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A REVIEW OF EMPIRICAL RESEARCH ON CONTEMPORARY NEEDS AND CONDITIONS IN HOUSING IN THE CONTEXT OF FLEXIBILITY

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Abstract. *This paper presents the results of a previous empirical research on users' needs and living conditions in multi-family housing units in the city of Niš, based on a German study of flexible housing named "Flexible Wohnungen". The research involved the interviewing of tenants about different aspects of living in multifamily housing, with particular reference to the flexible housing programme and its implementation in practice. By systematising and comparing the achieved results with the results of foreign research, certain conclusions can be drawn on the universal housing needs and current living conditions in the city of Niš.*

Key words: *flexibility, sustainability, tenants survey, multi-family housing*

1. INTRODUCTION

The physical environment should be stimulating and supportive to the psycho-physical and social development of individual, family and other social groups, in accordance with the individual affinities and ideological choices, as well as the established general goals of the society. In this regard, it is necessary to create a living space characterised by the qualities of development and flexibility, because the continuous satisfaction of the users' needs ensures a longer service life of a residential environment and builds a healthy social community. The realization of housing programmes whose variability in use covers the needs of social diversity represents a sustainable and socially responsible action.

Examining the situation and needs of housing is a necessary precondition for extending the period of effective exploitation of the building. Multidisciplinarity of housing issues conditions a continuous implementation of a strategically designed research, which would among other things include permanent monitoring of housing correspondence at all stages of exploitation. Such studies would involve surveying and interviewing tenants, tracking statistical data, with

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the involvement of professionals of various profiles (architects, civil and mechanical engineers, economists, ecologists, sociologists, psychologists, etc.) and an appropriate institutional support.

Serbia, which is nowadays on the path towards European integration, is facing a task of reorganising the entire state system, which also includes the reforms in the domain of the housing sector. Harmonization with European norms and standards, especially in the segment of sustainable development, requires the improvement of conditions and quality of housing, with the implementation of an appropriate advanced planning and construction policy.

The quality of the implemented housing programme is in the particular case examined in the conditions of the local urban community of the Republic of Serbia. Further work presents the empirical research of user satisfaction and living conditions in multi-family housing in the city of Niš, which is part of a more extensive study on the subject of flexibility. The aim of the research is to determine the extent to which the issues of housing sustainability are considered and, in this context, the extent to which the flexibility programme is implemented in local architectural practice.

2. METHODOLOGICAL BASIS OF THE RESEARCH

In order to perceive the real housing needs and living conditions in a specific social and urban environment, a survey on tenants of multi-family residential buildings located on the territory of the city of Niš was conducted (June-September 2015). The collected data on the tenants' opinion refer to the quality and disadvantages of the belonging living space, priorities of housing exploitation, individual needs and aspirations of household members and the general needs of the family group.

The interview form is, in an adapted form, taken from the study entitled "Flexible Wohnungen" [1], which, within the research on the topic of flexibility, also deals with the issue of user satisfaction with residential space in the built settlement of flexible housing. The motive for using this survey model is the author's intention to compare the degree of correspondence between housing priorities within the local community and the developed countries of Western Europe.

Data collection was carried out through a technique of direct interviewing of respondents in their households, at various locations of multi-family housing in the area of the city of Niš. The survey research included different aspects of living in a local residential area, with particular reference to the flexible housing programme and its implementation in practice. In further research, samples and types of collected data are described and the final results interpreted through the numerical indicators are presented. Eventually, the obtained results are compared with the results achieved within the research "Flexible Wohnungen" in order to make general conclusions about the universal needs and problems in housing.

3. DESCRIPTION OF THE SAMPLE

The survey was conducted on a representative sample of 500 male and female respondents living in multi-family residential buildings located on the territory of the city of Niš. The lower age limit of the respondents was 19, and the upper limit was not set.

During the research, the attempts were made to include the households with different structures and modalities of housing. Table 1 shows the age structure of the respondents.

Table 1 Structure of respondents by age

Age	Number	Total
19-30	78	
31-40	125	
41-50	163	500
51-60	90	
> 61	44	

4. RESEARCH INSTRUMENT AND VARIABLES

A questionnaire taken from the German study of flexible housing named "Flexible Wohnungen" was used as a research instrument. This study was aimed at gathering information on user satisfaction and living conditions in realised buildings of flexible housing by interviewing tenants in this kind of settlement. The study, which was carried out with the support of the Ministry of Regional Planning, Construction and Urbanism, included the analysis of 70 flexible units within two buildings of social housing, built in the 1970s at the location of Viblingen, Ulm (Germany). The residents, who had the opportunity to arrange their own apartments before and after they moved in were examined about the types, modalities and frequency of changes made within the apartments. Based on the achieved results, the degree of user satisfaction with the residential environment was identified.

The original questionnaire consists of 40 questions. The questionnaire is part of a more comprehensive study on the topic of housing, so only 25 questions were used for the specific research.

The variables in the research refer to the following items:

1. socio-demographic variables: age of parents, gender and age of children, level of education;
2. household structure at the time of moving in and making the interview;
3. data on the history of housing exploitation;
4. priorities of housing exploitation;
5. expected quality of housing;
6. perception of housing comfort;
7. assessment of the quality of the associated living space;
8. level of awareness of the respondents about the possibilities of flexible organization of space.

5. ANALYSIS AND INTERPRETATION OF RESEARCH RESULTS

The results of the survey were interpreted through textual explanations, charts and diagrams.

Diagram 1 shows the number of individual household structures in a representative sample at the time of moving in and interviewing. At the time of the survey, the

representation of the categories is as follows: married couples with two children (32.4%), followed by married couples with one child (24.6%), married couples without children (11.4%), single-member households (9.6%), parents with a child (9%), a parent with two children (5.2%) and three-generation households (1.8%). Comparing the redistribution of households at the time of moving in and at the time of interviewing, it can be concluded that there is a pronounced tendency of increasing family structure with children.

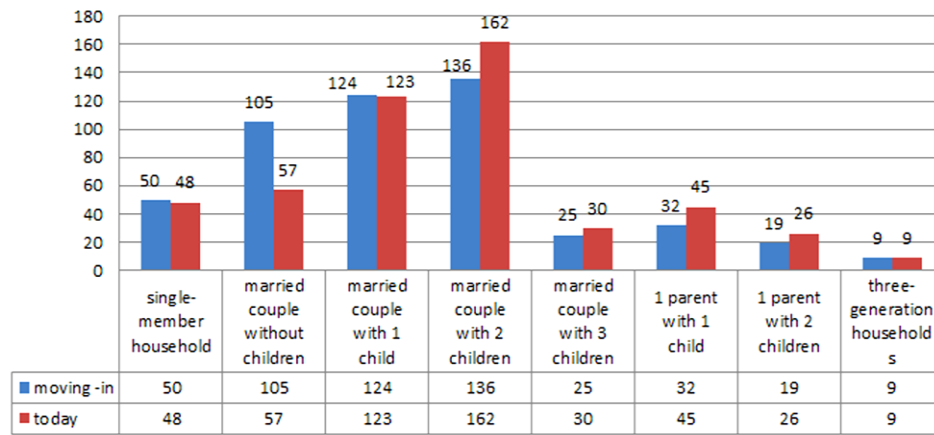


Diagram 1 The structure of households at the time of moving in and interviewing (today)

Within the representative sample, the share of households that have chosen the flat layout as a complete solution (62%) is greater than those that had the opportunity to participate in the conceptualization of the plan or to choose among the offered solutions.

Within the sample of households which previously lived in another apartment (29% in the sample), 67% went from a smaller to a larger apartment, with the apartment structure on average increased by one to two rooms. The most common reason for relocation is the extension of the family, which is in accordance with the observed increase in family structures with children in the total household share.

The largest number of respondents indicated the size of the apartment and the location of the building as a crucial criterion for selecting an apartment. Flexibility as a choice is represented by 13%. Analysed according to household structures, most respondents who have indicated flexibility as a key criterion in choosing an apartment are in a group of married couples with children (Diagram 2).

When asked what was crucial in choosing a spatial solution of the apartment, with the possibility of multiple answers, 54% answered that it was the number of bedrooms and 50% the size of the living room, while the other characteristics were less represented (Diagram 3).

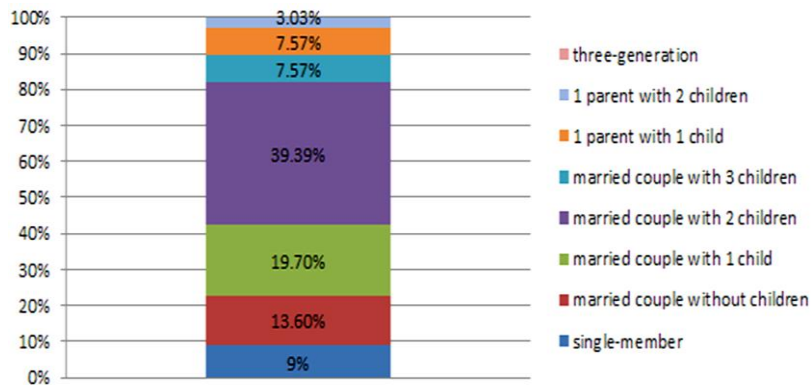


Diagram 2 Flexibility as a key criterion for selecting an apartment

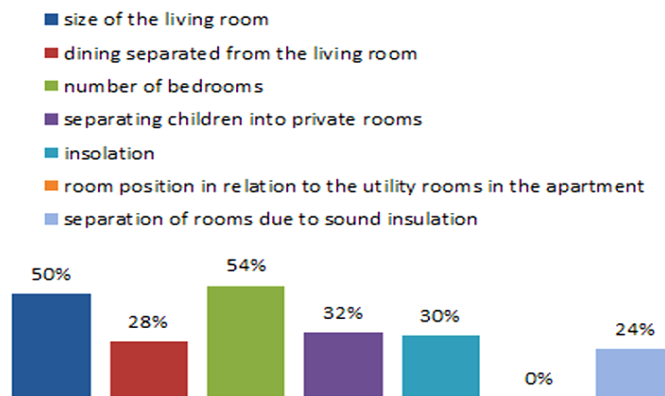


Diagram 3 The crucial criterion for choosing a spatial solution

By linking the answer to the question of whether the family is more important, the size or the number of rooms, the nuclear family structure, expected, gives priority to the number of rooms, while in the case of other households, both responses are equally represented (diagram 4).

The possibility of later changes in room arrangement is a preferable option among respondents in relation to the possibility of choosing from the offered plan variants or independent organizing of the plan before moving into an apartment. These data point to the fact that the users themselves are aware that at different stages of family development, different housing priorities are emphasised, which is very difficult to fully anticipate and perceive in the initial phase of moving in. It is therefore necessary to provide users higher level of freedom at the exploitation stage.

Although the majority of the respondents are satisfied with the size of the rooms within the apartment (75%), those who have this kind of objections especially emphasise the size of the bedrooms.

An additional space that the family needs in the apartment is a pantry, work space, an additional bedroom and the possibility of its subsequent division. According to the obtained results, the majority of respondents recognise the living room as space with potentials of multipurpose use, which could receive the sleep function during the night. This is supported by the fact that a certain number of respondents use the living room as a sleeping area (22%).

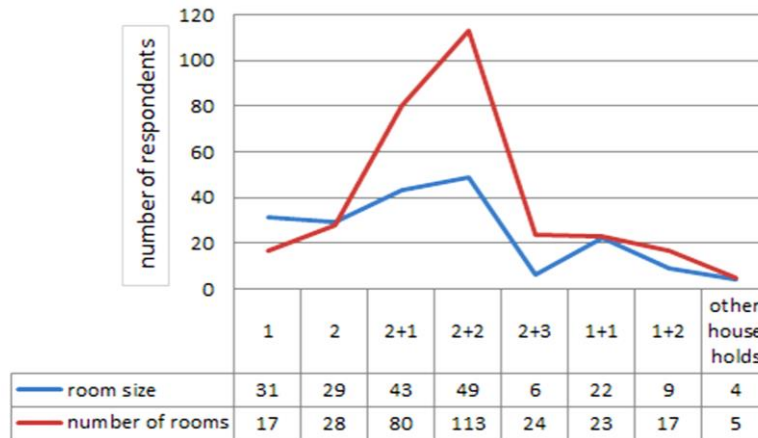


Diagram 4 Representation of the response "size of rooms" ie "number of rooms"

Comparing the flat structure with the household structure, it can be concluded that a large number of households live in inadequate overcrowded living space (Diagram 5). Often, some members do not have their own bedroom (usually parents) or adult children share a common room.

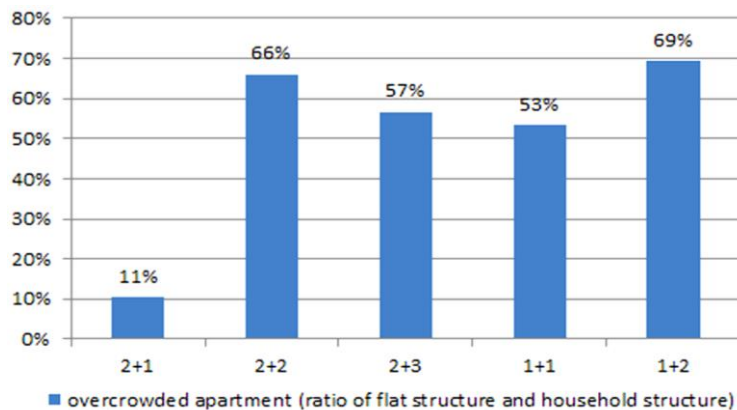


Diagram 5 Overcrowding according to the ratio of flat and household structure (%)

Of particular importance for the research is the ratio of the useful flat area and the number of household members, as one of the indicators of the quality of housing, but also the measure of the adaptability of the living space to the future needs of the user (diagram 6). Considering the ratio of the flat area and the structure of the household it belongs to, it can be concluded that a large number of households with three children live in undersized apartments.

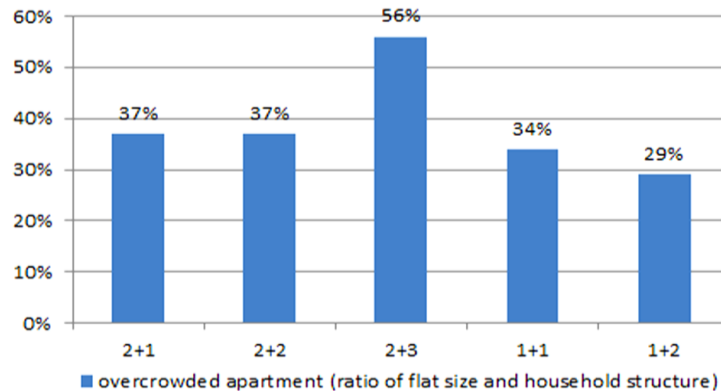


Diagram 6 Overcrowding according to the ratio of flat size and household structure (%)

After comparing the results from Diagram 5 and 6, it can be concluded that in the case of four-member households, the problem of disparity between the flat structure and the household structure is more pronounced than the problem of the sub-dimension of the space. This result is a consequence of poor representation of apartments with larger structures on the housing market.

In most households (89%), no changes were made in the apartment after moving in. Interventions that were realised in the rest of the surveyed households mainly involved painting, changing the furniture position, rearranging the bedroom, closing the terrace area, rearranging and changing the dining room to get space for bedroom, enlarging the bedroom to the account of the living room, etc.

When asked "Would you change the layout of the apartment or change the apartment with a change of household needs?", 62% of respondents replied that they would change the apartment, while 38% answered that they would change the layout of the apartment. The reason for such a result is probably the fact that in practice very often flats are so inflexible that users are forced to look for a new living environment in case of changing needs. The reason may also be the insufficient education and awareness of tenants about the possibilities of flexible housing exploitation.

The diagram 7 shows the ratio of representation of the response in which flexibility is recognized as a crucial criterion for selecting the apartment and the level of education of the respondents. It can be concluded from the enclosed that the increase in the level of education (awareness) increases the interest of users for flexibility.

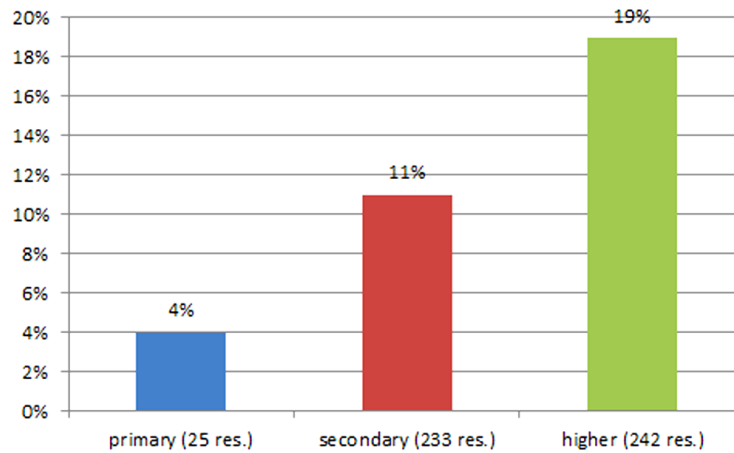


Diagram 7 Connection of the education level of the respondents and representation of flexibility in responses

The key question: "What kind of apartment would you choose if you moved into the apartment again?", the largest number of respondents said that they would choose an apartment that could be organised by themselves, with the possibility of moving partition walls (53.2%). Diagram 8 shows the representation of individual responses within the defined age categories of the respondents. The preferred option of a conventional solution is, as expected, smaller among the younger population.

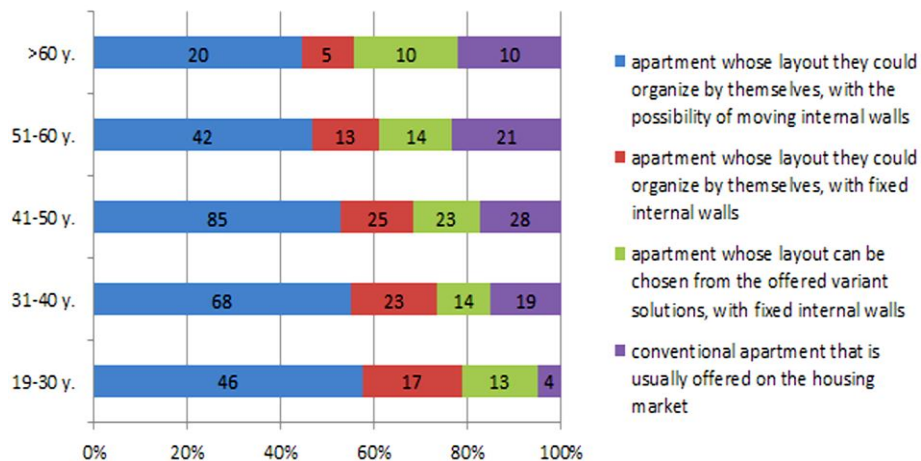


Diagram 8 Connection of the age category of the respondents and the answer to the question about the choice of the apartment

6. COMPARISON OF THE OBTAINED RESULTS WITH THE RESULTS OF THE STUDY "FLEXBILE WOHNUNGEN"

For countries in transition, such as Serbia, it is extremely important that measures of improving the quality of housing are strictly and rigorously defined and supported by adequate institutional and programme solutions. In this regard, the experience of the developed Western countries, both in terms of objectives and in terms of strategic measures for their implementation, are of great benefit.

By comparing the results of the survey of the tenants in multi-family housing units in Niš with the results of the survey of the tenants in social housing in Ulm (Germany), presented in the study "Flexbile Wohnungen", the following specificities and analogies are noted:

1. Within both surveys, a nuclear family is the most common category of households (with the largest share of married couples with two children and married couples with one child). There is also a noticeable increase in this type of households from the period of moving in to the moment of the interview. This data is of particular importance for the validity and reliability of the comparison and generalisation of the following results;

2. When asked which criteria were crucial in selecting an apartment, in both cases, the most frequent response was the size of the apartment, while only a small number of respondents indicated flexibility as the decisive factor in selection of the apartment, with the most common share of this response in nuclear family structures;

3. It is also interesting to note that in both cases, the choice of flexibility among answers is growing together with the level of education of the respondents. Based on this, it can be concluded that the concept of flexibility is unknown to a large number of users, as a result of insufficient awareness and knowledge of tenants about the potentials of housing exploitation and possible programme measures of sustainability;

4. In both cases, half of the respondents consider that the size of the living room and the number of rooms are an important criterion for choosing the apartment, wherein the representation of these responses proportionally increases with the increase in the household structure, which is a logical result;

5. In both surveys, smaller households give priority to the size of the rooms, while households with a larger number of members, as expected, the number of rooms is more important;

6. Although most of the respondents are satisfied with the size of the rooms in the apartment, those who have objections especially emphasize the size of the bedrooms, the need for separate bedrooms for adult children and the lack of storage for the needs of the household;

7. The possibility of a later change in the layout of rooms (extensive flexibility) is in both cases more preferable option than the possibility of choosing and changing before moving into the apartment (offered flexibility). This result points to the fact that the identification of users with housing space is better achieved by establishing of continuous communication between man and his immediate surroundings.

From all of the above it can be concluded that, regardless of spatial and temporal distance, cultural and social differences, the establishment of an active dialogue between human and the environment in which he lives represents the essential need for the self-sustainment of each individual in the narrower and wider community.

7. DISCUSSION

In the previous local architectural practice, apartments were mostly designed for an unknown user, where the characteristics of the plan leaving no space for tenants to express their own individuality through design. The static space of a typified expression in its exclusivity has become a place of use rather than a place of residence. Housing cannot be reduced to use only for practical purposes [2]. Minimum potentials for incorporating identities into the physical environment further intensify the sense of helplessness and frustration of users in conditions of greatly degraded living and social environment.

The possibility of choosing before moving into an apartment, which is occasionally realised in the domestic practice, is a positive step in methodological thinking, but not a sufficient prerequisite for the quality of life in the residential environment. Forecasting programme movements in the development cycle of exploitation is only approximate, as it depends on individual preferences and numerous other circumstances that can occur in the space-user relationship. Therefore, the solution chosen by the users in the initial phase of exploitation represents only a partial and temporary measure of meeting the needs of the household. The problem is further complicated by the possible changes in the structure and typology of tenants that bring their own criteria, needs and habits. Human needs in residential environments are an ongoing process, which is why it is necessary to allow users a choice at all stages of exploitation.

The conducted analyses have shown that the most frequent cause of the relocation of the household to a new apartment is the need for larger housing space due to the expansion of the family. On the other hand, the decision to change the place of residence depends to a large extent on the economic power of the household, which is why the purchase of a new apartment can be characterized as a privilege of higher social strata [3]. For households that are for financial reasons forced to stay in an area that does not correspond to the developmental needs of the group, living in a residential area can be a serious frustration and the "necessary evil" of economic weakness of its members. For this reason, in less developed societies, flexibility can be considered as an essential means of rationalized and socially responsible construction.

The results of the survey showed that the structural deficit is most pronounced in households with a larger number of members (families with three and more children and three-generation households) as larger apartments are poorly represented on the market, as indicated by statistical data [4]. Another problem is the fact that apartments are often sold on the market in a structure that does not actually correspond to the defined structural standards. Also, there is the case that the room where the accommodation of two users is planned actually corresponds in the size and dimensions to a slightly larger half-room (room for one user). In this way, the elementary health, hygienic and functional criteria of living are being destroyed and it creates an inadequate framework for the proper development of psycho-social and bio-physiological functions in the apartment [5].

Survey studies have shown that in apartments where family households live, the living room often assumes the sleeping function, which can be considered as an inappropriate and forced solution. In the context of a permanent housing crisis, families are consciously opting for an apartment where initially or over time some incompatible housing functions are performed within the same area, sacrificing in this way the overall quality of life in the apartment. The living room where sleeping is planned cannot be considered as a common

room for gathering family members, nor an individual room where, in accordance with psycho-physiological needs, it is possible to periodically allocate members from the group. Such practices can lead to serious problems in the family's development cycle, even to its breakdown [6]. Multipurpose use of space in terms of day-night regime superfluously divides the housing functions on day and night, although human needs in the apartment are much more complex and diverse.

Flexibility as a crucial criterion for selecting an apartment has been recognised, to a large extent, in the group of nuclear family structures, as well as among respondents of higher education. The need for space flexibility is, therefore, the most prominent in micro social environments in which the complexity and unpredictability of housing needs causes prolonged decision-making. The absence of an adequate policy to propagate and affirm different modalities of tenants' participation in decision making is one of the reasons why the flexibility potentials are exclusively recognized by information through education [7].

And in cases where the flexible potentials of improvement of the housing environment are recognized by tenants, the desired interventions are realized in a small number in practice. The reasons may be financial but also psychological, as a consequence of the inertia and apathy of the users in the domain of self-expression. A sense of resignation and unwillingness for changes is often conditioned by a culture of housing in a particular community, but also with a general social climate that can act as a disincentive to an individual [8].

8. CONCLUSION

The uncertainty of future needs and the way of building exploitation requires a continuous assessment of the conditions and quality of life in a particular environment. Forecasting the programme movements is merely an orientation measure of sustainability, whereby the negative effects of changes can be mitigated by a flexible physical platform. Interviewing tenants can give very useful information about the spatial and functional characteristics of the space, user satisfaction and "visibility" of flexible potentials within the residential area.

The dynamics of housing needs and potential modalities of space use cannot be fully anticipated at the design stage and the stage of moving into the apartment. Therefore, it is essential that the appropriate design solutions, with the technical and professional guidance leave the space to the users to adapt the apartment to their own needs during the exploitation.

Correspondence between the physical and social component in the temporal continuum categorizes the living space as a renewable resource, which undoubtedly contributes to the preservation of the environment in conditions of population and urban overcrowding, recorded at the local and global level. Raising awareness, informing and educating users and professionals about the criteria of socially responsible and ecologically conscious activities within the community creates a healthy housing policy, which can contribute to resolving global problem issues by local influence.

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REFERENCES

1. R. Gaupp-Kandzora, H. Merkel, "Flexible Wohnungen: Nutzerfahrungen", Karl Krämer Verlag, Stuttgart, 1978, ISBN 3-7828-0712-X
2. V. Kubet, "Novi aspekti fleksibilnosti stambenih prostora", Nauka i Praksa, br. 12/1, 2009, str. 97-100, ISSN 1451-8341
3. G. Knežević, "Apsolutna i relativna fleksibilnost u organizaciji stana", doktorska disertacija, Arhitektonski fakultet sveučilišta u Zagrebu, 1980
4. Knjiga 22: Broj i površina stambenih jedinica, Popis stanovništva, domaćinstava i stanova 2011. u Republici Srbiji, Republički zavod za statistiku, Beograd, 2013
5. D. Ilić, "Projektovanje stambenih zgrada 1 - Organizacija stana", Univerzitet u Nišu, 1991
6. M. Čanak, "Otvoreni ili zatvoreni stan", Arhitektura i urbanizam, br. 38, 2013, str. 65-77, DOI: doi:10.5937/a-u38-4997
7. Đorđević, M, Kondić, S., Tanić, M: "Uključenje korisnika u proces arhitektonskog projektovanja u kontekstu individualne interpretacije stambene sredine", Zbornik radova Građevinsko-arhitektonskog fakulteta, Univerzitet u Nišu, br. 25, 2010, str. 65-72, ISSN 1452-2845
8. Živković, M: "Definisanje i primena metode vrednovanja fleksibilnosti prostorne organizacije stana u višeporodičnim stambenim objektima", doktorska disertacija, Građevinsko-arhitektonski fakultet, Univerzitet u Nišu, 2017

PRIKAZ EMPIRIJSKOG ISTRAŽIVANJA SAVREMENIH POTREBA I USLOVA STANOVANJA U KONTEKSTU FLEKSIBILNOSTI

U ovom radu su prikazani rezultati prethodnog empirijskog istraživanja potreba korisnika i uslova života u jedinicama višeporodičnog stanovanja u Nišu, zasnovanog na nemačkoj studiji fleksibilnog stanovanja pod nazivom "Flexible Wohnungen". Istraživanje je uključivalo intervjuisanje stanara o različitim aspektima života u višeporodičnom stanovanju, s posebnim osvrtom na fleksibilan program stanovanja i njegovu primenu u praksi. Sistematizovanjem i upoređivanjem ostvarenih rezultata sa rezultatima inostranog istraživanja, mogu se doneti određeni zaključci o univerzalnim potrebama stanovanja i trenutnim uslovima života u gradu Nišu.

Ključne reči: *fleksibilnost, održivost, anketiranje stanara, višeporodično stanovanje*