EVALUATION & CRITICISM

Transversal Comparative Approach to Middle-Class Mass Housing

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ABSTRACT: The COST-Action (CA 18137) on Middle Class Mass Housing in Europe (MCMH-EU) has established a transnational scientific network to document the productions of middle-class mass housing built in Europe since the 1950s in order to investigate this specific topic and share knowledge. Considering that middle-class mass housing dominates most of our cities, the research translates into the study of the extensive development of cities in Europe after World War II. The breadth of the theme and the differences between the countries make it difficult to construct a systematic and unified criticism of middle-class mass housing, albeit concentrating on the post-war period. The COST-Action has the goal to build a network to gather research representing the pooled knowledge and experiences from the network of multidisciplinary researchers. So, transversally throughout the Working Groups, an inventory of case studies, a collection of articles, and studies on the policies were produced. This paper elaborates on the collected and produced material and data in order to trigger comparisons and reflections on the approaches and methodologies to face the complexity of middle-class mass housing topic. The comparison was built by using different methods intersecting multiple points of view and following specific thematic tracks that seek to deconstruct the complexity of the middle-class mass housing topic into singular aspects. This paper presents the results of data analyses, visualisation techniques and comparative studies to identify massification processes, morphological structures, demographic and policy developments. It shows a combination of several methods to build a cross-sectional and systematic approach to the diverse knowledge envisioned to develop a methodology for future research. This can be especially useful for future developments and insights towards joint or individual European guidelines, laws and policies to improve the dilapidated housing stock, current housing situation and to compete the housing crisis in general.

KEYWORDS: Inventory, comparative analysis, mass housing neighbourhoods, policies, interdisciplinarity.

INTRODUCTION: Middle-Class Housing has been explored as a specific typology in urban and architectural research (Caramellino and Zanfi, 2015) and stands next to a larger body of research which focuses on affordable or social housing (Hess et al., 2018) in particular on mass housing (Glendinning, 2021) and on larger housing estates in former socialist countries (Hess and Tammaru, 2019). Studies are often highlighting the differences between Western States and former (Eastern) socialist countries as well as contras northern (Scandinavian) and southern European models of housing. Within this scope middle-class mass housing has been produced in different formats and forms of expression in Europe since the 1950s as a result of the housing shortage after WWII — thus comparable to the enormous and famous efforts of modern settlements after WWI in the 1920s and 1930s all over Europe. Post-WWII middle-class mass housing has been developed in different socio-economic and political contexts, therefore any direct comparison between countries is considered difficult.

To investigate this phenomenon further, several researchers from different fields and countries across and beyond Europe were involved in the COST-Action from 2019-2023 with 151 members from 33 member states, among them 14 Inclusiveness Target Countries (ITC). Significant findings from a statistical point of view were achieved through the analysis of the collected case studies: out of 97 cases 95 were analysed. The peak of middle-class mass housing planning and production was reached in the 1960s-1970s which corresponds to the period of the

"Trente Glorieuse" (Fourastié, 1979), the boom period of the thirty years [FIGURE 01]. It was characterized by strong economic and industrial growth, in particular within Western Europe, and accompanied by the realisation of new towns and new suburban settlements conceived on the principles of the Modern Movement. Similar to the interwar-period, the hierarchization of the work flowed with the construction of buildings on concrete slabs over natural ground and prefabrication was emphasised in order to "provide housing for the greatest number and improve the citizens' living conditions, as a symbol of a modern and democratic society" (Tostoes, 2021) in Europe and beyond. Even though the peak of activity was in the 1970s, the 1980s continued to be a relevant period; in particular in Eastern European and socialist countries the development was delayed by about a decade due to slower and lower economic development. Together the majority of the middle-class mass housing stock is between 40-80 years old and shows significant needs to be "ennobled" (Glendinning, 2008).

Interdisciplinarity is one of COST's strategic instruments, and in fact being fundamental to cover the multi-faced middle-class mass housing phenomenon. In order to unravel the background of the participating researchers, it was essential to distinguish the research areas and themes related to middle-class mass housing. Information about ongoing and finished research projects was collected and evaluated:[1] Out of 33 member states, 61 research projects from 27 (out of 33) countries were provided and analysed. The analysis aimed to illustrate the main research areas and gaps that offer a potential for further collaboration: 88 study areas could be localised, out of which 90% are in Europe. 61% of those study areas are within the researchers' own countries and 39% of the research is dealing with study areas outside their home countries, a heterogenous topology in scale and focus, hardly connected on national or European level. In addition, [FIGURE 02] shows that historical research is dominant with 79%, followed by architectural and technological approaches in 51% of the projects. Social and anthropological research was relevant in 36 % while, both sustainability-related, and economical and political approaches rang much lower with 23% and 15% of the projects. Some projects carry out extensive studies covering more than one approach. The analysis also reveals that most of the research is rather academic and scientific (research projects, PhD, post-doc), only 11% of the cases are practice-related and 5% are linked to educational programs. As a result, the carried analysis reveals that the middle-class mass housing phenomenon is mainly studied from a historical and architectural approach, compared to environmental economic and political approaches.
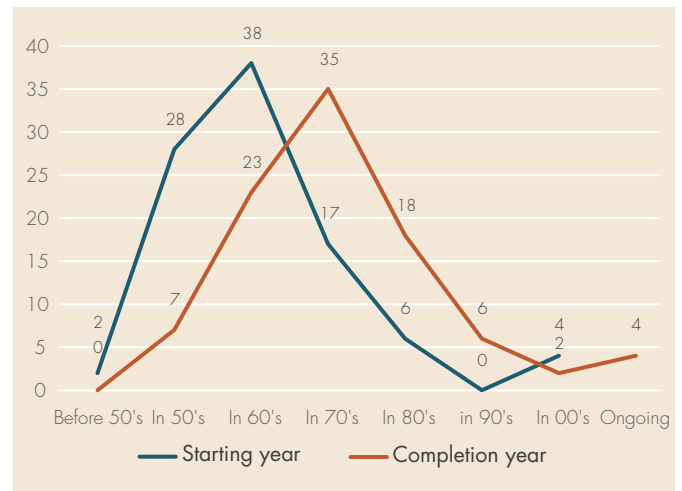
01 Construction periods of the case studies collected in COST-Action MCMH based on 95 retained cases out of 97 received (blue line: starting year, orange line: completion year). © Authors, 2022.
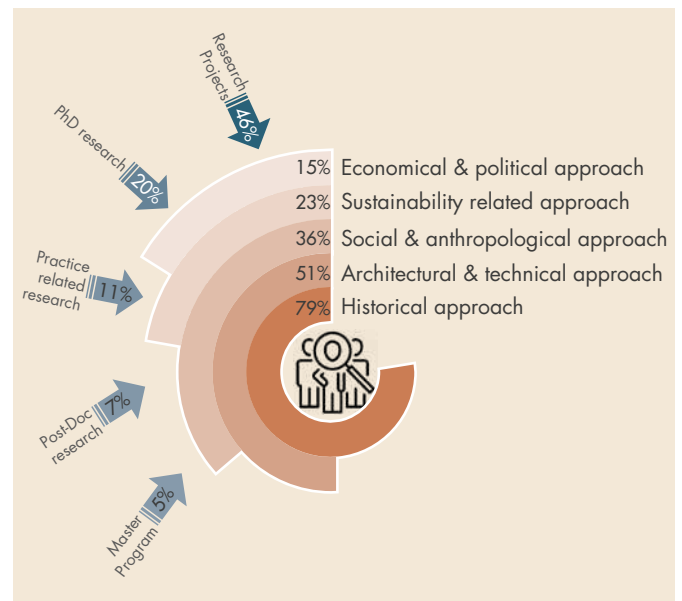
02 Diagram reflecting the MCMH research framework and research approaches. © Authors, 2021.

As a result, the authors aimed to trigger a reflection about the current status and future actions based on a comparative analysis of the material and data collected in the three Working Groups of the COST-Action: an inventory of case studies (WG1), a collection of narratives: images, videos, interviews and critical texts and articles (WG2), and a collection and overview of policies enriched through articles and studies (WG3).

COMPARATIVE APPROACH AND METHODS

The comparative approach starts by investigating the two terms of the project acronym that are the cornerstones of the research: *Middle Class* and *Mass Housing*. Both are two complex issues that are difficult to define, having a breadth of meanings that is difficult to summarise in a single and determined concept. The breadth of the theme and the differences between the countries seems to make it impossible to construct a systematic and unitary critique of middle-class mass housing, even within a fixed historical time, that of the post-war period. The definition of *Middle Class*, which refers specifically to

sociology, is arduous and manifold among the various countries and has undergone variations modifications over time (Atkinson et al., 2013; Holgers, 2020; Kocka, 1995; Rose, 2016). Nevertheless, the term is also seen through an architectural and urban approach rather than a sociological one—identifying with it the occupancy of those buildings, which are not related to social housing or luxury buildings, thus, in essence those built for a large part of the population. The term *Mass Housing* identifies the specificity of the large size of production. Moreover, reflections on the term *Mass Housing* may involve issues of density and size, that in fact, necessarily lead to a comparison with the urban realities in which they are inserted (Haughey, 2005; Yeung, 1977).

To investigate the two terms in an interdisciplinary way, several methods were involved: mass study (method 01), data analysis (method 02), and social contextualization within public policies aimed at middle-class mass housing (method 03).

Method 01: The reflection on the term *Mass Housing* led to an investigation of the massification process, namely the main three development patterns: a) height expansion as *vertical massification*, i.e. through towers, b) horizontal expansion represented by large housing blocks as *horizontal massification*, and finally c) *repetition of elements* with progressive additions. This means that *Mass Housing* can in fact also be defined by the repetition of elements that are not large in themselves, i. e. through the repetition of medium-sized residential buildings or even over the repetition of detached buildings and of single-family houses that, for example, become a *Mass* in the great extension of the urban suburbs.

Method 02: Additional information data, which outlines the case studies regarding the historical classification, extension, private or public processes, etc., were selected, registered and also visualised in charts. The charts represent valid tools to clarify differences and common elements among countries, e.g. through the interpretation of the complexity and diversity of urban spaces by reducing them to a clear description of spatial and compositional themes. Among these is the relationship of proximity—distance regarding the consolidated city, roads, infrastructures, the relationship with open and common spaces, etc. The themes were then visualised using morphological drawings that served as a base to build a system for comparing and measuring the phenomenon.

Method 03: Finally, the main public policies were explored, through which the most representative case studies were analysed. The interpretative drawings combine the sociological and historical aspects with the policies of several countries with the goal to get insights into the relationship between policies and housing evolution.
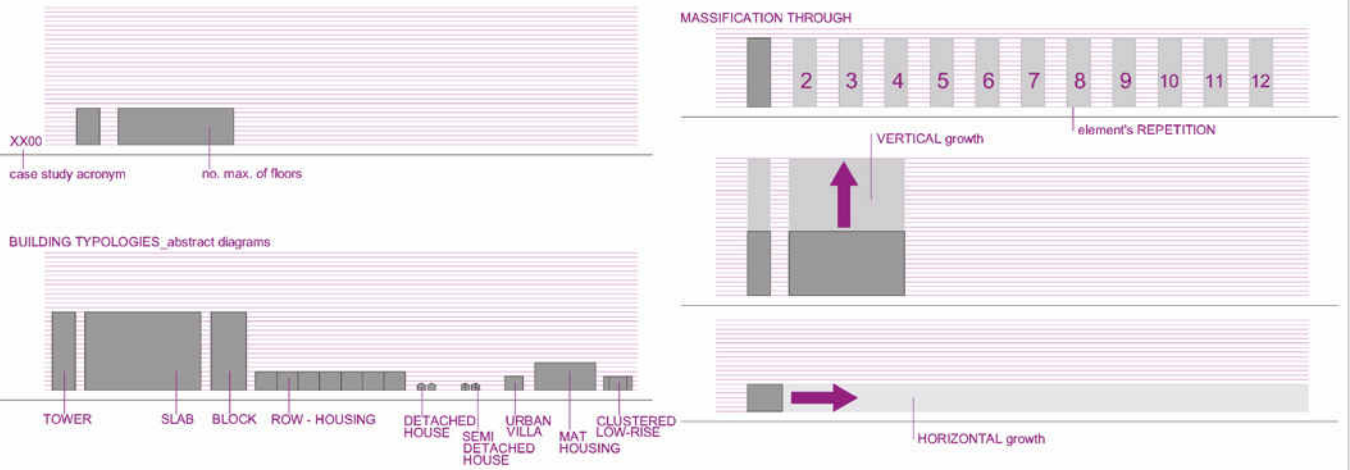
METHOD 01: MASS STUDY

Method 01 focused on the case studies looking at them only as built complexes, studying therefore specifically the *Mass*. The investigation analysed the *mass measurement* and also, through a *morphological analysis*, the relationship with the city and the urban patterns. The different case studies were traced back to one or more patterns of massification concerning architectural solutions. Diagrammatic drawings were developed to show the extent of the case studies' patterns, thus visualising the type and scale of the middle-class mass housing productions from different countries.

The collection of case studies that formed the basis for the analysis also included graphic and visual materials such as photos and drawings. However, the considerable dissimilarity and non-homogeneity of information determined the redrawing of all the case studies by choosing a predetermined manner of representing the massing process, namely redrawing based on a diagrammatic representation. Diagrams are explored in contemporary times as an analysis and design tool, for their ability to synthesise issues abstractly and thus to prefigure approaches and developments (Como et al., 2014; Corbellini, 2015; Eisenman, 2005; Van Berkel- Bos, 2006; Vidler, 2005). From this point of view, it seemed a useful tool to simplify the complexity of Middle-Class Mass Housing characters to create a comparative visualisation between cases. Therefore, the object of the diagrammatic representation was defined. The section is the type of representation chosen as the most appropriate for investigating a measurement from several points of view. The section was represented as a schematic drawing including the real data, such as the number of floors in each building, however, it simplifies some issues. The forms of building typologies and the process of massification have been represented abstractly according to prior-defined rules [FIGURE 03]. Thus, the diagram becomes a strategic tool to use due to its ability to measure the real data and its interpretation. In this application, the diagram measures the process of massification in a non-quantitative way but rather as a visual and comparative overview between case studies with different backgrounds.

By comparing several case studies, the methodology provides an impressive visualisation of issues such as scale, height and type of growth. The visualisation allowed us to immediately identify extreme conditions and imagine their impact on the city. For example, it is possible to observe overwhelming horizontal growth in some case studies from Lithuania with row housings and slab blocks. The phenomenon of mass housing presents the characteristics of repetition and horizontal growth with the construction of multiple low-rise residential buildings. The

NOTE FOR THE COLLECTION

MASSIFICATION THROUGH

2   3   4   5   6   7   8   9   10   11   12

XX00

element's REPETITION

case study acronym   no. max. of floors

VERTICAL growth

BUILDING TYPOLOGIES_abstract diagrams

TOWER   SLAB   BLOCK   ROW - HOUSING   DETACHED   URBAN   CLUSTERED
HOUSE   VILLA   LOW-RISE
SEMI   MAT
DETACHED   HOUSING
HOUSE

HORIZONTAL growth

03   General rules for the diagrammatic re-drawing of the case studies in the section representation for the mass measurement. © Authors, 2022.

04   Diagrams of the massification processes related to the 16 case studies with simultaneous evidence of horizontal growth, vertical growth, and repetition. © Authors, 2022.

AL03

BE01

BA01

BU01

BU02

DE02

DE03

DE04

IL01

LT01

LT02

LT03

PT02

RO03

RO04

TR02
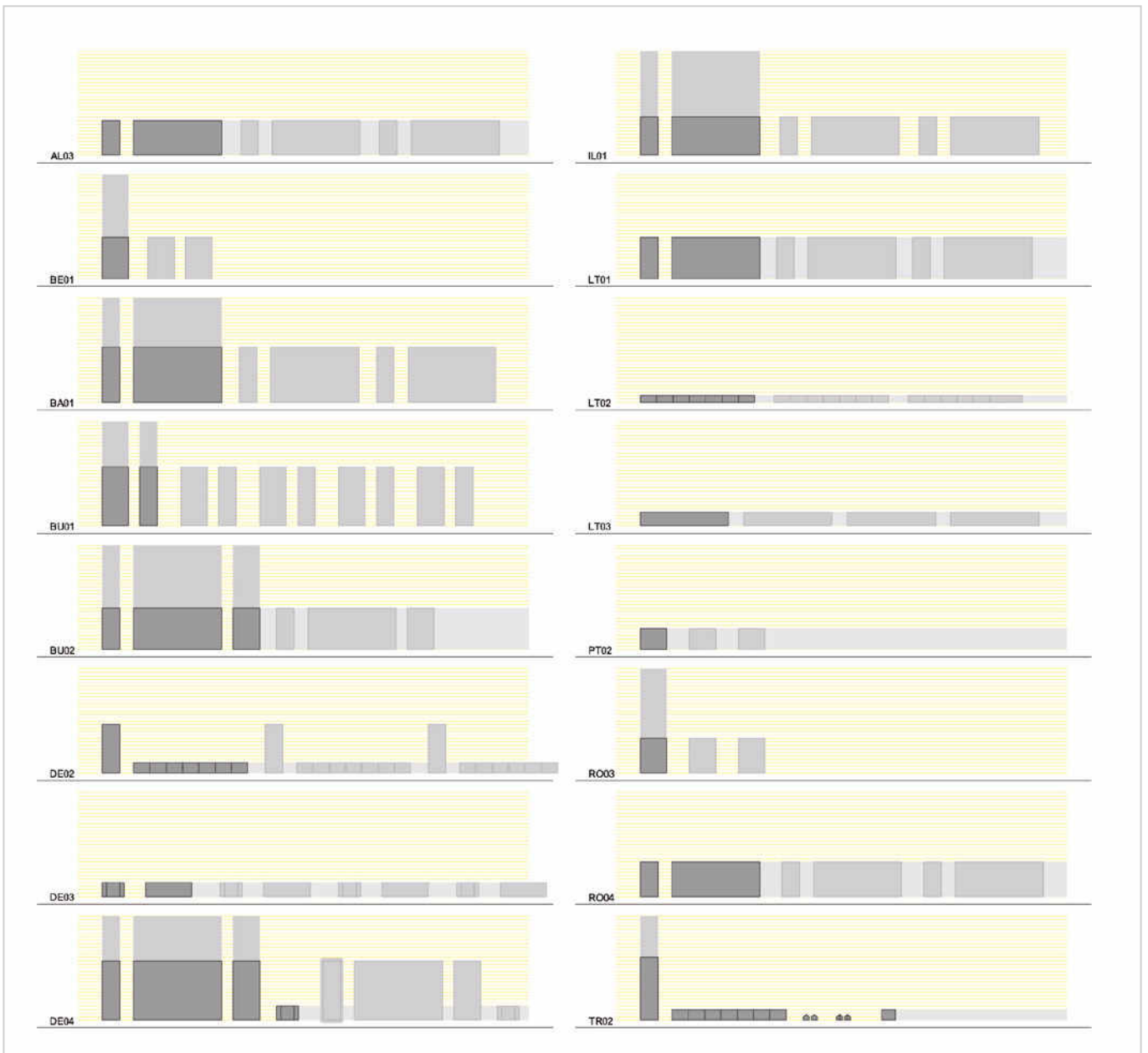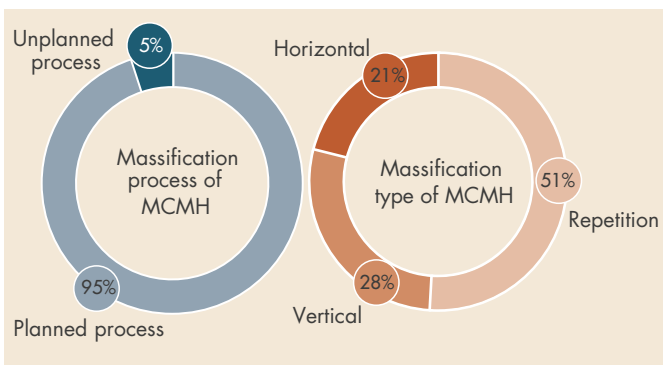
05 Diagrams reflecting the massification process and type of the analysed MCMH. © Authors, 2022.

diametrically opposite case, for example, is in Bulgaria where the massification process is determined by the repetition of towers and blocks with vertical growth determined by high rise multi-story buildings [FIGURE 04].

Within the collection of case studies provided by 27 countries, a total of 93 sections were redrawn. Out of these, 17 case studies represent horizontal growth, 18 cases vertical growth, and 41 repetition of individual buildings. Out of the total received case studies, 16 present a concurrence of factors that determine the massing process.
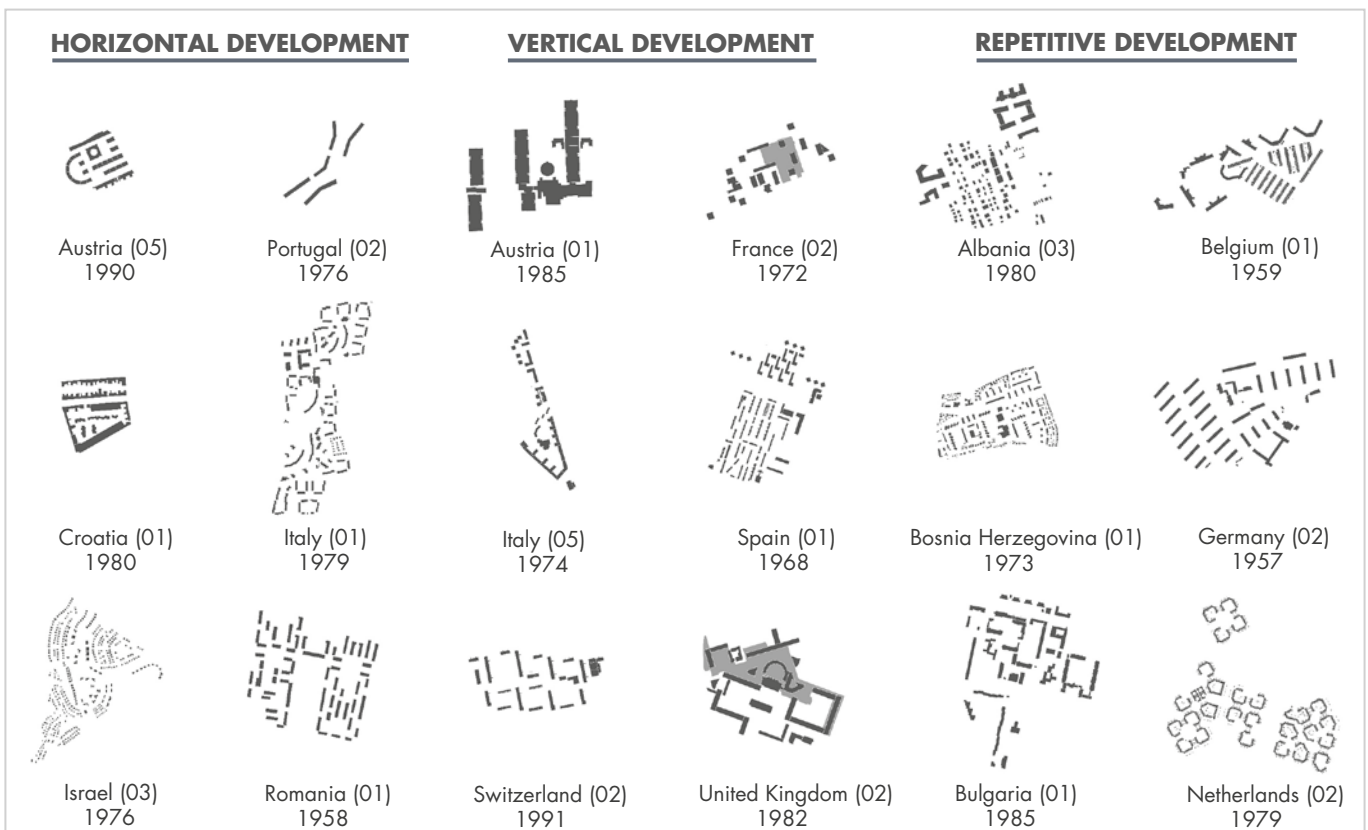
To recover the missing information regarding the massification type, it was considered to combine the analysis of the height of the buildings, their footprint and their repetition on the site for the classification of the case study into one of the three categories of massification that were pre-defined. This led to a qualitative distribution of all the case studies into three categories according to the massification process: horizontal, vertical and repetitive development.

Accordingly, 51% of the known case studies[2] are characterised by repetitive development. The other two types share the remaining half [FIGURE 05]. It should be noted that a case could combine several types of massification. Repetition is a design criterion that involves the planning with the repetition of volumes but also the uniform character of the single volume, for example with the repetition of opening in the facade that strongly influences perception and imaginary association with mass housing (Plouchart, 1999). Even if we found that 95 percent of middle-class mass housing was built under planning processes, we have two examples referring to middle-class mass housing as an unplanned process: the case of the *polykatoikia* in Athens and other Greek cities (link to Alexiadou) which developed extensively as an unplanned and private process, and another one involving illegal buildings in Southern Italy.

The *morphological analysis* had the goal of visually comparing and interpreting the middle-class mass housing phenomenon from an architectural and urban perspective. This study is part of a long tradition of morphological analysis of cities (Oliveira, 2016; Fleischmann, 2022) and visualises the qualities of the existing structures, the potential of common spaces, and the impact of future interventions (Dragutinovic et al., 2023).

A fewer number of case studies—18—were selected from the three categories of vertical, horizontal and repetitive type of development to produce the figure-ground drawings for these 18 cases on the same scale,

HORIZONTAL DEVELOPMENT

Austria (05) 1990

Portugal (02) 1976

Croatia (01) 1980

Italy (01) 1979

Israel (03) 1976

Romania (01) 1958

VERTICAL DEVELOPMENT

Austria (01) 1985

Italy (05) 1974

Switzerland (02) 1991

France (02) 1972

Spain (01) 1968

United Kingdom (02) 1982

REPETITIVE DEVELOPMENT

Albania (03) 1980

Belgium (01) 1959

Bosnia Herzegovina (01) 1973

Germany (02) 1957

Bulgaria (01) 1985

Netherlands (02) 1979

06 Scale comparison of the 18 selected case-studies. OS maps 1:5000 and drawing oriented as true north (upright). © Authors, 2022.

geographical orientation and graphical quality. These sets of drawings helped in establishing a base to define the architectural and urban comparison criteria of diverse typologies across the middle-class mass housing built from the 1950s-1990s [FIGURE 06].

As a result of this exercise, the argument about the varied understanding of what is *Mass housing* became even more prominent. For instance, it is easy to notice that cases like Forellenwegsiedlung in Salzburg (Austria 05) and Alto da Barra in Lisbon (Portugal 02) have a significantly small footprint in terms of housing density if compared with the cases such as, Barbican Estate in London (United Kingdom 02) or De Werven in Almere (Netherlands 02).

In the second step of this methodology, a more focused approach was adopted to observe the relationship of housing with the urban infrastructure in the city. For this study, a set of the three most representative cases from each development category was chosen and analysed with the help of open-source geographical platforms. These three cases were then redrawn using the same scale, highlighting some of the key aspects, such as, solids versus voids, blue and green spaces, main streets along the housing periphery and major transport connections in the context: Segrate in Milan (IT 01), Olympiades in Paris (FR 02), and Woonunits in Antwerp (BE 01). Additionally, to observe the geographical location of the housing within the urban context, a simplified city map was drawn indicating if the housing was in the centre, periphery or outskirts of the city. All drawings and diagrams were then compiled in a visual fact sheet indicating the urban context, period of construction, type of housing policy, massification process and urban morphology [FIGURE 07].

This exercise led to some intriguing observations and possible future research questions. Two of these three mass housing projects were located on the city periphery and both of these cases in Paris and Antwerp have a similar yet distinct vertical and repetitive character. What was even more interesting to notice is the difference in the number of dwellings, for instance, Olympiades in Paris has 3200 dwellings versus 696 in Woonunits in Antwerp and if then compared with their built versus green spaces, it is arguable that Woonunits possibly offers a better life quality as the urban configuration allows for more green and probably social spaces compared to extremely high-rise spaces offered in Olympiades to the middle class. Similarly, if Woonunits is compared to Segrate, which is built on the outskirts of Milan, Segrate offers large green surroundings and interconnected neighbourhood spaces despite the very high number of dwellings (2600).
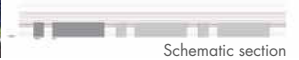
Hence, this methodology represents a chance to increase the knowledge of the case studies collection and

IT 01
Milano 2, Segrate (Milan)

1970 - 1979
Planned Process
Private Housing Policy
Middle Class
Repetition
Dwellings: 2600

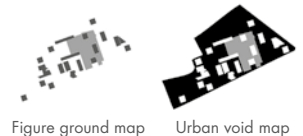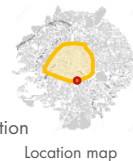Location map — Figure ground map — Urban void map
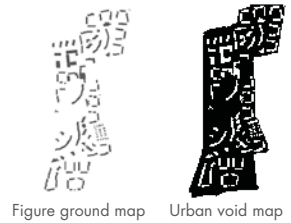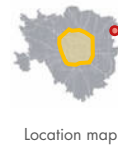
Urban Context Map: Blue & Green and Major streets

Schematic section

FR 02
Olympiades, Paris, 13e

1967 - 1972
Planned Process
Public Housing Policy
Middle Class
Vertical growth & Repetition
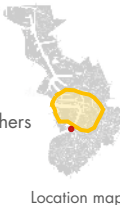(as per observation)
Dwellings: 3200

Location map — Figure ground map — Urban void map

Urban Context Map: Blue & Green and Major streets

Schematic section

BE 01
Woonunits
Kiel/Braemblokken , Antwerp

1951 - 1959
Planned Process
Middle Class and others
Vertical growth & Repetition
Dwellings: 696

Location map — Figure ground map — Urban void map

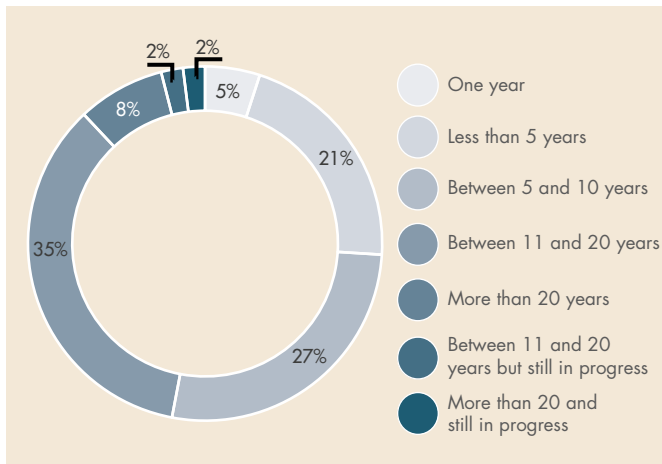Urban Context Map: Blue & Green and Major streets

Schematic section

07 The visual fact sheets compare the three case studies from Italy, France and Belgium.
    © Authors, 2022.

to observe the middle-class mass housing district in relation to the urban patterns.

METHOD 02: DATA ANALYSIS

The statistical analysis of the data collected from 97 case studies served as a primary basis for comparative analysis (Frey 1991, 1992). Significant findings from a statistical point of view are the comparison of construction periods, the types of dwellers, the types of promotion and ownership (public and/or private) deployed for realisation. The
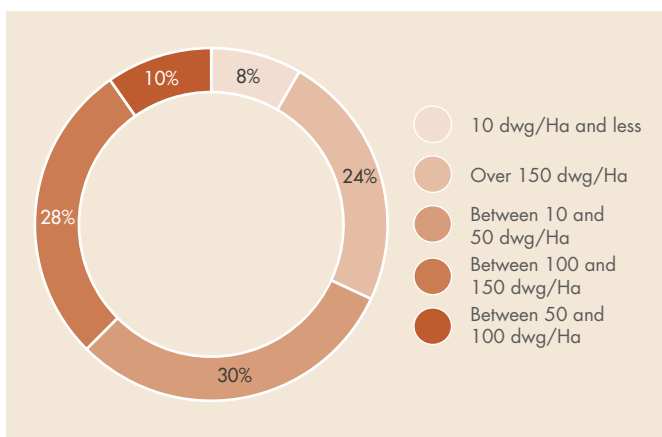
08 Diagram showing the duration of the construction period based on 95 cases. © Authors, 2022.

One year

Less than 5 years

Between 5 and 10 years

Between 11 and 20 years

More than 20 years

Between 11 and 20 years but still in progress

More than 20 and still in progress

09 Diagram showing the proportion of original dwellers class (left in orange) and current dwellers class (right in yellow) of the provided case studies. © Authors, 2022.
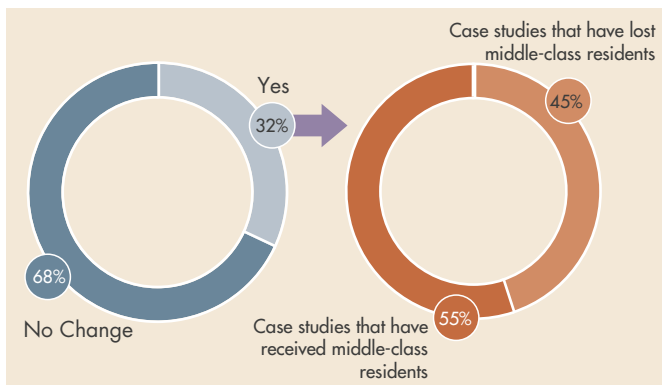
10 Middle class movements in the 32% of projects that recorded a change in the social class of their residents. © Authors, 2022.

11 Density of dwellings per hectare. © Authors, 2022.

10 dwg/Ha and less

Over 150 dwg/Ha

Between 10 and 50 dwg/Ha

Between 100 and 150 dwg/Ha

Between 50 and 100 dwg/Ha

analysis of the construction period allows us to apprehend the value of the work involved in the realisation of mass housing. The idea is to be aware of the economic and material investment required to realise them, as well as the difficulties that can characterize the process. The study thus revealed long construction periods, defined by the starting and the completion year shown already in [FIGURE 01] and summarised in [FIGURE 08]: 8% were finished only after more than 20 years, 35% of the cases needed between eleven and 20 years for completion, and 27% lasted between five and ten years. Only 26% of the cases were built in less than five years, despite the desire to deliver large quantities of housing as quickly as possible.

The public sector was the largest investor in urban and real estate development in middle-class mass housing in Europe based on the countries surveyed in the period from 1950s-1990s. There are also some countries where the private sector dominated the market, such as Italy and Portugal. We found a low percentage of partnerships (less than 16%), which could be explained by the fact that the projects studied mainly date from the 1960s and 1970s when this type of combined public-private promotion was less common, but also by the strong economic and industrial growth that Europe experienced during this period of the "Thirty Glorious Years" (Fourastié 1979).

Statistical data reflects information regarding the share of the middle-class among the dwellers in the mass-housing ensembles. Almost 70% of mass-housing developments were for the middle class, which was reduced by 5% since the buildings were first inhabited [FIGURE 09]. However, it was found that in only 32% of the surveyed cases, the social class of the residents changed. On this part, 45% of the dwellings originally intended for the middle class have lost this category of the population. Meanwhile, the other cases have experienced an influx of middle-class dwellers [FIGURE 10]. Therefore, based on the samples, it can be assumed that there is a kind of rebalancing over time between the losses and gains of middle-class residents in mass housing.

Almost half of the middle-class mass housing was located on the periphery of the city. The study shows that nowadays most of middle-class mass housing became part of the city centre. Considering that at the beginning of the development of middle-class dwellings only 17% were located in the city centre, today their presence is almost doubled to 31% of the stock due to the process of urbanisation and urban sprawl over half a century (Fourcaut 2006, 2012).

The last striking point in the statistics relates to the issue of housing density. An average of 63 dwellings per hectare was identified across the countries studied [FIGURE 11]. This average is well below the minimum threshold defined by the

Cerema report (Bocquet, 2022) to identify mass housing, which it sets at 100 dwellings per hectare. Only 38% of the case studies identified meet this definition. Statistically speaking, a low density does not necessarily mean a low number of dwellings and vice versa. Thus, if we look at the number of dwellings, 51.3% of the case studies correspond to the definition of mass housing given by Lacoste (1963). The latter defined a minimum of 1000 dwellings to be considered as such. However, we have examples that do not meet either definition, but which the members of the COST-Action have identified as mass housing such as *Nova Oeiras*[3] in Lisbon which, with its 149 dwellings, has one of the lowest densities we have recorded with 3.75 dwellings/ha. This contrast calls into question the definition of mass housing in each state and among researchers themselves, and the importance or otherwise of the notion of density or the number of dwellings in these definitions. This is an opportunity for COST-Action members to work on a new definition of mass housing in Europe.

METHOD 03: SOCIETAL CONTEXTUALIZATION WITHIN PUBLIC POLICIES

Public policies play a crucial role in the leverage of contemporary urban and architectural interventions and they offer the possibility of comparing research through a common framework of information. This research aims to consider middle-class mass housing as an effect of public policies that predated its maximum spread and, therefore, understand the middle-class mass housing role in the long term.

The country representatives were asked to construct a national synthesis about the main urban policies that have had influences in developing middle-class mass housing as an urban phenomenon in the 20th century. The information was collected through general data such as the name of the law, the acronyms, the author/body, the date, the title and subtitle, and the main objectives and measures. The national policy-frameworks were visualized in order to compare political orientations, intentions, and the main bodies involved in the middle-class mass housing diffusions (Aalbers, 2012; Clapham et al., 2012; Moreno Monroy et al., 2020). It was integrated into a common timeline with the main events that characterized the entire 20th century, such as WWs I and II, the birth of the European Economic Community (EEC) and the establishment of the European Union (EU). Based on the common timeline, each country added specific events that were crucial for national urban policies about housing such as civil strife, the transition from monarchy to republic, or the fall of dictatorship regimes.

Keywords describing objectives and measures were then identified from the list of public policies. These topics made it possible to build a methodological framework with key issues that can be addressed in urban policy analysis, certainly including policy actors, promoters, beneficiaries, actions, types of incentives, etc. The visualisation along the timeline, with the national laws concerning middle-class mass housing, showed the close relationship between historical events and housing policies. The comparative approach firstly was a simple juxtaposition between timelines from different countries, secondly, it was used as a starting point to intersect national frameworks and make the comparison a little more complex.

The analysis moved forward organising comparisons among clusters of countries geographically defined. These comparisons were then discussed in specific working group meetings which revealed huge differences that characterize geographically distant countries. For example, within the South Group, including Italy, Spain, Portugal and Greece, a major common thread was that middle-class mass housing has been incentivized through numerous economic campaigns to promote private ownership. So, the condition for the development of middle-class mass housing is quite coincident with the home ownership collective venture. Analyses and comparisons between countries' national policies were expanded by combining these data with further investigations on specific themes such as minimum living standards, financial aid, actions towards carbon reduction, etc. [FIGURE 12].

As a result, these visual comparisons pointed out some groups of countries with common patterns in addressing similar issues, such as the promotion of new housing and then the sponsoring of urban redevelopment through economic incentives, or energy efficiency and sustainability issues that became part of the national agendas at the same time for many countries. For example, the cases of Poland, Hungary, and Romania, despite their political and historical differences, have a similar timeline that shows coincidences of mass housing production linked to a change in the form of government, and they addressed the problem of urban renewal and energy around the same time [FIGURE 13].

## CRITICAL REVIEW AND DISCUSSION OF THE RESULTS

The involved methods triggered an interpretative and comparative analysis based on the informative and descriptive work of common data collections. The initial reflection on the difficulty of tackling the study to the extent of the middle-class mass housing phenomenon led to methodological evaluations. Through comparison and transversal observation between places and themes, it was possible to understand some underlying and common issues of the case studies.

Method 01 contributed to reveal the specificity of the middle-class mass housing phenomenon connected to the
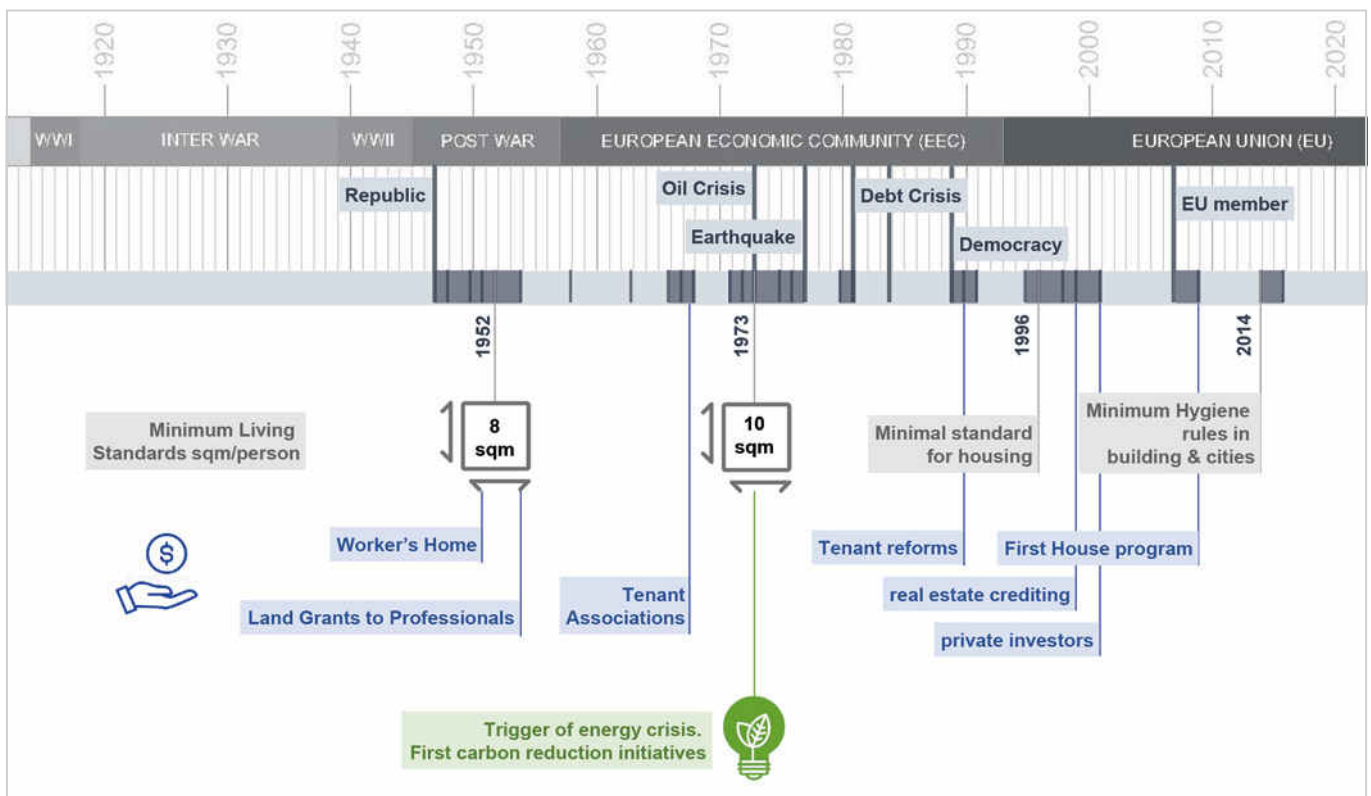
12 Proposed thematic analysis: illustrated examples from National Policies in Romania. © Authors, 2022.
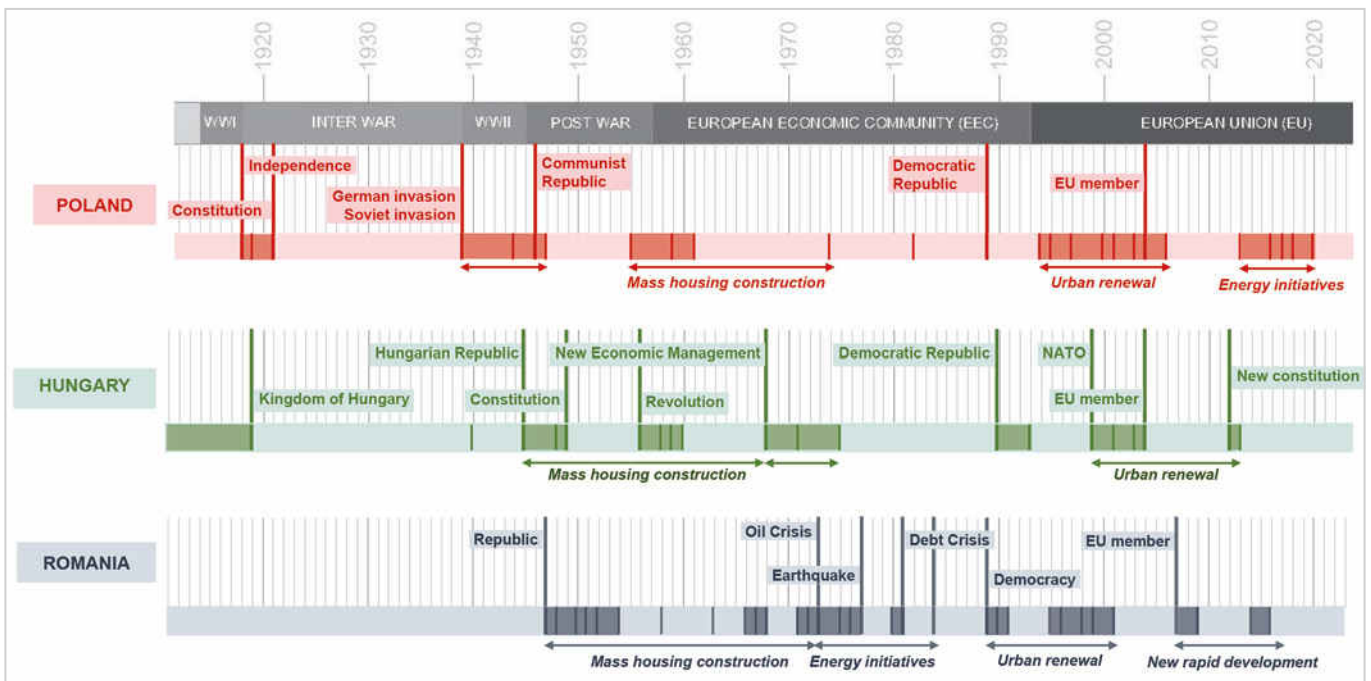
13 Thematic outline of country clusters. Poland, Hungary, and Romania cluster case-study. © Authors, 2022.

term *Mass Housing*. The diagrams illustrate the different measures of mass among case studies and helped in observing the process of massification. The visual comparisons clearly show that only in some cases the massification is determined by a single process, i.e. either vertical, horizontal or repetitive growth, and for most cases the process is intertwined. For example, the processes of horizontal growth and repetition or vertical growth and repetition co-occur in the same case study. In fact, the repetition of individual buildings is the most common aspect of massification, while the process is more complex, and it is not possible to identify a single aspect involved because

it is most likely determined by a combination of conditions. Hence, diagrams of *Mass measurement* were very effective in investigating the *Mass* aspects, however, as they purely focused on the built mass, had no understanding of the relationship with the city. This also led to the need of developing a study on the relationship between the middle-class mass housing and the city following a traditional practice of urban morphological analysis. This showed the diverse housing typologies among the collected case studies and represented a chance to elaborate on the underlying role of middle-class mass housing within the urban context. Overall, it was considered quite
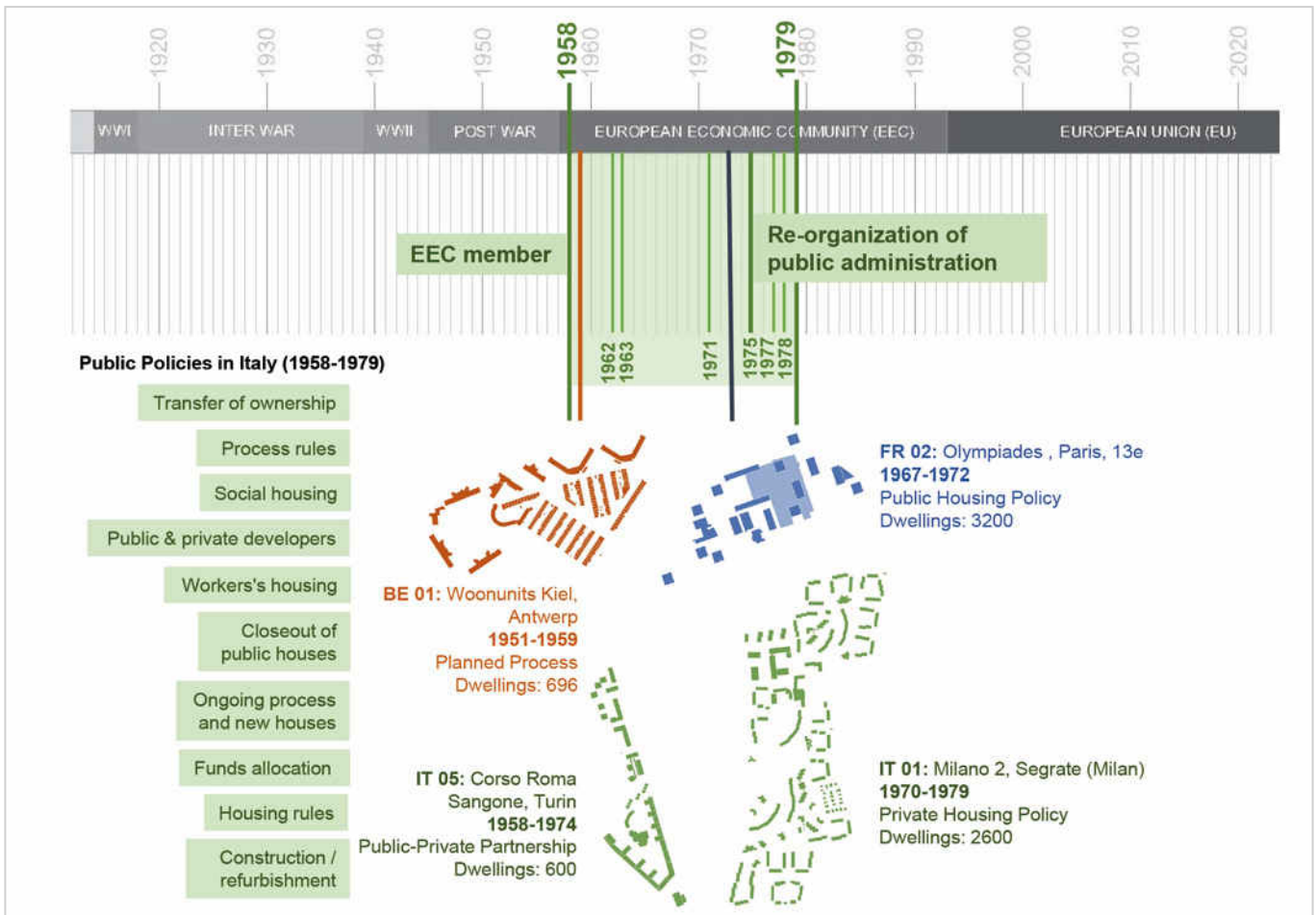
useful to compare the geometries and complexity of the urban districts; however, it also highlighted some major limitations for synthesizing the middle-class mass housing phenomena. Firstly, the project boundaries were not precisely marked in some cases, which made it difficult to analyze the context. Secondly, the drawings produced were limited to two-dimensional plans, while the *Mass measurement* focused on sections and the process of massification. While the *morphological analysis* focused on some selected cases, the *mass measurement* diagrams and the *data analysis* could make comparisons among a large number of case studies.

Method 02 shows comparisons on the period of realisation of the European Mass Housing, mainly concentrated in the 1960s-1970s time frame. It also showed that the middle class is a fluctuating phenomenon: buildings originally planned for the middle class changed their inhabitants, and buildings which were originally social housing became homes of the middle-class; nonetheless it was noticed that over time there was a rebalancing of use. This result seems to contradict studies that have observed a loss of the middle classes in this type of housing and their impoverishment, describing a phenomenon of polarization (Chauvel 2004, Hess et. al. 2018, Bugeja-Bloch et al., 2021, and Lelévrier, 2018). This rebalancing is a very

important result of this study, which should be explored in more detail, because, over and above the possible error in the data, this would allow us to take a critical look at the urban renewal operations and urban policies aimed at maintaining the middle classes in large housing estates that have been carried out in several European countries, such as France (Lelévrier 2014).

Method 02 also focuses on the location of the middle-class mass housing: initially in the periphery, nowadays mainly within the city. In fact, buildings initially built on the periphery of cities or in the suburbs have, over time, been absorbed by urban growth. Regarding density, in the initial results, this distinction is made with the Western countries recording the highest and lowest densities, while the Eastern countries are more in line with the overall recorded average. Regarding the process of massification, it is clear that it was mostly planned and only in a few countries — such as Italy and Greece — there are a large number of unplanned processes.

Method 03, focusing on policies, elucidates the historical time frames and the comparison among countries, rather than case studies. Through this method it was possible to describe a country's identity related to the phenomenon and in the meantime connect it to the European context, by linking housing policies with historical events.

14   Urban and architectural characteristics comparison of scale and typologies between settlement and countries. © Authors, 2022.

In this study, the comparative approach constructed a common framework through visualizing policies, mainly by observing their temporal progression and the main themes synthesized in keywords. This allowed us to compare the relative timelines among countries and to observe the middle-class mass housing phenomenon through a series of actions promoted through specific national policies. This method has proved to be successful in spotting common processes, historical recurrences, and most recognized urban policy strategies which led to the basis of formulating common narratives on the European middle-class mass housing phenomenon.

In general, it was noticed that architectural and urban issues became clear through methods 01 and 02, while economic and sociological issues were shown only in methods 02 and 03. In each track of investigation, that is for each applied method, it was not possible to arrive at a total critical understanding of the phenomenon, though all methods clarified several aspects of it.

Future development of research on an even more systematic basis with more information and refinement of data could lead to a deeper interpretation by increasing comparative possibilities and therefore clarifying theoretical issues. The development of research would increase transversal relationships and interpretative possibilities, that are new and further methods to be applied. It could, in fact, be possible to select additional tracks of study within the inventory of case studies and make it possible to intersect tracks of research.

One of the future goals would be to engage the national researchers for more specific discussions regarding the selected case study that covers a specific public policy and/or a major political and historic event in that country. This will help in achieving the larger goal of accomplishing the middle-class mass housing research. It would be important to use the visualisation comparison as a tool to explain transversally fundamental issues about middle-class mass housing such as typologies, design, and policies, and contextualise the processes in a common timeline. [FIGURE 14].

CONCLUSION

Finally, the systematic and common reflections between the different countries could form the basis for a strategic development analysis of conservation or transformation operations. The large complexes and intensive interventions carried out after WW II, characterized by a modernity aspect often in decay, have left open questions and problems that are still struggling to become part of the contemporary city. The large dimension, which manifests itself in the scale of production or in excessive growth, explodes urban, visual and landscape relationships,

invading landscapes and urban voids, designing a city that has yet to be understood. Middle-class mass housing neighbourhoods are places of urban transition; they tell the story of a period of transformation of the city, a period of post-war reconstructions and urban developments. These being the response to housing and social needs, they are the places of the city that are privatized, occupying voids or natural spaces. Today, they are places in need of transformation, often the subject of controversy over the choice of demolition and replacement or regeneration. They practically invite us to reflect on the original meaning of the operations and their relevance in the contemporary city.

The MCMH-EU discrimination seminar "*Lieux et Enjeux 1*" on the issue of urban renewal in mass housing organized in Paris in 2021, focused on the analysis of architectural and urban strategies of restoration and rehabilitation of this heritage of the modern movement and the identification of the different social processes that seek to maintain or attract the middle classes. More broadly, it has sought to cross-reference the narrative strategies and narratives that fuel projects and debates around renovation, rehabilitation and heritage, in relation to history and collective memories of the heritage defined as middle-class mass housing in Europe built between the 1960s and 1970s (Glendinning, 2008).

To enhance the development of policies and to foster implementation, it seems necessary to connect architectural and historical research closer with economic, political and sustainability related approaches, and with stakeholders from those fields. Also, a gap in connecting scientific research to educational programmes could be identified. This may require further investigation into the structure and content of current educational programs in particular related to the conservation, rehabilitation (Prudon, 2011, Graf and Marino, 2015, and Milovanović, 2022), and upgrading of existing middle-class mass housing estates (Docomomo International, 2022). It is also necessary to update the narrative and compare current strategies to build bridges between countries. The main goal should be to use our knowledge, as multi-faceted researchers, professors, designers, and urban planners to influence cultural and political debates at the European level and contribute to influence the policymakers

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ENDNOTES

1 The work was carried out by COST-Action members Luisa Smeragliuolo Perrotta, Ahmed Benbernou, Olga Harea, Uta Pottgiesser and Müge Akkar Ercan.

2 Based on 63 of the 97 case studies provided.

3 We suppose that the peculiarity of this project, identified as mass housing, lies not in its size, but in its architect: Luís Cristino da Silva, one of the pioneers of the modern movement in Portuguese architecture.