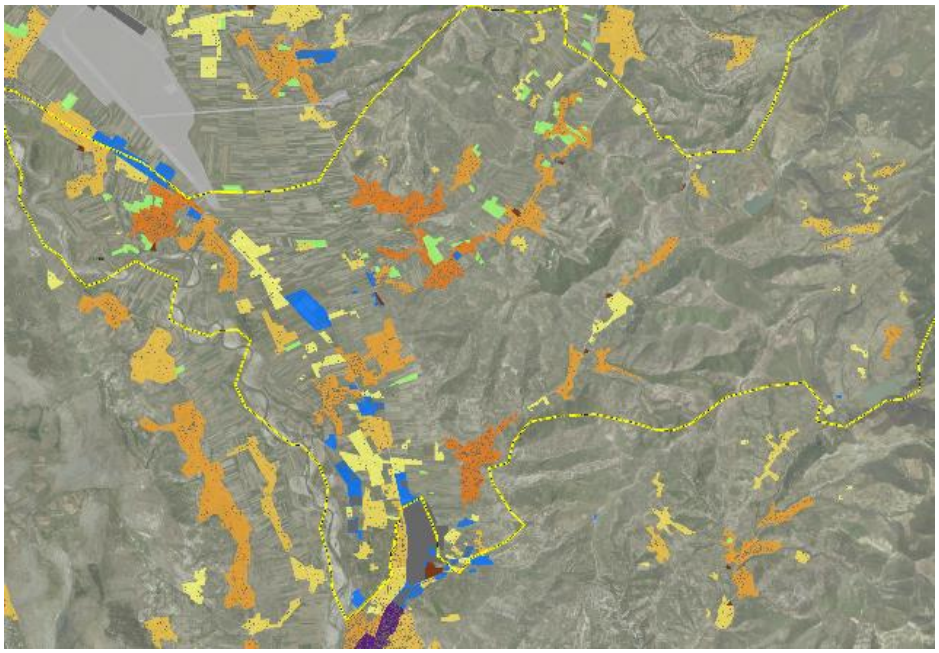
[8] The classification of longitudinal buildings includes multi-household buildings that have more than two entrances and over 3 storeys. Tower-type buildings include multi-household residential units of over 5 storeys, where height is greater than the dimensions of the base. The villa type includes one-household buildings (either separate or lined-up) and duplex buildings with a height up to 3 storeys.

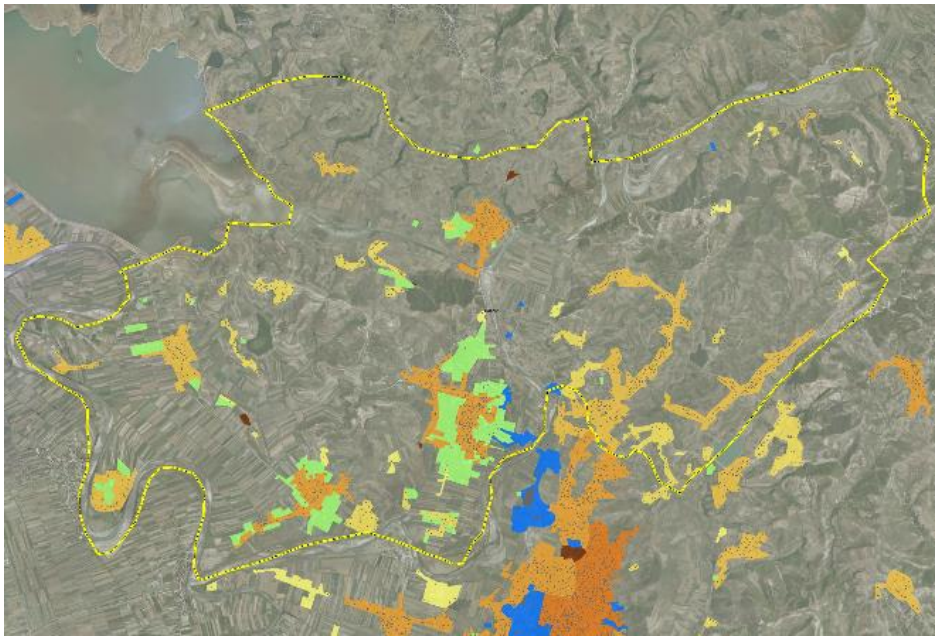
with very low density in agricultural land, referred to the “leap-frog” type of developments in the middle of agricultural land. Areas with prevailing longitudinal buildings are rarely found in their pure form and it is difficult to differentiate among areas with high, medium and low density. These typologies are found in urban centers and are mostly mixed with typologies of towers, villas, or both. Areas with pure-tower typologies are also very rare.

Areas of non-residential typology are considered so, if over 80% of the surface of the footprint of their building belongs to non-residential uses. These areas are very rare, especially the administrative ones. This proves that the Albanian cities, despite functionalist planning during the period 1945-1990, remain deeply mixed regarding their use, because of the highly dynamic influence of redevelopment processes after the 1990s.

Zoning of the building typology is more distinct between rural and urban areas. However, even in rural areas, the types of villas and their co-location are diverse, as shown in the images below:

Figure 42. The administrative unit of Otllak: prevailing typology of villas of high and medium density





There seems to be a gradual shift from one typology of higher density to a lower one and vice-versa. The high density is generally found in the communes close to urban centers, adjacent to urban-rural boundary. The uninterrupted spatial (linear, fractured linear, grid, rectangular, etc.) extension has high and medium intensity. This can be seen in administrative units of Otllak and Labinot Fushe. In addition, extensions scattered over the territory and the nuclear typologies are associated with low and very low densities. Some other correlations at municipal and administrative unit level are provided in the end of this section.

In the regional territorial context, the overall character of the municipalities under study unfolds as follows:

-**Kuçova** is a municipality that is a part of the FUA of Berat in 90.6% of its territory, and has undergone a growth of double its size in the period 1990-2007. The level of urbanization is medium, in terms of growth of settlements, while the low-density villa typology is prevailing. The main spatial relationship among settlements is satellite, where Perondi and Kozare units communicate directly with Kuçova. The administrative unit of Lumas has a linear, nuclear typology and does not communicate directly with the center.

- **Berati** is part of the FUA of Berat in 80% of its territory. It is distinguished for a low-density urbanization, with a growth of 80% in the period 1990-2007. The prevailing building typology includes areas with medium-density villas and the settlements are connected linearly with each other and in a satellite way with the center of Berat.

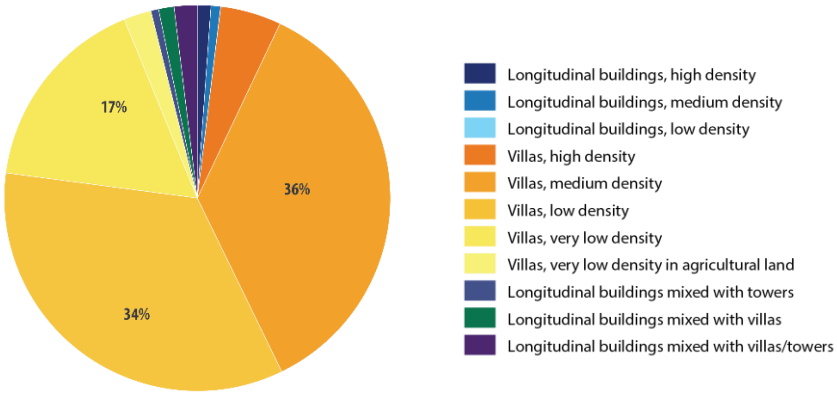
-**Elbasani** has increased by over 120% in the period after the 90s, reaching medium-density urbanization, regardless of the prevailing typology of low-density villas. From the polycentric viewpoint, 73% of its territory is part of the FUA of Elbasan, and features

agglomerate spatial relationships (in the Elbasan-Bradashesh continuity along the main axis) and nuclear in the settlements scattered in mountainous-hilly terrain.

-Fier's expansion has more than doubled during 1990-2013, with a low-density urbanization. Some 80% of its area is part of the Fier-based FUA and features network relationships of its settlements, where there is more than one communication path for each in relation to the center. One can notice the phenomenon of scattered settlements over agricultural territory. Medium-density villas are the prevailing building typology in Fier.

-Lushnja, despite its accessible position, belongs through just 59.6% of its territory in the Lushnja-centered FUA. It has increased by about 50% in the period 1990-2007, and by a larger extent, of 10% during 2007-2013, which shows the constant pressure of urbanization. Settlements in the Municipality of Lushnje are connected with each other in a network form, and have no visible dependency relation with the town of Lushnje. Medium-density villas are the prevailing building typology.

Figure 43 Distribution of typologies, municipal level



With regard to the relationship among spatial layouts and the prevailing building typology, one can notice that the settlements with network typology mainly have medium density villas, and are, therefore, more compact and their extension has considerably increased during 1990-2007. Linear and fractured settlements also have medium- or high-density villas, and mainly belong to peripheral suburban units of low status. The nuclear spatial typology is noted only in agricultural, mountainous or plain units and allows for the development of low- and very-low density villas. These typologies are mostly found in areas that have low inclusion in FUA-s, i.e., are peripheral in terms of the economic aspect and accessibility. On the other hand, the satellite typology is mostly noted in administrative units with greater development, with central agglomeration, or suburban peripheral character, and prevailing typologies of medium and low density villas. Radial typology, which ensures a uniform distribution of settlements and a better access, is not very widespread and pertains to only 3 administrative units.

From the viewpoint of spatial growth, a more limited extension over time is found in rural

settlements of mountainous or plain agricultural character, with building typology of villas with low and very low density, and greenhouses, whereas the greatest growth pressure is noted in agricultural areas of Lushnje with existing satellite typology and medium-density villas.

Regarding the distribution of various kinds of building typology areas in the territory, one can notice that Elbasan has most of the areas with very low density villas.

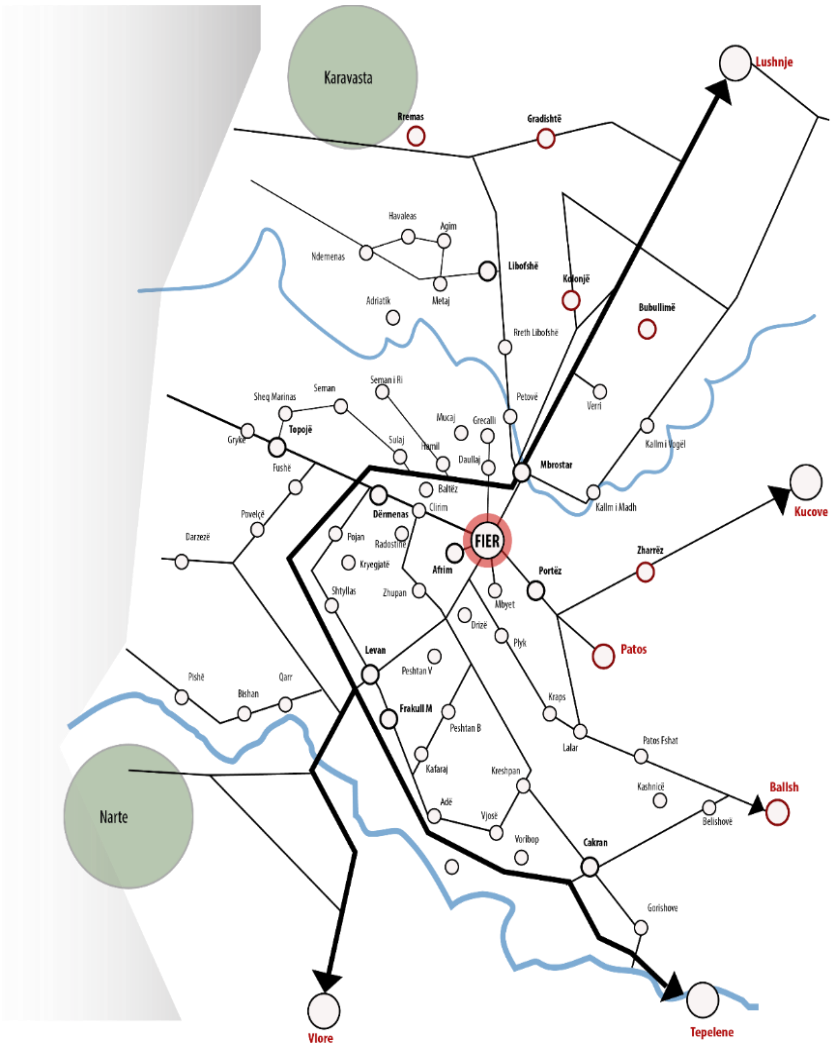
This is the third most spread typology at municipal level, and does not belong to a specific spatial extension of settlements (including linear, nuclear, satellite, etc., settlements). Areas with low-density villas comprise 34% of the urban system and are mostly located in Elbasan and Fier, mainly with satellite extension. Most typologies are medium-density villas, mainly in Lushnje and Fier. These typologies belong to settlements with linear, fractured linear and satellite extensions.

As already noted, more than three quarters of the settlements at municipal level have medium, low and very low-density villa typology. This is an indication of an urban system[9] with profound rural building character and that tends to stretch further into agricultural land. So, the challenge of protecting agricultural land is further reinforced for local decision-making after the territorial reform.

From the point of view of the spatial extension at municipal level, one can notice an almost equal distribution among satellite, nuclear and linear typologies. Thus, the relationship among the units is hierarchical towards the center (satellite); completely independent from it and scattered sporadically (nuclear); or dependent on the infrastructure network (linear / ramified linear). There is some tendency to establish agglomerations between urban and rural centers, but they are still powerless from the territorial aspect (such as Kuçova-Perondi centers, Elbasan-Bradashesh, etc.)

[9] In accordance with the definition of systems provided by the planning legislation (Law No. 107/2014 and Council of Ministers' Decision No. 671/2015).

Figure 44. Typology at municipal level - Fier

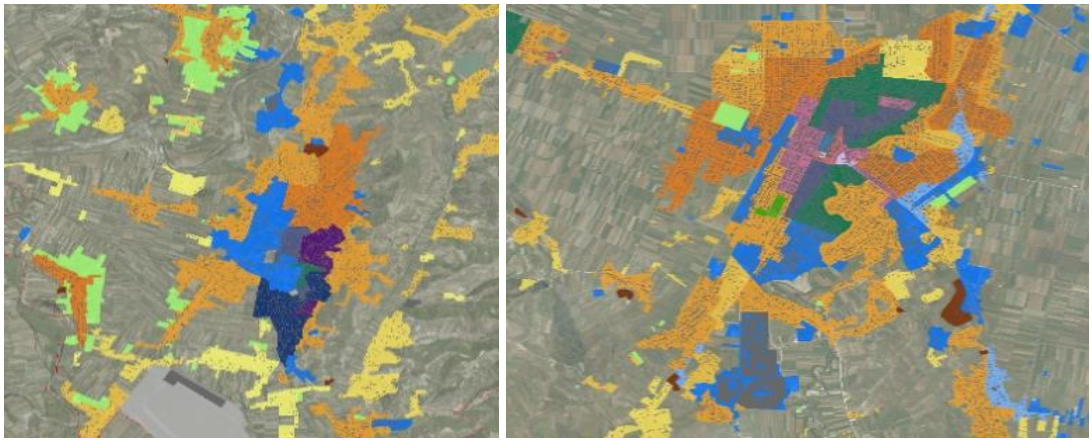


Source: Own interpretation

Level 2. Urban Center Typologies

This section addresses specifically urban centers of municipalities under study in order to explore the complexity of spatial relations within towns. Built environment typologies at urban center level are more diversified than at municipal level and include a variety of areas with mono-typological longitudinal buildings as well as mixed areas with longitudinal buildings, towers and villas, and areas with mid- and high-density villas. However, in the 5 towns under study, the largest surface area belongs to areas with high-density villas, followed by areas with villas with low density and areas with longitudinal buildings, mixed villas and towers positioned mainly in the center of cities. Areas of clear typology of longitudinal buildings of high, medium and low density account for only 20% of the urban area. This shows a very mixed spatial structure, with clearly visible phenomena of urban infill with villas or development pressure with typologies of towers or residential complexes.

Figure 45. *Spatial typologies at urban center level (Fier, Kuçovë)*



Source: Own calculations

Level 3. Spatial typologies of rural settlements

This section describes some findings on how villages lie in the territory, the number of their settlements and their relationship, etc. To this end, 344 villages of the municipalities of Fier, Lushnje, Berat, Elbasan and Kuçova, have been studied by making an inventory of the layout typologies of rural settlements. For some of these settlements, development indicators have been estimated, including (net, gross) intensity (FAR), coverage (PCR), road coverage (RCR), and public space coverage (PPCR) to see interconnections between typologies and implemented standards.

The first part of this section presents the results of inventory of spatial expansion of the municipality at two levels:

- How are residential units connected within a village?

- What is the shape of these units in relation to territory?

Spatial Typologies and Territorial Relations for Rural Settlements

Spatial relations among settlements are important for this study, because they bear witness for urbanization trends of the territory. This study considers 6 cases of typologies of spatial layout of rural settlements of villages, as follows:

Central: the village has only one clear, delineated settlement and does not spread over the territory;

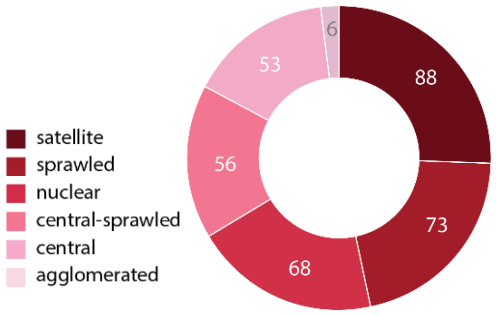
Satellite: the village has a distinguishable center and several zones dependent on and directly linked with it;

Nuclear: the village is composed of several small, scattered and unconnected centers in territory, where none is superior to others in terms of hierarchy;

Agglomerate: the village is composed of one distinguishable center and one or several other centers that are connected through urban continuity with the former;

Scattered: the village is irregularly scattered over natural and agricultural territory without a certain rule or center;

Figure 46 Spatial layout of rural settlements



Central scattered: the village has one distinguishable center and is developed beyond this center in a scattered fashion over territory.

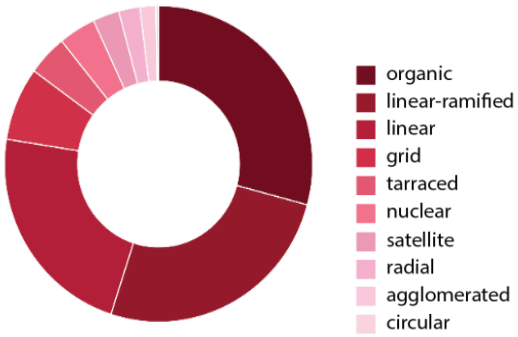
The most common layouts are satellite, scattered and nuclear typologies, followed at a narrow difference by central and central-scattered typologies. Agglomerations are very few, indicating that rural settlements continue to considerably preserve their rural character, are still very fragmented and with well-established boundaries among centers. The scattered typology is more common in rural settlements in plain areas, such as Fier and Lushnje. In Fier, this typology, without hierarchy, constitutes the most common type of spatial layout (1/3 of villages). In Berat, where villages are positioned in mountainous terrains and their accessibility is somewhat weak, one can notice nuclear typologies. Thus, some centers in a village seem to have no specific hierarchy among them. In Lushnje and Kuçova, satellite typology is most common, with a major center and several other smaller centers directly linked with it. In Elbasan, the central scattered typology is predominant: villages have well-established centers, but their further development in the terrain has been carried out sporadically and uncontrolled.

The typologies of settlements within villages indicate how residential areas are positioned in the territory of the villages. This analysis identifies 847 settlements (belonging to 344 villages) for which 10 spatial typologies are identified:

- Linear: where the settlement is located along the road;
- Radial: when the settlement is developed around a center and radial axes that pass through it;
- Linear-ramified: when the settlement has a linear expansion but with transversal axes and prominent branches
- Organic: when the settlement follows the territory, without a specific rule;
- Satellite: when the settlement is composed by a dense center and other detached areas linked with it only by infrastructure;

- Terraced: when the settlement is located in terraced hilly/mountainous areas;
- Nuclear: when the settlement is composed of several residential areas not connected with one another;
- Circular: when the settlement has a center and few spiral roads that delineate its extension;
- Grid: when the settlements has a rich road infrastructure that enables passage from one point to another in several forms (and does not have a specific center);
- Agglomerate: some centers linked with one another with a grid structure creating an urban continuity.

Figure 47 *Spatial typologies of rural settlements*

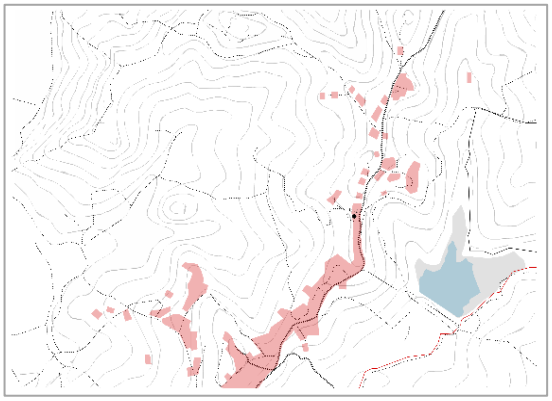


Findings on spatial typologies show that the most common are the organic, linear-ramified and linear structures. This shows that the development of residential areas almost always occurs sporadically (or without following a particular order; or by following the direction of the main roads). Circular, radial and agglomerate typologies, which imply a higher level of territorial management, are much less frequent.

If we make an analysis by municipality, we note that in Berat the organic typology is dominating, followed by the linear and linear-ramified typologies; Fier is distinguished for a grid as well as linear and linear-ramified typologies; Kuçova is widely characterized by linear and linear-ramified typologies; Lushnja has an organic typology; and Elbasan features mostly an organic typology followed by linear and fractured linear typologies. There is some tendency that mountainous municipalities have more organic typologies, while those with plain areas have deeply linear typologies.

Development Indicators for Rural Areas

Once an interpretation of prevailing spatial typologies and the relationship among settlements in villages was conducted, it is necessary to understand what implications these relationships have to spatial development. Thus, development indicators were estimated for 32 villages from all municipalities, regarding FAR, PCR, RCR, PPCR, etc) to see if there is any repeated indicator within the same typologies.



Linear typology (Gega)

Linear typologies usually pertain to spatial satellite typologies and achieve at average the following indicators

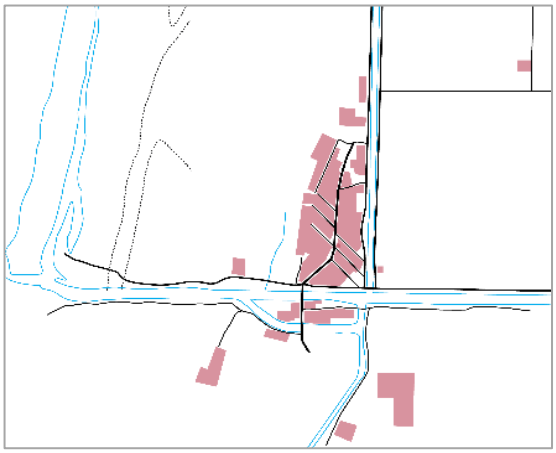
net FAR = 0.54

gross FAR = 1.2

PCR = 24.1%

RCR = 8%

PPCR = 10.4%



Linear-branched typology (Darzeza)

Linear-branched typologies are akin to linear typologies and similarly common.

net FAR = 0.51

gross FAR = 1.16

PCR = 23.4%

RCR= 8%

PPCR= 10.4%

Grid typology (Topoja)

Grid typologies are very rare and are generally realized in central spatial layouts. The average indicators for them are as follows:

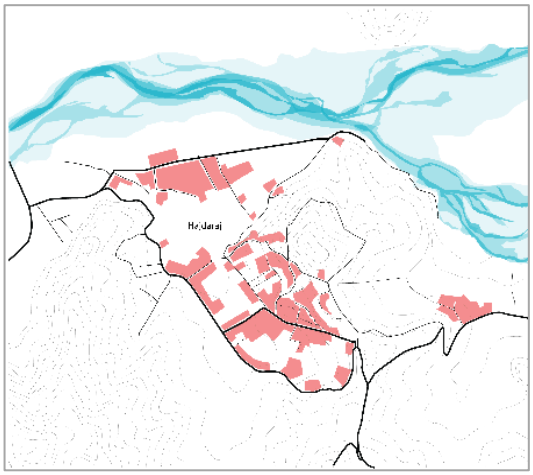
net FAR = 0.65

gross FAR = 1.31

PCR = 25.3%

RCR= 7.6%

PPCR= 11%



Organic typology (Hajdaraj)

Organic typologies are very common, particularly in mountainous and remote areas. They generally pertain to satellite spatial relations and have these average indicators:

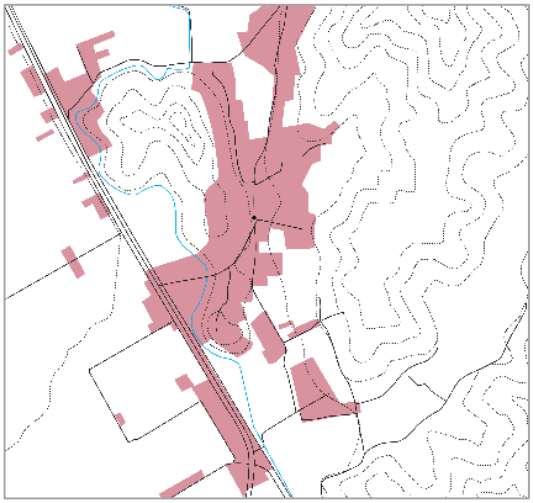
net FAR = 0.47

gross FAR = 1.02

PCR = 21%

RCR = 8%

PPCR = 10%



Satellite typology (Golem)

Satellite typologies are less common and are usually found in plain areas expanding on larger territories but with lower density:

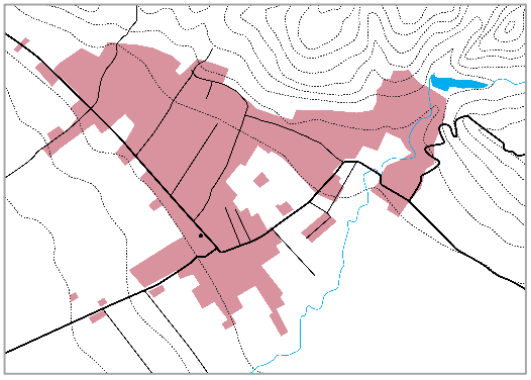
net FAR = 0.39

gross FAR = 1.08

PCR = 19.6%

RCR= 9.9%

PPCR= 10.8%



Agglomerate typology (Cakran)

The agglomerate typology is rare and has a very high density, similar to urban areas, but with deficient road network and limited public spaces.

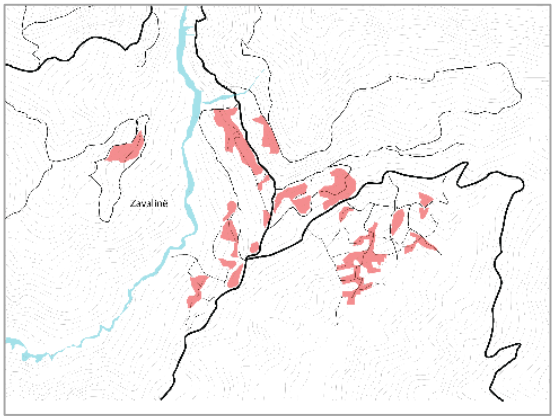
net FAR = 0.657

gross FAR = 1.124

PCR = 26.5%

RCR= 7.2%

PPCR= 9%



Nuclear typology (Zavalina)

The nuclear typology is found in remote mountainous areas and is chiefly associated with a villa typology of low and very low density. The development parameters in these areas are low, as follows:

net FAR = 0.29

gross FAR = 0.69

PCR = 22.6%

RCR= 9.76%

PPCR= 10%

This analysis leads to the conclusion that the most efficient typologies, which carry higher densities, but still remain livable, are the grid typologies, followed by linear and linear-ramified typologies. Although not widespread, the agglomerate typology has a fairly high intensity and territorial use, while the roads and public spaces are quite reduced. Nuclear typology is moderately widespread and features very low densities, which should be avoided for a sustainable urban development. Finally, satellite typologies occupy large areas and achieve average densities, lower than linear, linear-ramified and agglomerate typologies.

Level 4. The urban-rural boundary

Developments in the urban-rural boundary are often conditioned by issues of local governance and land value. While the boundary of the municipality (as per the old territorial division) was consistent with the town boundary, the dynamics of development beyond this borderline varied from an urban uniform continuity to even higher density than urban areas, to much lower residential densities, to industrial, economic and other incompatible uses, to agricultural, natural land covers, up to physical barriers. All these cases are worth studying in order to assess the implications that this duality brings to new developments in the territory, in determining structural units, and the development parameters that will be attached to those units. So, 12 rural-urban boundaries (yellow borderline - beyond the yellow line), have been taken under this study for Berat, Fier, Lushnja and Kuçova.

The aspects considered in this section are: the type of boundary (physical, urban continuous, natural, etc.), built environment typologies on both sides of the boundary, spatial layout on both sides, land use, (perceived) density as well as development indicators on both sides (PCR, gross FAR, PPCR, RCR).

The urban-rural, or city-suburb boundary is often not easily perceivable. This is due various reasons: first, because in the city, as well as in the suburban area beyond it, the residential density is generally low in the towns under study and, secondly, because this boundary has not always been significant to the town development and to the increase of property value. Informal settlements (already legalized or under legalization process) also play a role in the *blurring* of the border. Therefore, the boundary generally coincides with an urban continuity; with a semi-urban area and semi-agricultural area; partly urbanized natural area, etc. In very few cases, we have an abrupt boundary of the urban area.

It is generally observed that the spatial layout is preserved in both sides of the boundary. The town has a linear spatial layout, which continues in its suburban areas. The same applies for typologies of perimetric layout, organic layout, etc. In general the town's layout, close to the suburban areas, changes from regular, rectangular or ring network (in their central part) to linear--ramified or, nuclear layout. Beyond the boundary, the most common spatial layouts include linear-ramified, organic and (rectangular or irregular) grid typologies.

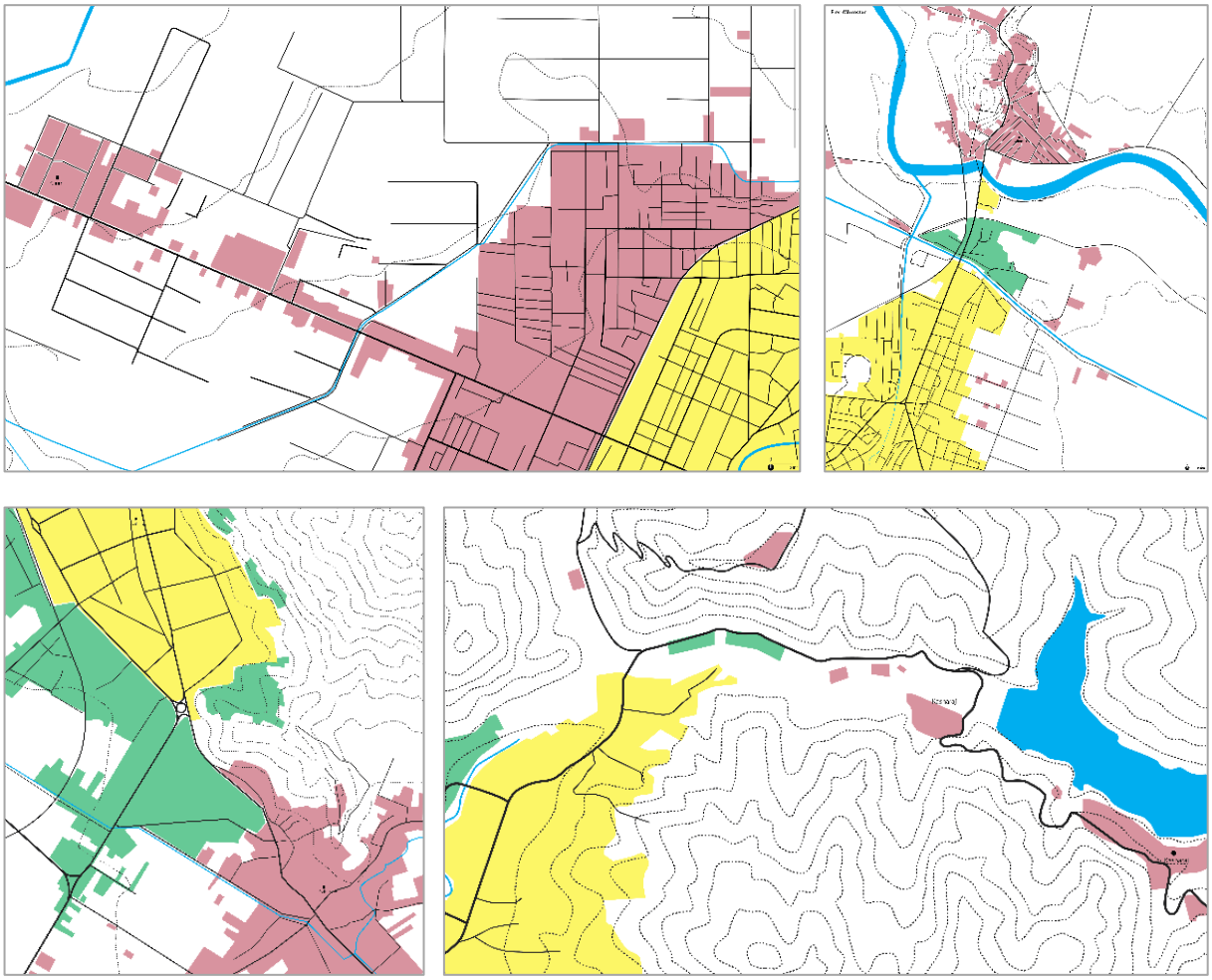
In terms of built environment typologies, the most typical is the transition from villa typology of certain density to the same type, with slightly lower density. It may happen that we shift from medium density to low density, especially in bordering agricultural areas. In some cases, there is a transition from low-density villas to medium density villas (as in Fier-Mbrostar border), which shows the pressure development in the boundary. In a few cases, there are longitudinal buildings of medium density (Kuçova, Fier) in the city boundary and then they are replaced with villa typologies of medium density, or longitudinal buildings with low density, in the rural boundary.

In many cases, the urban-rural boundary coincides with suburban industrial areas. Nevertheless, the residential density in relevant rural areas is medium-high, indicating the problems of urbanization near industrial or former industrial areas.

A general trend shows that the indicators of development in the city are quite higher than the ones across the border. Below is an overview of these parameters for the fragment of the city near the boundary (1) and a fragment of rural area (2). These fragments are determined using the criteria for structural units, according to the Planning Regulation.

Table 6 Averaged values of development indicators for the urban-rural boundary

	PCR	RCR	PPCR	Gross FAR
1 _urban boundary	37.85%	13.18%	12.02%	1.00
2_ rural boundary	18.74%	7.00%	6.28%	0.34



Urban-rural boundary in Fier and Lushnje

The towns under study have 1-2 "bordering" areas where the concentration and density are higher, on both sides of the border. For example, the Kuçova-Polvinë and Fier- Zhupan boundaries have a PCR of about 50% in the urban boundary and 40-45% in the rural one. However, in some specific areas with high border density, as in Fier-Çlirim, Lushnje-Karbunara, etc., the difference of PCR on both sides is high, dropping from 45-50% to 15-25%. So, despite the urban continuity, there is a different development pressure, which should be considered in city development strategies. Meanwhile, lower PCR belongs to the Uznove-Berat, Fier-Mbrostar, and Lushnje-Kasharaj boundaries, with a value 15-20% in urban areas and 5-10% in rural areas. In the Uznova case, the PCR is slightly higher than the Berat boundary. The average difference between PCRs in both sides of the urban-rural boundary is 19%, i.e., relatively high. There is no specific correlation between this difference and the PCR values.

It may happen that the PCR value in the urban boundary is lower and, again, the value in the rural boundary is much lower, (e.g. in Lushnje-Kasharaj).

The PPCR and RCR also have higher values in the urban boundary, compared to the rural

one. The differences in this case are smaller. Higher RCR-s belongs to Kuçova border areas, ranging from 20-25% in the urban areas and 12-20% in rural areas. In Fier and Lushnje one can distinguish the lowest RCR values, respectively 4-5% in Lushnje-Kasharaj, and Fier-Zhupan borders, where both areas have linear spatial layout. Higher PPCR is realized in the Berat-Velabisht boundary (where the town is separated from the rural areas by the Osum River) and in Lushnje-Karbunara (20% in the urban part and 7% in the rural part). PPCR in this case is not necessarily indicative of the presence of public services in accordance with standards, but rather of natural public spaces.

In terms of intensity, we have taken into account the gross FAR, due to the presence of mixed economic and residential uses in the areas under study. Fier has the highest urban FAR in the town-village border, at the boundary of the villages of Afrim i Ri and Zhupan (at a value of 2-3). The rural FAR in the same borderline is very low (0.5-0.7). This is problematic, given their continuity with the city as an integral part. Lower values of FAR are found in the Lushnje-Kasharaj and Berat-Uznove boundaries where the density was lower. Generally, the FAR in the urban-rural boundary is in accordance with the respective PCR, which shows the relatively low height of buildings ranging to 1-3 stories in the suburban areas of the town.

Level 5. Area-level typologies

This section focuses on some of the findings at zonal level, contributing to the understanding of how the building and spatial typologies are linked with development indicators. Some 27 areas have been selected, with special features of the spatial structure and building typologies. Several indicators of each of them are taken under study and relate to the prevailing building typologies, road network structure, permeability, etc. Below is the full list of quantitative and qualitative indicators of the study.

- Prevailing building typology
- Road network typology
- Density (units per hectare and residents per hectare)
- Development indicators (PCR, PPCR, RCR, net/gross FAR)
- Typical positioning of buildings to the parcel, to the road; prevailing type of parcel
- Access to road (% of parcels without access to road; % of parcels without access to roads wider than 6 meters)
- Abidance to distance regulations (% of buildings that do not keep distance to one another/ % of buildings that do not keep the distance from the road)
- Permeability of the area (void-built ratio; permeable space-built ratio)

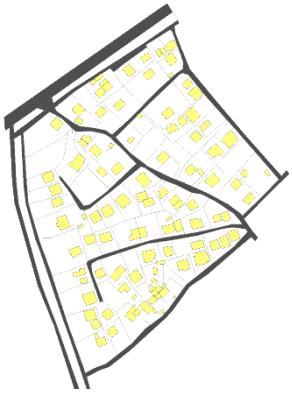
Selection of Modules

For the selection of modules at city level, several general criteria is considered, such as average height of stories, prevailing building typologies, road network structure, positioning of buildings in blocks, etc. For each building typology identified at municipal level, we selected 2-7 modules to serve as representatives. For example, for low density villa areas, 2 modules with different road network were more than enough, because their general features, typology, and altimetry were similar. For mixed areas with villas and towers, we considered 7 modules, because the cases they introduce are more diverse.

At the town level, Berat had greater variety of typological zones, starting from areas of historic neighborhoods to mixed central areas, planned suburban areas, etc. Thus, in Berat we selected 10 areas. Four areas in each Lushnje and Fier, were taken under study, based on their typological uniformity and road networks. In Kuçova we considered 3 areas, while in Elbasan 6 areas, including 2 low-density areas, 1 historic area (the Castle) and other mixed types.

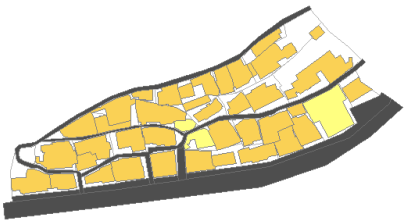
The 27 modules have an area that varies from 1 to 20 ha and their main use is residential. So, the typologies of industrial and agricultural areas are not taken into consideration.

Below are some of the modules selected, divided by prevailing building typology, and showing the attribute of altimetry.



Area with villas of low density (E5_Elbasan)

Area with villas of medium density (F4_Fier)



Area with villas of high density (Mangalem, B6, Berat)

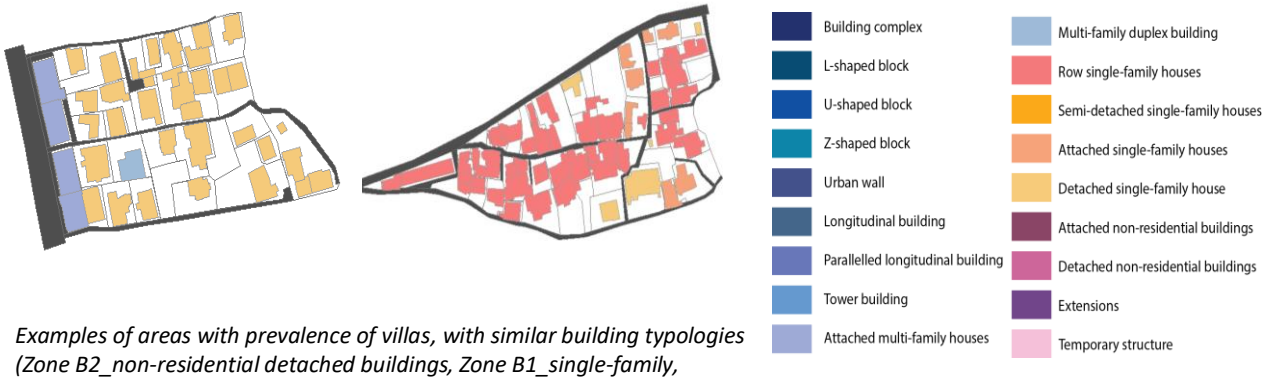
Area with longitudinal buildings, mixed with villas (K2_Kuçovë)

Area with mixed longitudinal buildings, mixed with villas and towers (L2 Lushnje)

Area with longitudinal buildings, mixed with towers (F5_Fier)

Spatial Typologies of the Modules

The spatial structure at zonal level is as diverse as the building typologies themselves. There is a uniformity in structure and typology only in the villa zones, in which the altitude difference is small, the type of typologies is limited and the road structure is more or less uniform. This can be seen mainly in the historic area, but also in the suburban part of the city. So, generally, if the area is populated with villas, we can expect that buildings have the same style, the same type of coverage, the same positioning to each other and to the plot, the same type of fencing, etc. This is for two reasons: firstly, because such uniform areas belong to historic quarters of the city, built at the same time and in the same style, and secondly, because when they are located in suburban areas, the development is carried out incrementally in time, i.e., the "residents/builders" of new houses follow the style of existing models in those areas.



Examples of areas with prevalence of villas, with similar building typologies (Zone B2_non-residential detached buildings, Zone B1_single-family, attached buildings)

Areas with villas represent different densities, with PCR ranging from 15-30% to 80% (in historic neighborhoods), and FARs of 1-2. PPCR in these areas is generally fairly low, 10-15%, belonging mostly to educational institutions or other facilities of public use that may be located in them. Their average permeability is 15-20%; a figure that is consistent with the RCR. This means that the only permeable surfaces in these areas are the streets and squares servicing them, while the rest is surrounded by walls.

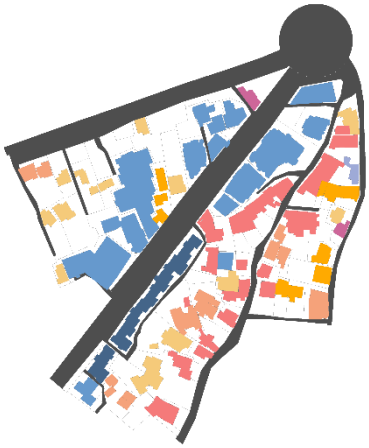
In areas with longitudinal buildings, the spatial structure is almost always occupied with typologies of villas, towers, or both. This is a consequence of failure to abide to rules on free space among buildings and informal or permitted occupation of residential territory[10]. Some examples of these are provided below:

[10] A residential territory implies a territory that belongs to the building plot and the respective space around it, necessary for normal living. This space is determined by considering the distance needed for insolation and intimacy purposes and is not included in "public space" use; rather, it is included in "residential use"

Area with longitudinal buildings, mixed with villas, Zone F1

In the first example there is a clear prevalence of longitudinal buildings, combined with L-shaped buildings, with a height of 4-5 floors. Longitudinal buildings are positioned in parallel inside the residential block, and in the form of an urban wall in relation to the main road, allowing periodic passages. The main network of the area is perimetral, combined with an irregular internal network. There are some non-residential buildings in the area, with institutional and service functions, which have respective plots, with wide space. Densification trends after the 90's have caused an addition of villas or duplex typologies to the empty spaces in the area. This affects negatively the urban density, accessibility and permeability of the area, and constitutes a violation of both the residential territory, and the insolation and privacy conditions. If we study the parameters of development for this area, we see that the PCR=48% and the gross FAR=3.1, i.e., despite the low average height, the density is quite high. However, the PPCR is very high, about 50%, and the RCR has also positive indications, about 25%.

If we take into account the distance indicators specified in the Territorial Development Regulation, according to the formula $d = 0.8 * h_{max}$, we will note that in this area more than 25% of the buildings do not respect this distance from each other. That is, over 25% of the buildings have problems with insolation in the ground floors, and with the privacy conditions. However, a calculation of permeability of the area, as the ratio of the permeable space (without barriers) to the total, indicates that the permeability of the area is at 66%, a very positive ratio. In such similar areas, the positioning of buildings with corners facing the main road and parallel to one another, has not allowed the urban infill with villa typologies to induce major problems in the permeability of the area, but has nevertheless caused problems in density and distance conformity.

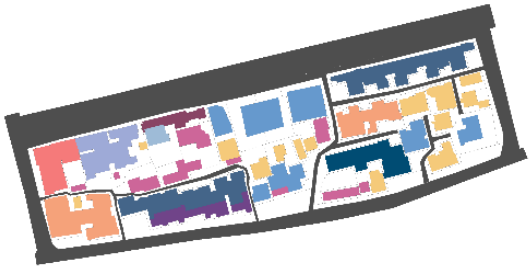


Mixed area with towers and villas, E4

Area with longitudinal buildings, mixed with towers (L4)

Another example are the areas with a mixture of longitudinal multi-family typologies with tower typologies. In this case, in Lushnje, longitudinal buildings, positioned along the perimeter and with an urban wall shape, formed a wide space in between, to serve local residents. Many non-residential uses are also present, such as services and educational institutions. The road network consists of main perimetral roads and a range of secondary linear roads that run along the facade of buildings. Over time, the area was densified with a 12-storey residential complex and several tower buildings. This has increased the residential density to 300 inhabitants per hectare, and other indicators follow respectively: PCR = 60%, FAR = 3, etc. The permeability of the area has decreased to 40% due to the new construction. Although the distances are not respected by a small number of buildings, their impact is huge in the livability of the neighborhood. So, in areas with longitudinal buildings where there is visible presence of towers, the parameters of permeability are low and those of the density are very high.

Areas of longitudinal typologies, mixed with villas and towers are more widespread among the samples under study. In the zone illustrated the areas occupied by longitudinal buildings, towers and villas are almost the same. Generally, longitudinal buildings and tower-type buildings are positioned along the road, while the villas occupy the space in between. In these cases, the territorial use for residence is maximum, and reaches a PCR of 60-70% and a FAR of 3-4. Public uses and infrastructure are quite limited, while the distance between buildings is not maintained in 13% of cases. Permeability turns out to be quite high, over 50%. This illustration takes into account an average height of 4-5 floors for longitudinal buildings and 5-7 floors for towers.



Area with longitudinal buildings, mixed with villas and towers of medium height (L2)

One other common typology includes the areas with a mixture of villas and higher towers. These typologies are characterized by lower permeability, due to spontaneous road structure and the presence of fencing walls. The issues of access to these areas are associated with problems of privacy, given that 40% of the buildings do not respect the distances imposed in the regulations. Density rates are quite high, with 500 inhabitants per hectare, a PCR of 50% and a FAR of 2-3. Depending on the presence of public functions, these areas may have high PPCR (30%), but this remains a poor indicator of quality of life and services in these areas.

Areas with a mixture of villa typologies (L3)

Finally, areas with prevalence of villas may have a mix of typologies and uses, depending on their position and dynamics of development in them. For example, the illustrative case in Lushnje represents an area dominated by duplex buildings with courtyard, mixed with various non-residential uses, activities and services. In these cases, the road network is ramified, providing access to each parcel, but not necessarily at a suitable road width. These areas have good permeability, about 30-40%, but this depends on the presence of the walls surrounding courtyards and the ownership situation of vacant parcels. Net FAR in these areas can vary from 1 to 3, and PCR ranges from 30% to 60%, depending on the buildings' coverage and their height: often duplex buildings may have a height of 4-5 stories. Regardless of the large amount of free space, distances in these areas are not respected by an average of 15-20% of buildings.

Table 7 Main findings from typological study at zone level

Area Code	Prevailing building typology	PCR at zonal level	PPCR	RCR	Net FAR	Density (residents per hectare)	Typical positioning of buildings in their parcel	Typical relationship with the road	Void-Built ratio	Permeable space-Built ratio
B9	Detached single-family house	53.51%	68.76%	17.17%	0.7	n/a	In the center of the parcel	Exit to tertiary road with pathway	40:10	30:10
B4	Detached single-family house	66.73%	24.64%	26.05%	2.2	n/a	In the center of the parcel	Exit to secondary road via pathway	19:10	15:10
E2	Attached single-family house	32.42%	29.05%	21.28%	n/a	n/a	At the beginning of the parcel	Exit to tertiary road	20:10	13:10
B10	Detached single-family house	60.34%	16.40%	26.00%	1.2	n/a	In the center of the parcel	Exit to tertiary road via pathway	12:10	8:10
E3	Detached single-family house	23.87%	12.18%	14.32%	n/a	n/a	At the end of the parcel	Exit to secondary road via pathway	30:10	10:10
B2	Detached single-family house	48.18%	1.74%	18.59%	0.9	n/a	In the center of the parcel	Exit to secondary road via pathway	14:10	4:10
B3	Single-family row houses	27.78%	15.63%	15.05%	0.6	60	At the beginning of the parcel	Exit to tertiary road	32:10	26:10
E5	Detached single-family house	14.48%	11.07%	11.62%	n/a	61	In the center of the parcel	Exit to tertiary road via pathway	60:10	15:10
B1	Attached single-family house	65.32%	15.28%	17.00%	1.0	87	At the beginning of the parcel	Exit to secondary road	8:10	5:10
F4	Detached single-family house	32.52%	20.55%	15.41%	0.6	95	In the center of the parcel	Exit to secondary road via pathway	29:10	11:10
L3	Multi-family duplex building	50.11%	25.89%	23.06%	0.9	102	In the center of the parcel	Exit to road, via pathway	24:10	11:10

B5	Detached single-family house	37.32%	34.10%	15.03%	1.0	143	In the center of the parcel	Exit to tertiary road via pathway	30:10	14:10
K1	Detached single-family house	43.14%	27.99%	15.23%	0.6	150	In the center of the parcel	Exit to main road, via pathway	23:10	10:10
F3	Longitudinal building	56.85%	46.04%	18.75%	1.2	233	In the center of the parcel	Exit to secondary road	23:10	18:10
K3	Tower building	69.64%	47.54%	28.68%	1.3	248	In the center of the parcel	Exit to tertiary road via pathway	19:10	18:10
K2	Detached single-family house	85.75%	66.90%	38.09%	1.3	265	In the center of the parcel	Exit to secondary road	29:10	30:10
E6	Detached single-family house	50.04%	38.99%	23.80%	1.2	274	At the end of the parcel	Exit to tertiary road	24:10	18:10
B6	Single-family row houses	90.66%	24.55%	32.37%	1.439877	275	In the center of the parcel	Exit to secondary road	6:10	9:10
L4	Longitudinal building	69.71%	38.67%	18.65%	3.811764	326	In the center of the parcel	Exit to tertiary road	13:10	10:10
L1	Detached single-family house	55.02%	23.43%	17.71%	1.470998	342	In the center of the parcel	Exit to secondary road	16:10	9:10
F1	Longitudinal building	48.89%	55.43%	22.32%	1.976367	394	In the center of the parcel	Exit to secondary road	20:10	20:10
F5	Longitudinal building	60.43%	38.30%	25.51%	2.232981	410	In the center of the parcel	Exit to secondary road	18:10	19:10
B8	Detached single-family house	84.98%	46.12%	23.34%	1.237765	467	In the center of the parcel	Exit to tertiary road, via pathway	9:10	7:10

B7	Z/U-shaped longitudinal buildings	75.84%	55.46%	42.24%	2.142194	506	In the center of the parcel	Exit to secondary road	13:10	17:10
E1	Longitudinal building	66.99%	47.63%	24.72%	1.63	516	In the center of the parcel	Exit to secondary road	18:10	15:10
E4	Tower building	52.32%	30.03%	34.93%	2.199049	579	Without distinguishable parcel	Exit to secondary road, via pathway	17:10	10:10
L2	Attached single-family house	60.51%	37.32%	35.55%	3.075396	583	In the center of the parcel	Exit to tertiary road	9:10	11:10

Level 6. Building typologies

In the context of studying the samples, 2680 buildings in urban areas were inventoried, which constituted interesting characteristics regarding the typology of the buildings, construction style, height, non-residential functions, number of residents, period and quality of construction, type of cover, plot, fencing, etc.

The samples under study indicate that the dominant building typology turns out to be the detached single-family house. This means that in Albania, even in urban areas, the most preferred and "safest" housing is associated with individual, 1-2 storied building, and a surrounding courtyard, often accompanied by a high wall. This kind of villa, which serves

for only one family of 4-8 members, prevails in many construction periods, from the year 1970 to 2010. However, there is a very high prevalence in the period 1990-2000, which coincides with towns' densification and expansion to the outskirts as a result of internal migration. During this period, the main reason of the preference for this building typology was the impossibility / inability of public institutions to respond to the demand for collective housing with fast and affordable solutions. So, this typology coincides with the individual solution for housing. The construction style of the detached single-family house is generally unspecific (in some cases influenced by traditional models, as the "Elbasan-typology"), i.e., without strong aesthetic identification elements, but merely a functional construction, with a flat roof and unpaved gardens.

The second most common typology in urban areas is the attached single-family house. This structure is composed of three or more single-family conjoined (but not lined-up) buildings with a common yard. It is mostly present in the post-90's period due to expansion of row houses constructed before the '90s, with a new single-family building. In general, the buildings have a hip roof, belong to a traditional building style, with low walls, small windows, etc. In most cases, yards are indistinguishable and have no fencing.

Tower building of medium height, communist style

Single-family semi-detached houses,

Single-family row houses, traditional style

The third most widespread typology is the longitudinal building, which usually implies buildings constructed during 1970-1990 or earlier, with an average height of 2-5 stories, of "communist style". In several cases, they are positioned facing one another creating residential blocks with wide spaces. In general, these buildings do not have distinguishable parcels, but in few cases, the ground floor is fenced and used as private garden or yard

(mainly because of interventions during the post-‘90s). The first floor is oftentimes turned into a coffee bar or shop.

Single-family row houses are also very spread, particularly in historic areas of the cities. This term implies houses that have a common yard and are positioned to the side of one another, with conjoined side facades, in a sequence of more than 3 buildings; or buildings with separated yards, but with their yard wall conjoined to the side facades. One subcategory includes semi-detached single-family houses, which are joined in pairs and are especially widespread after the 90s. The reasons for the emergence of these typologies include mainly the growth of households and the construction of new buildings within the same yard.

Multi-household tower-type building, modern style

Tower-type buildings are also quite common, and we can recognize 2 different periods of their construction: during the ‘70s-‘90s, when they were used a lot as a building typology in cities, had a height of 5 storeys and a single entrance; and the buildings of the 1990-2010, the average height of which is 6-10 storeys. Tower typologies includes all multi-family buildings that have greater height than the base dimensions, have an apartment structure (unlike multi-storey duplex buildings), are generally collective and are segregated in the territory, i.e., not part of any complex. Residential complexes, with 2 or more tower-type buildings, with shared courtyard, are mainly common in the period after the 2010-s, but not dominant, though. Tower-type buildings feature a variety of styles, from modern to eclectic, and the number of residents varies from 20 to 400. Their parcel is regular and paved and there is always a variety of coffee bars and shops on the ground floors.

Duplex building of eclectic style

The most recent widespread typology of construction is the duplex building. This typology includes two or more families sharing a villa-type building, usually of 3 storeys, and a shared courtyard. Households are generally separated by storeys, but there are cases of two-storey apartments, several apartments in a single floor, etc. This is the most widespread typology during the years 1990-2000, and accommodated families originating from the same family basis. Often the first floors of these buildings are not occupied, and have a flexible space for warehouses, stores or parking. Generally, these types of typologies feature a very good quality of building, paved courtyard, decorative vegetation and low fencing. The style ranges from modern to eclectic and unspecified.

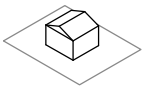
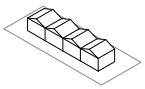
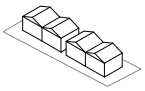
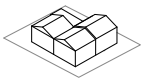
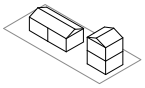
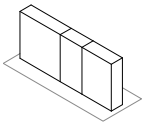
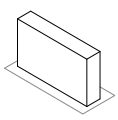
Other residential typologies, such as multi-family, U-, Z-, and L- shaped buildings, urban walls, etc., are not very common in our cities. These space-forming typologies are found only in some rare cases, in the planned central areas, and belong basically to the communist style.

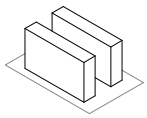
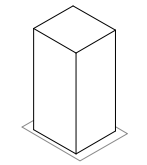
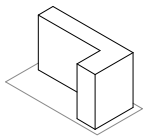
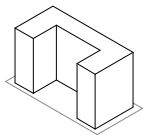
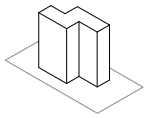
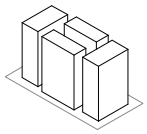
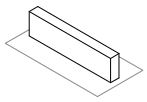
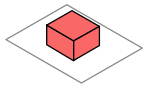
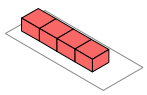
From the non-residential buildings, the most common typologies include coffee shops, restaurants, and stores, followed by warehouses and institutions. Mostly these are one-storey buildings without a particular building style, and are usually common during the period 2000-2010. Oftentimes, these buildings are positioned in row, comprising typologies of attached, non-residential buildings. In both cases, these service typologies have paved parcels, no fencing, and a flat roof cover.

Attached, non-residential buildings, with no style

Urban wall typology, communist style

A summary of the data on buildings is provided in the following table:

Model	Typology	No.	Building style	No. of storeys	Non-reside. function	No. of residents	Construction period	Quality of building	Type of cover	Type of parcel	Type of fencing
	Single-family detached house	732	Unspecified style Traditional style Eclectic style	2 1	Store; bar; restaurant	4-8	1990-2000; 2000-2010; 1970-1990	Normal	Flat roof Gable roof	Parcel with paved yard; Parcel with unpaved yard	High fencing
	Single-family row houses	200	Traditional style Unspecified style	1 2	Store	4	before 1900; 1900-1950	Good Normal	Hip roof	No distinguishable parcel; Parcel with paved yard	No fencing
	Single-family semi-detached houses	76	Unspecified style Traditional style	1 2	Store	4	1990-2000; 1950-1970	Good	Flat roof Hip roof	No distinguishable parcel	No fencing
	Single-family attached houses	245	Traditional style Unspecified style	2	Store	4-8	before 1900; 1990-2000; 2000-2010	Normal	Flat roof Hip roof	No distinguishable parcel; Parcel with paved yard	No fencing Low fencing
	Multi-family duplex buildings	119	Unspecified style Modern style	3 2	Store; warehouse	8-16	1990-2000	Very good	Flat roof	Parcel with paved yard; Parcel with garden	Low fencing High fencing
	Multi-family attached buildings	39	Unspecified style Communist style	2 3	Store	4-12	1990-2000	Good	Flat roof	No distinguishable parcel; Parcel with paved yard	No fencing
	Longitudinal buildings	214	Communist style Prefabricated buildings	1-7 (2-5)	Store; bar	4-240 (48-180)	1970-1990; 1950-1970	Normal	Flat roof	No distinguishable parcel; Parcel with paved yard	No fencing

	Parallel longitudinal buildings	16	Communist style	5	Store	160-230	1950-1970	Normal	Flat roof	Parcel with paved yard	No fencing
	Tower buildings	146	Communist style Unspecified style Modern style	5-14 (6-10)	Store; bar/restaurant	20-412 (40-100)	1970-1990; 2000-2010	Good Normal	Flat roof	No distinguishable parcel; Parcel with paved yard	No fencing
	L-shaped residential block	20	Communist style	2-5 (5)	Store	16-172 (70-120)	1970-1990; 1950-1970	Degraded Normal	Flat roof	No distinguishable parcel	No fencing
	U-shaped residential block	7	Communist style	5	Store	96-180	1950-1970	Normal	Flat roof	Parcel with paved yard	No fencing
	Z-shaped residential block	16	Communist style	5-6	Store	32-128 (40-100)	1950-1970	Normal	Flat roof	Parcel with unpaved yard	No fencing
	Residential complex	6	Modern residence	10-13	Store	144-360 (150-200)	pas 2010	Very good	Flat roof	Parcel with paved yard	No fencing
	Urban wall	8	Communist style	4-5	Store; offices	96-176 (100-150)	1950-1970	Normal	Flat roof	Parcel with unpaved yard	No fencing
	Non-residential detached building	189	No style Unspecified style Eclectic style	1-7 (1-3)	Bar-restaurant; store; warehouse; institution	0	2000-2010; 1990-2000	Degraded Normal, Very good	Flat roof	Parcel with paved yard	No fencing Low fencing
	Non-residential attached buildings	47	No style	1-3 (1)	Store; warehouse	0	1990-2000	Good Normal	Flat roof	Parcel with paved yard	No fencing

Aggregated data at building and parcel level

Note: For each characteristic, the most repetitious values have been listed, starting from the most common (if they account for over 10% of the total). For numerical values, the entire range of the values is initially identified, and in parentheses we have given the most common value or range of values, if this is different from total range.

5. Discussions

5.1 To code or not to code?

The issue of normativity in city planning can be regarded as challenging, nevertheless it is unavoidable to ensure provision of public goods and fair distribution of value captured from land development.

Smart Code is a very easy instrument to help draft land development regulations. Nevertheless, conventional zoning cannot be substituted in the whole territory. Given that Smart Code is supposed to be implemented in existing or potential walkable neighborhoods, all areas that do not fall under this category, cannot be successfully addressed by Smart Code (i.e. industrial areas, military areas, suburban areas outside the city, etc.)

These models encourage repetitiveness in urban form, and are based on the assumption that whatever density/typology/land use works for a city, will work for another one as well. This is very difficult to replicate in the Albanian context.

The concept of the urban-rural transect addresses in an integrated way the question of 'where the city ends'. Transect studies help define the border between urban-rural, and the differences between urban, suburban, peri-urban areas.

Nevertheless, transect concepts don't take into account polycentric tendencies in cities, especially in terms of land value.

Even though the land development system in Albania is based on a wide array of standards, if they are not co-related to a given typology (spatial and building typology), then the outcome will be oriented from the developers, rather than from the city. Thus, models of typologies of space and building should be introduced more thoroughly in the Albanian legislation, both as mandatory or non-mandatory.

The division into structural units (as used in Albanian legislation) is by far the most successful method of zoning for the Albanian context, which, if used wisely, can be both flexible, as well as easy to implement. Nevertheless, there is significant lack of capacities of local authorities to implement the division of territories into structural units in a 'smart' way. This can cause, at the best, loss of large opportunities for development in certain areas, where the division of structural units, the appointment of unrealistic standards, etc., prevents development instead of encouraging it; and, at the worst, stepping back to the patterns of informal development, or corruption. Therefore, the situation calls for more 'standardized' models of division into manageable zones. They cannot be 'borrowed' by other models, but designed locally according to these enhanced models, and implemented in a timely way, through a series of trials and revisions. This way, the territorial dynamics and the citizen needs can be fully articulated in planning documents, and respectively implemented.

5.2 Bringing indicators and zones together

The above mentioned indicators are condensed in two case studies, of two specific new

zones in Albania.

Case 1: Urban Consolidated Area

This area is situated in the city of Vlora, along the coastal part of the city. It is bordered on one part by the main promenade, and on the back by a hilly terrain and individual houses. It has a longitudinal shape and is mostly made of building complexes and tower buildings, built during the last decade. The approach towards development was such, that the existing typologies of low rise, individual buildings, were demolished. Therefore, the existing urban tissue of the area is homogenous. The main function is residential, with mixed use activities in the first floor, and there is one educational institution, namely the Marine Academy.

Existing indicators:

According to the local plan of Vlora, the area is considered in an expansion process, and has an expected FAR of 0,7-1,4.

The area has 82 000 m2 of buildable space, with a GSI of 54%. The existing FAR of the area is 2, thus exeeding the expectations of the local authorities.

In order to determine whether the area needs lower or higher indicators, the evaluation of the 4 parameters will be carried out.

The area has a high density (1000 dwellings/km2) and a distinctive fragmentation of plots, because of the former typology of buildings. The street network is closely related to the main promenade, whereas the secondary system is not well connected, branched and of poor condition.

The open space ratio of the area is 0,23, indicating a rather small public area. The distribution of the building blocks and their orientation indicates irregularity. Nevertheless, the fragmentation of the blocks makes the inner area easily accessible.

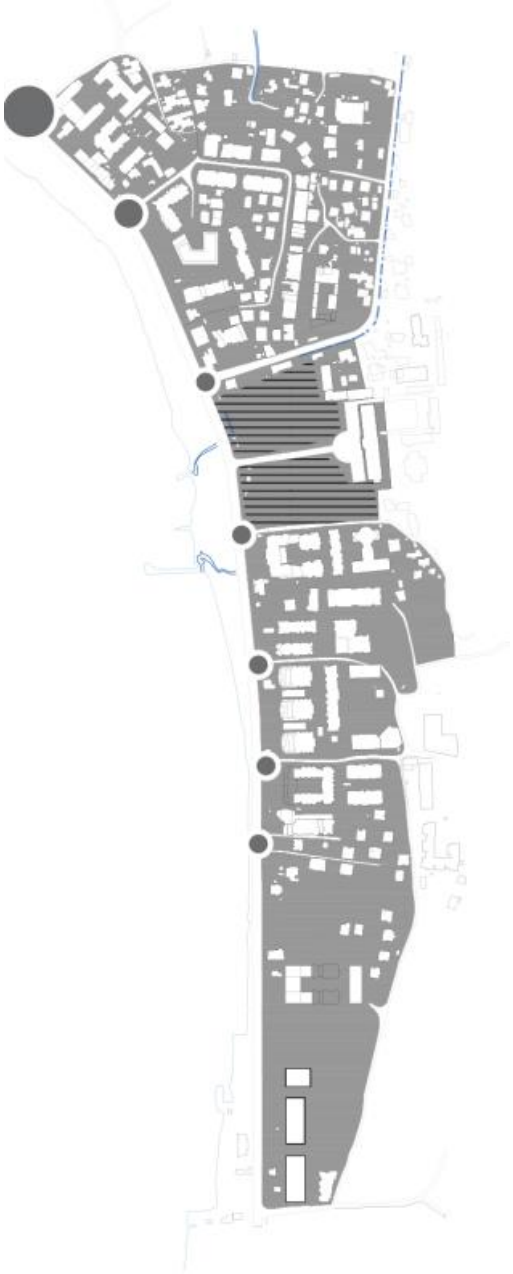
In terms of perceived density, the area has a total front length of 1,5 km, and 8 entrance points from the main street. This indicates a problem conserning the entrance density, thus giving the feeling of crowding. It is also the case in the space syntax analysis.

The irregularity factor, the entropy, is rather high, indicating a non continous urban form. The connectivity is also very poor in inner areas.

As the environmental aspects goes, the building complex blocks the natural ventilation, coming from the sea, especially in the summer time. This makes the inner part thermally

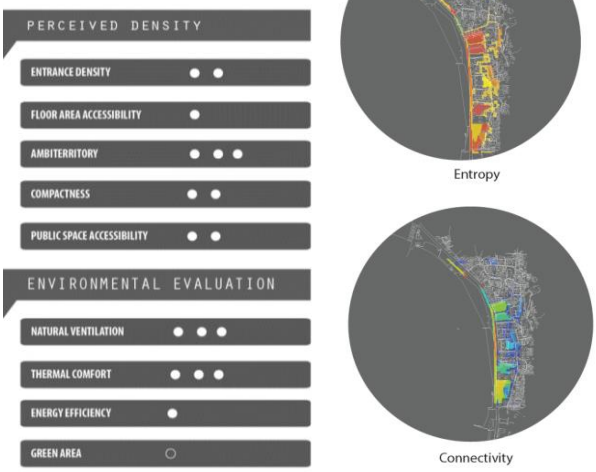
uncomfortable.

Also, the same height of buildings facing each other creates strong wind tunnels, thus raising the uncomfortable condition. The solar radiation is high during the summer, and there is need for solar protection in the third and fourth line of building, where the buildings are low rise.



In conclusion, we can state that, although the existing density of the area seems to be visually good, it's quality of life, health and the livability are lacking. There is no green area provision inside the neighborhood, the network system is deficent, and the building form doesn't respect the environmental qualities.

The area is best to have a more organized structure, and a OSR of more than 30 %. The proposed intensity for the area is still 2, but the configuration should be perimetral to the network system, and with a high permeability, rather than randomly distributed buildings. This would create a more walkable and livable environment.



The building blocks should be arranged in a more peripheral setting, in line with the secondary road, in order to have a better configuration and quality of the inner space. The green area standard can be provided through design of pocket parks in the semi-public areas. The typological features of the buildings should be the same, with a few alterantions of height, in order to set a good sun exposure through the sun angle planes.

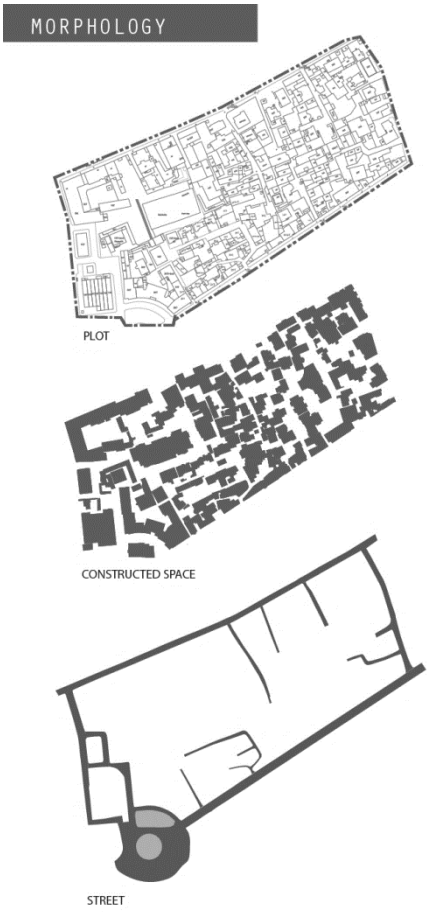
Being a coastal area, it is also important to set regulations on the alignment of buildings, and

the quality of color used on them, which should be resistant to climatic conditions.

Being a mixed area, with a large percentage of unbuilt space, this is a case where numerous standards and principles can be applied, to ensure a better coordination and impact of these features.

Case 2. Urban mixed central area

This area is located near the center of Tirana, in the historical part of the city. Today it has an established mixed typology, made of old urban villas, mid-rise buildings of the communist period and new, high rise dwellings.



When analyzing this kind of area, the morphological aspect is important, to determine the relationshio between plots and constructed space.

The plot-plot ratio is irregular and fragmented. The number of plots is high and has influenced the morphology of the area, because of the processes of turning the old villas into high buildings. The negotiation process has been part of this context for decades.

The constructed space to constructed space ratio is in favor of the old houses. There are in total 32 individual houses, 10 long collective buildings and 4 high rise buildings. The tendency is to build more high rises, substituting the existing villas.

The street-street ratio is poorly structured, since the secondary inner roads are not paved, and serve as cul de sacs.

The plot-street ratio suggests that almost all plots have access to the secondary or primary street network, suggesting that there is no actual problem with accessibility.

The constructed space to plot ratio identifies the large number of landowners of the area, in relation to the high density buildings.

Finally, the constructed space to street ratio does not fulfill the required distances of a building to the edge of the road.

The existing FSI of the area is 1,1, which is rather low. The GSI, on the other hand, is high, 70 %, considering only the residential plots. The average height is 3 floors, and the estimated OSR is 0,2.

At this point, it is important to make an evaluation of the accessibility inside the area, namely the space syntax.

It is obvious that the connectivity is low in some parts and the continuity of permeable spaces is missing. The integration of the inside network with the perimetral roads, therefore, is low. This indicates a perception of lack of connectivity, regardless of the length of the inner network. The entropy is high at some points in the block, indicating high visual irregularity.

The need for a systematic intervention in the area is important for the regeneration of the urban form. The intensity is too low, whereas the GSI too high. The road network needs to be improved, by creating possible transversal passings.

Other development parameters should help and ease the shift from low rise to high rise buildings, since most of the inhabitants are eager to do so. The quality and environmental features should be maintained between the proposed new layout of buildings and the existing mid-rise buildings. Standards for commercial activities and parking possibilities should be considered. Green areas can be secured through the design of pocket parks.

This area is of a mixed typology, but it cannot be regarded as consolidated, due to the situation of dynamism in the relationship between landowners. Therefore, the approach to normativity in this case should be dual: with quantifiable parameters for the possible developments, like: FSI = 2, GSI = 70%, etc., and with qualitative principles, and ease of the negotiative process.

5.3 Unifying indicators based on typologies

A summary of the indicators measured for the model municipalities by typologies under study is given in the following table. Albeit the typological areas are assigned in flexible way, with various building types in them, the produced layout and the indicators analysed in Pillar 4 seem to range widely. No significant unification seems to be found.

Table 8. Summarized data as per the study of typologies for five model municipalities

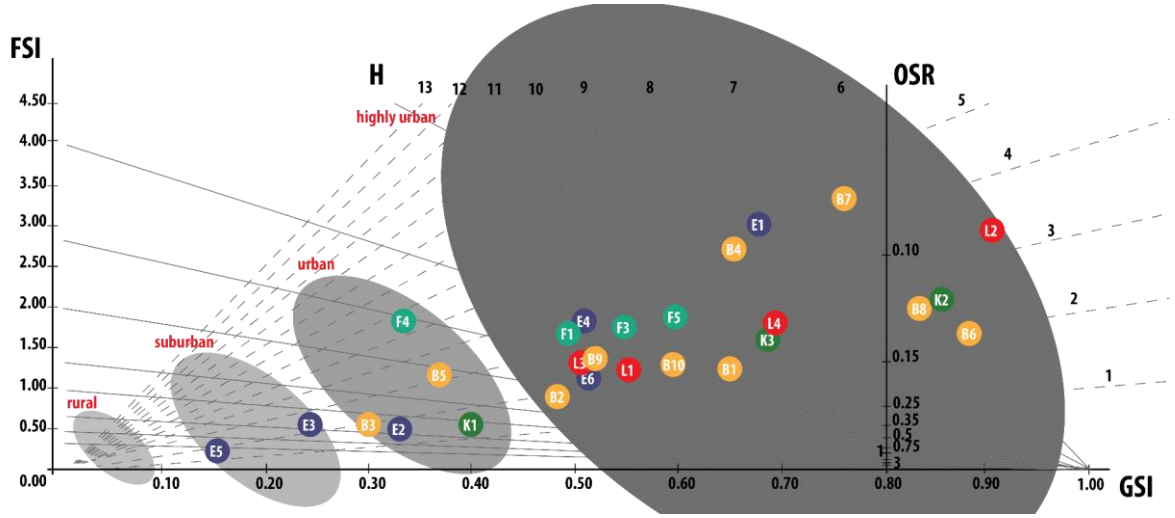
Typologies	PCR	Net FAR	Gross FAR	RCR	PPCR	Open Space Index	Building to building distance not respected in … (of buildings)	Building to road body distance not respected in … (of buildings)	Density (building/ha)	Density (residents /ha)
Low density villa area	15-25%	0.5-0.7	0.6-0.8	10-15%	10-15%	20-30%	10-20%	5-10%	0-10	0-60
Medium density villa	25-40%	0.6-	0.5-1	15-	15-	40-60%	10-20%	20-60%	10-15	60-100

area		0.8		20%	20%					
High density villa area	40-60%	0.8-1.2	1-1.5	20-25%	20-25%	30-40%	10-15%	5-10%	15-20	100-150
Longitudinal buildings mixed with villas	40-50%	1.5-2	2.5-3	20-25%	40-60%	50-70%	10-20%	15-25%	5-15	300-400
Longitudinal buildings mixed with towers	50-60%	1-1.5	1.5-3	20-25%	35-50%	40-50%	20-30%	5-10%	15-30	200-250
Longitudinal buildings mixed with towers/villas	60-80%	2-2.5	2.5-3.5	20-25%	30-40%	50-70%	10-20%	10-15%	30-40	350-450

Source: own calculations

This can also be noted in the following graph:

Figure 48. Graphs of correlation between FSI-GSI-OSR-H for the studied samples



Source: own contribution

While the spatial layout of

5.3 Shaping the form-based code

Finally, the table below summarizes the characteristic of each zoning instrument studied so far, as to determine specific results from each.

Table 9. Summary of lessons learned from zoning

ZONING form	Possible use	Level of rigidity	Positive aspects	Negative aspects
Conventional	Outdated	high	Easy to monitor and implement	Does not meet needs of population in terms of

Form-based code	Consolidated urban pattern and controlled development	medium to high	Very easy to adapt and implement	Asks for strong unification of typologies
Smart Code	Homogeneous development	medium to high	Model-based, easy to draft, as well as implement	Calls for transect-based city form
Overlay	Special provision areas, central zones	low	Makes extra provisions easier for specific areas	May contradict planning instruments
Performance	Urban center, specific areas of interest	low	The only zoning form	Arguably favors developers to citizens
Cluster	Areas that will be redeveloped	low	Allows for place-based development	Fragmented approach
Making room	Systems with a mature planning culture	low	Flexible growth	
Containment	Systems with robust development control	high	High predictability	Not effective in urbanizing countries
No zoning	-	lowest	Freedom for developers	No guarantee for public amenities
Plot based	Neighborhood level plan	low	More specific and detail-oriented	May be speculative at area level
Area based	Comprehensive integrated approach	medium	More comprehensive than plot based	Does not always regard plot level

Source: own contribution

The aim of this research was to develop a matrix for the future form-based code in complex systems. Albeit in the case of Albania, where it took the premise, the typological heterogeneity proved that such an instrument cannot be applied entirely, we can discuss a few premises for each level of study, in terms of form-based tools and indicators to be addressed.

Table 10. Conclusive discussion on form-based code

Level	Outcome	Standards / indicators used	Method/Instrument used
Municipality	The prevailing building typology The degree of urbanization The main spatial layout Existing spatial typology	Planning standards: schools (ratio) New Urbanism standards (at regional and local level)	Zoning on GIS Overlay zoning Transecting at large scale, by determining fuzzy boundaries (macro-structural units)

Urban center	Balance between vitality, health and comfort Mixed uses Small, accessible housing units, avoiding perimeter blocks Provision of basic services and infrastructure Residential units should be characterized by a particular typology of buildings, road networks or public spaces Diverse and open living units Abundant public space Human scale and variation Buildings define and emphasize public space	The spatial layout The main spatial typology Process of growth Density Development indicators (PCR, net and gross FAR, RCR, PPCR) Planning standards	Axial syntax analysis Area based development Plot based development Smart code
Urban-rural boundary	Provision of basic services and infrastructure Continuity of urban typology in transitory way	Prevailing building typology Development indicators (PCR, net and gross FAR, RCR, PPCR) Density (buildings/residents) Distance conformity of buildings from one another and the road body Road network typology Permeability of the area Accessibility of the area (no. of openings to the area, no. of buildings without access to roads, etc.)	Transect method Plot based urbanism Smart code
Rural settlements	Provision of basic services and infrastructure Provision of compatible land uses Harmonization of layout with natural and agricultural surrounding	The spatial layout of settlements inside the village The main spatial typology of the village Process of growth Density Development indicators (PCR, net and gross FAR, RCR, PPCR) % of buildings without access to roads % of parcels where urban agriculture is developed	Transect method Cluster zoning Area based development Plot based urbanism

Zone level	Solar exposure Thermal comfort Direction and wind speed protection Suitable air humidity Rain protection Energy efficiency Appropriate conditions of intimacy	Prevailing building typology Development indicators (PCR, net and gross FAR, RCR, PPCR) Density (buildings/residents) Distance conformity of buildings from one another and the road body Road network typology Permeability of the area Accessibility of the area (no. of openings to the area, no. of buildings without access to roads, etc.) Theoretical population Land use density Open Space Ratio Green Space Public Space Parking Commercial facilities Healthcare facilities Sport facilities	Cluster zoning Plot based development Area based development Space Syntax Smart Code Performance Zoning (in specific areas)
Plot-building level	Placemaking principles Urban seeding	Building typology Building style No. of floors/height Position towards the road Position towards the parcel Land use Function No. of residents Building period Building quality Type of building extensions Lot size	Plot based development

6. Conclusions and recommendations

6.1 Conclusions

Approach to normativity in different planning theories

Although the issue of the importance of normativity today is still arguable, it is obvious that

theories throughout the last two centuries varied in terms of acceptance towards principles, standards and regulations. One thing is sure: each theory or planning paradigm emerged as a need to overthrough or fix the problems of the previous one. At least this is the case until the postmodern area. Thus, as one theory supported the use of aesthetic and physical development standards, the next one had a more social-oriented approach, and was followed again by a theory supporting rigid and normative, functionalist planning. Hence, with the change in cultural background and mindset, it is understandable that theories like City Beautiful, Garden City, Modernism, can not be taken into consideration for setting today's standards and norms. Postmodern theories, on the other hand, consist of such a variety of concepts and approaches, that it is difficult to be supportive of only one of them.

The acknowledgement of the different approach of Planning theories and Urban design theories, at this point, is crucial. It seems that theories about the urban form, the spatial relations, etc. have evolved rapidly in the last century. These theories, even though they don't always propose quantifiable principles of qualitative living, thus don't always create standards and norms, present some interesting arguments on the way a city, neighbourhood or block should be designed. Livability, walkability, environmental comfort and health are some of the most important suggestions of theories like Wholism, Livable Streets, Urban Quarters and New Urbanism.

On the other hand, postmodern planning theories, like systems view, rational planning, or communicative planning are more concerned with principles of city organization and governance, rather than the quality of living in its thorough physical manifestation. Therefore, although standards are often present (except in Communicative Planning theories, which thoroughly rejects any standard), they are not linked to the morphological context, but rather to the need to set goals and reach them according to a specific plan.

Merging both types of theories, by acknowledging their strong points and weaknesses, would be the next step towards designing enhanced and realistic development standards for the contemporary city.

Following are some of the principles of urban design that can help in setting standards for spatial typologies in Albania.

1. the urban environment we live in should offer a good livability, good health and comfort
2. urban quarters are a concept that can be used in city formation, as a substituent of the rigid urban block, which can be regarded as outdated in contemporary mixed-use cities
3. the smaller the urban quarters are, the more access and public frontage they create
4. perimeter blocks are not preferred, since, in repetition, they encourage social disruption
5. in order for a block to be orientable and of good formal qualities, it must either be created from a typologically classifiable street pattern, or from a classifiable building typology, or have public spaces which have classifiable typology. The three can not occur in the same time because it then leads to chaos.
6. a city must have functional integration and proximity between neighbourhoods
7. the areas need to have positive urban space / The urban environment should be an environment that encourages people to express themselves
8. human scale and variation are important for the perception of the area
9. buildings should be positioned in such way, as to define/enclose the public space
10. the criterias for qualitative living can be measured in different scale typologies: region/city , neighborhood/district/corridor, block/street/building

The presence and strength of normativity differs from one legal system to the other. Usually the decisionmaking process about use of standards and their way of assessment is achieved at the level of local authorities, and in rare cases these decisions come from central or regional government. There is a recognisable tendency to draft new, more updated legislation for urban planning, which is more context-based than rigid. The new emerging field were standards are more present is the environmental consern in urban scale.

Also, there is a difference between the planning culture of different countries. For example, Italy is known for its well structured, numerous and specific land development standards, and for the planning standards, which are applied in relation to spatial typologies. UK is known for the negotiative and flexible approach towards development, applying several qualitative principles in the requirements. USA, on the other hand, has a few, simple development indicators, and many instruments facilitating the process of development and financing. These are examples that can be considered as successful in their mileu.

Correlation between morphology, spatial typologies and development standards

At municipal level: Typological zoning is one of the most important steps of the in-depth analysis, which simplifies the process of assigning physical intervention methods and structural units in an area, as well as and in the course of drafting the general local plans. Currently, there is no professional terminology in Albanian on building typologies and also there is no codification of the possible typologies. It is recommended to prepare a guide with this terminology, and provide a codification of categories of typologies, in order to unify the process and the analysis carried out for various LGUs. However, knowing that the typologies are dynamic, as is the process of development of the territory, it is strongly suggested that codification be open, as a guideline and not final. This codification must be provided as an instruction and not as a legal-binding act, and municipalities should use it to adjust and then incorporate it in local planning and development regulations, in accordance with the relevant contexts.

As noted above, we have used the "density" term to define the typologies under this study. The use of this term does not apply to the definition of development indicators, because in the conditions of "mixed" use of land it can rather be a more speculative indicator, but helps to quickly understand the final land use regarding the **function-built-void** trinomial. So, density also means the building's function, height and occupation of the territory.

Schools, stadiums, hospitals, cemeteries and other special uses can be considered as a separate category, or included in the above categories, depending on their size. The prevailing typology for each area is the one that occupies the greatest percentage of surface area (i.e., in footprint, not floor area), or that is numerically displayed more often. The remaining natural, agricultural, water, etc., area is not required to appear in this analysis, as they can be evidenced by other layers, such as territorial systems, existing land use, LULC of Corine, etc. In the case of houses that are located on farmland/natural land, etc., if necessary, other (low, medium…) densities and additional cases of positioning (e.g., longitudinal buildings in agricultural area, villas with high density in a military area, etc.) can be specified. However, in all cases, the density is related to the structure of the plot and to the owner's rights to it. Thus, any conceptual codification of the typology based on density must have initially resolved the relationship of the building to the parcel as a property and

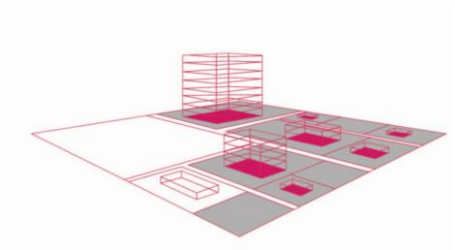
should state the extent to which this relationship will be taken into account. Finally, we should consider that this categorization (whichever it is) must be valid for determining the structural units and relevant regulation, i.e., the need to undertake more in-depth local studies up to a comprehensive codification.

The analysis undertaken for municipalities under this study reveals that the prevailing building typology belongs to the area of villas with low and medium density and to areas with very low density. The least common typology is that of the areas with longitudinal buildings, with low density.

In addition, at urban center level, the areas of villa buildings with low, medium and high density are most widespread.

At zone level: Keeping the perimetral road network and prevailing building typology as a dividing criteria of the areas (structural units), it results that most areas do not have typological uniformity as to be integrated in specific form based codes. Out of 27 areas taken in this study, only 6 had similar residential typology (in more than 80% of buildings). The rest of the areas have at average three typologies that prevail, including detached single-family houses, attached multi-family buildings, and longitudinal buildings.

In terms of development indicators measured in the zone, the following is a summary of their values:



PCR (Plot Coverage Ratio):

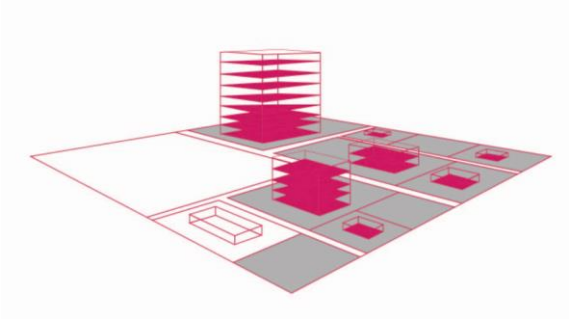
- The PCR value is not enough to estimate the free space and permeability of the zone. An assessment of the ratio of 'permeable area[11]/built area' indicates that the highest ratio (30:10) belongs to central areas.
- It is recommended that the regulation includes a qualifying but not mandatory indicator for use in proposals in order to measure the "free space" at zonal level. This index, the "Open Space Index", measures the ratio of permeable area to the total area. Permeable surface is any surface that is not limited by private or public walls. This index helps to estimate the real permeable areas and, as such, it serves a lot in improving the analysis of territories, and to evaluate the peripheriality and spatial qualities of the built environment.
- It is recommended to establish the "void-built ratio" and "open space-built ratio" as indicators at structural unit level.[12] This ratio may be expressed as x:10 or as a percentage. Its value will help to quickly interpret the spatial situation. The PCR

[11] The permeable surface is the entire unbuilt space, which can be freely permeated by people, i.e., without impediments, such as fencing walls, etc.

[12] In these two indicators, the empty or free space is the total unconstructed, permeable or not, space.

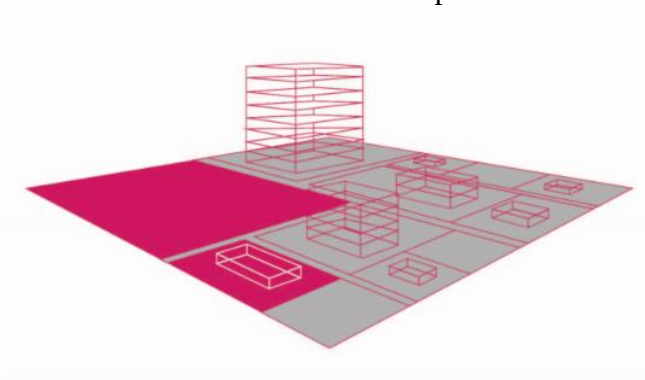
in this zone is 48%. This information tells us that the density is relatively medium, but there are many physical barriers (walls of courtyards) that lower its permeability.

- Areas with higher PCR generally have mixed-typology buildings, like longitudinal buildings, individual houses and towers.



FAR (Floor Area Ratio):

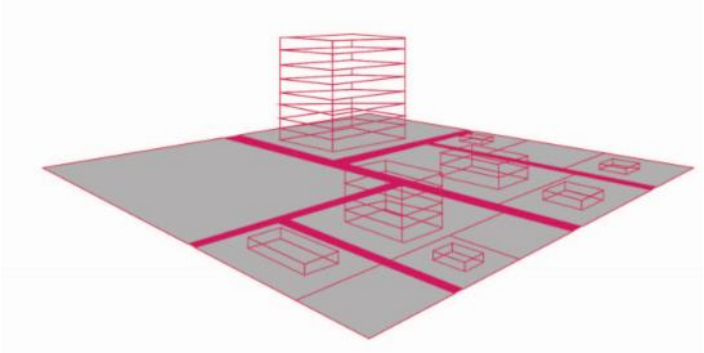
- Lower FAR-s are noticed in areas planned during the communist period, which have not undergone any other changes over time. Higher FAR-s are achieved in areas with predominant longitudinal typology (4-5 storeys), which have undergone urban infill, with high residential complexes.
- Areas of duplex, row, attached or semi-attached houses have a FAR that varies from 1,4 to 2.5, comparable with the FAR of areas with longitudinal buildings.
- Areas with higher FAR include a prevailing typology of 5-storey buildings and have a difference of more than 3 storeys between the highest and average height, i.e., the height is diverse, not uniform, among all parcels of the area. In this case the buildings vary significantly in terms of height. However, we cannot identify a direct correlation between the high intensity and failure to abide to distance regulations. Areas with higher intensity have a 90% rate of compliance with the building-to-building distance regulations, whereas areas with average FAR (1-1.5) have a respective compliance rate of 60%. The low buildings constructed before the ‘90s are generally old and built prior to application of urban planning of the communist rule period.



PPCR (Public Plot Coverage Ratio):

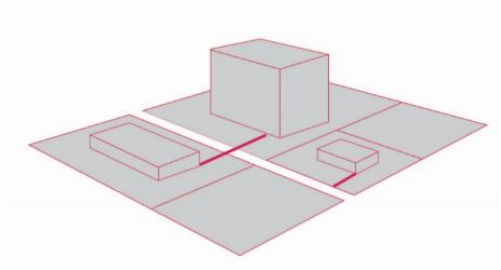
- The average values of PPCR are 20-40%.
- Public uses are generally referred to shared free spaces (less to public, educational, healthcare, institutions, etc.)
- The PPCR and the value of Open Space Index in most cases is proportional.

- The lowest PPCR is noticed in areas of low, medium and high density individual houses, with a prevailing typology of detached, or row single-family houses.
- The highest PCPR is seen in areas with mixed longitudinal buildings and villas, where the prevailing typology is U-, Z-, and L-shaped buildings, as well as attached, single-family houses.



RCR (Road Coverage Ratio):

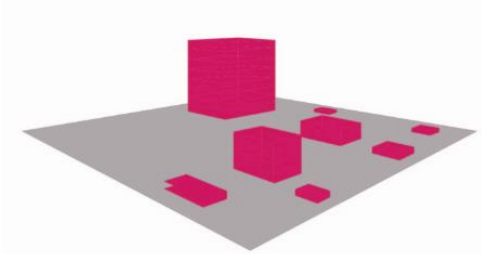
- The average value of RCR is 18-25% and, as a numeric value, is generally satisfactory regardless that in many cases the quality of the network is poor. Long roads inefficiently increase the RCR, but they are narrow and badly-maintained.
- The lowest RCR belongs to areas with irregular, spontaneous and linear networks, and to areas with villas of detached, single-family typology.
- The highest RCR belongs to areas with rectangular and radial grids and to areas with longitudinal buildings mixed with villas, areas with U-, L-, and Z-shaped buildings and semi-detached buildings
- In general, the RCR and the Open Space Index are proportional.



Distances (setbacks):

- 22.3% of the buildings under this study do not respect the building-to-building distance.
- The areas where this failure to abide to distance rules is more predominant include central administrative areas, with prevalence of attached and row single-family houses, and the historic areas.
- The distance among tower buildings, residential complexes, etc., built after the year 2010 is respected in none of the cases observed. This is one of the most difficult cases, because these buildings seek to achieve a high intensity within consolidated urban areas, where the urban infill and parcel-based development (that is indeed occurring) are quite inappropriate to achieve high intensities.

- The building-to-building distances are mostly respected in areas with medium density, planned, and consolidated villa areas, as well as in mixed zones with longitudinal multi-family buildings or row single-family houses.
- Some 21.9% of buildings do not respect the building-road body distance. This indicator is mandatory by means of the traffic code, but it is generally ignored or is little understood by developers and landowners.
- The distance from the road body is mostly respected in areas with radial road typology, irregular and perimetral network, in areas with medium and high density, with domination of towers, duplex buildings, etc.
- It is recommended that the criteria of distance/setback remain in local planning regulation, but stipulating that: (i) for historic, cultural and architectonic-historic areas, the distance criteria must be defined in the general plan in conformity with the legislation on culture; (ii) consolidated urban areas may include some facilitating cases; (iii) as a rule, the details on distance must be defined in the general local plan for each structural unit, in conformity with the proposed spatial typologies.



Density:

- The highest population density is in areas with prevailing typology of towers, longitudinal buildings and urban walls.
- The lowest density is found in areas with prevailing typologies of detached or row single-family houses.
- The building and population densities do not have specific correlation between them.
- It is recommended that the building density linked with the relevant typologies be imposed as an indicator in the planning regulation to be used in the cases of implementation of land development financial instrument programs, such as conditioned intensity, TDR, etc. Likewise, conditional to the fact that the carrying capacity of an area, in accordance with the proposed spatial typology, becomes a binding element, it is worth estimating it as part of the building density (by buildings of residential units per hectare).
- It is not recommended to make residential density mandatory, because it does not reflect the carrying capacity of the area, which in most includes other uses, thus increasing the number of users in the area. This is a good research indicator, but makes the process of planning of indicators for an area difficult and obstructive.

6.2 Recommendations

This section focuses on recommendations addressed to city makers and researchers in two contexts: international and local.

Zoning regulations need to be embedded strongly in planning systems. Therefore, it is difficult to alter them frequently. Nevertheless, the need to bring out enhanced forms of zoning, as well as enhanced development and planning indicators, is present.

The division into structural units (as used in Albanian legislation) is by far the most successful method of zoning for the Albanian context, which, if used wisely, can be both flexible, as well as easy to implement. Nevertheless, there is significant lack of capacities of local authorities to implement the division of territories into structural units in a 'smart' way. This can cause, at the best, loss of large opportunities for development in certain areas, where the division of structural units, the appointment of unrealistic standards, etc., prevents development instead of encouraging it; and, at the worst, stepping back to the patterns of informal development, or corruption. Therefore, the situation calls for more 'standardized' models of division into manageable zones. They cannot be 'borrowed' by other models, but designed locally according to these enhanced models, and implemented in a timely way, through a series of trials and revisions. This way, the territorial dynamics and the citizen needs can be fully articulated in planning documents, and respectively implemented.

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