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Request and Potential for Social Housing Projects in Germany by the example of the Federal state of North Rhine-Westphalia

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ERES Paper: About 16 pages (1p. Abstract, 1p. Introduction, 2-3p. Problem Definition, 1p. State of the Art, 1p. Method, 7p. Analysis, 2p. Results, 1p. Conclusion)

Contents

Definitions

Ancillary space: calculation is equivalent to 'Nutzungsfläche' NUF 7 in accordance with DIN 277

Living space: calculation is equivalent to 'Wohnfläche' in accordance with WoFIV

Main surface area: calculation is equivalent to 'Nutzungsfläche' NUF 1 to 6 in accordance with DIN 277

Traffic area: calculation is equivalent to 'Verkehrsfläche' in accordance with DIN 277

Abbreviations

EPI: Eduard Pestel Institut e.V.

NRW: North-Rhine-Westphalia

WFB: Wohnraumförderungsbestimmungen

WFNG NRW: Gesetz zur Förderung und Nutzung von Wohnraum für das Land NRW

WoBindG: Wohnungsbindungsgesetz

WoFG: Wohnraumförderungsgesetz

WoFP 2014-2017: Mehrjähriges Wohnraumförderungsprogramm 2014 bis 2017

Figures

Abstract

The demand for residential housing in Europe has increased in recent years. In Germany, affordable housing space in growing regions is becoming scarce. This results in many household types hardly being able to provide themselves with adequate living space. Although there is a high demand for housing with rental control, the relevant housing stock has declined in recent years. Considering the rising demand and the simultaneously declining stock of subsidized housing, the underlying conditions for the profitability of housing projects with rental control must be optimized. In 2006, there was a redistribution of responsibilities between the federation and the states in Germany. As a result, the responsibility for subsidized housing was transferred from the federation to the single states. This has the advantage that the laws can correspond to regional needs, but the different underlying conditions are hardly comparable.

With regard to the population and the economy, there is an increased interest in research and there are numerous publications concerning publicly subsidized residential housing. Although, currently there is no certainty regarding the influence of the nation-wide framework conditions on the typology of subsidized housing projects. Therefore, there is a need for a critical investigation of the aforementioned uncertainty.

This paper is part of a PhD at the Chair for Real Estate Development at the RWTH Aachen University, within which the regional and local differences between the laws and regulations are examined. The overall objective is to analyze to what extent the realized types of dwellings vary in selected federal states. Furthermore, it will be proven if this variation can be justified by differences in the funding guidelines. Within this paper the named issues and results are exemplary described for the federal state North Rhine-Westphalia (NRW). The aim is to investigate the conditions of subsidized housing and to determine whether they influence the realized housing typologies.

The state-specific conditions as well as the various regional regulations of the state NRW were analyzed. Additionally, this examination was supplemented by a real estate analysis of recently built residential housing projects in the German region. Various project partners support the examination. The housing types of the individual case studies were empirically examined. Empirical data of subsidized residential units was therefore determined and the influence of the conditions for publicly subsidized residential construction on the typology of the accommodations was investigated.

Based on this investigation, it seems that there is a strong influence of the laws and offers for social housing projects on the realized apartments in NRW.

Keywords: Social Housing, Rental control, Area efficiency, Germany

Introduction

Germany has a long tradition with regard to social responsibility in terms of providing housing. Many housing policy instruments have been developed (cf. Oettgen & Metzmacher, 2011). Their origin goes back to 1945. After the Second World War it was necessary to supply a broad sector of the population with housing space. Nearly half of the apartments built during this period were social apartments (cf. Neitzel & Walberg, 2016).

According to the declining demand, public authorities have invested less in social housing in the following years. Concurrently, private investors have increasingly focused on private residential construction rather than on subsidized housing construction; because of this the percentage of the construction activity of the publicly supported residential sphere was periodically less than 2 % of the total housing construction (cf. Neitzel & Walberg 2016). As a result, the stock of publicly supported apartments has declined consistently (cf. EPI, 2009). For this reason, today there tends to be a lack of social housing in several German regions. In 2012, according to the Eduard Pestel Institut e.V. (EPI), there was a deficit of 4 million social rental apartments in Germany (cf. EPI, 2012). In 2010, 5% of the total housing stock in Germany was social apartments (cf. Thies, 2016). Only in Spain and Hungary was there a smaller proportion with 3% and 2% respectively (cf. Thies, 2016). In comparison, in the Netherlands 32% (2010), in Scotland (2011) and in Austria (2012) 24% of the total housing stock were social apartments (cf. Thies, 2016).

In Germany, affordable living space is, despite political reforms, becoming a rare good in growing regions and municipalities. Overall there is sufficient living space available but rental prices vary widely between individual regions, so that many households in municipal regions can no longer provide themselves with adequate living space (cf. Heising P. & Baba L., 2011).

In recent years, the trend of re-urbanization has increased as a lot of households move to large and university cities. In these regions, there is already an extreme lack of housing in the lower price sector (cf. Selle K. , 2011; Schürt A. et. al., 2013; Held T. et al., 2015). In Munich, the average quoted rent was 16,15 €/ m^2/ month and thus 9,65 €/ m^2/ month higher than in e.g. Essen (cf. NAI apollo group, 2015). Correspondingly, the housing market situation in Germany is becoming increasingly divergent (cf. Heising P. & Baba L., 2011). Besides this, the burden on low-income households due to rent continues to grow nationwide (cf. BMVBS, 2011).

In 2001, social housing promotion was developed due to the reform of the Housing Allowance Act (cf. Neitzel M. & Walberg D., 2016). Until then, the political aim was to supply a broad sector of the population with sufficient living space. Since the reform, the support reaches identifiable target groups e.g. single parents or people with disabilities hardly being able to provide themselves with an adequate living space in large and university cities (cf. §1 WoFG). Due to the redistribution of the responsibilities between the federal government and the federal states there was an additional political refocusing concerning the subsidized housing construction (cf. Neitzel M. & Walberg D.,

2016). Since then the federal states have jurisdiction (cf. § 3 WoFG). As a result, many federal states have issued their own state laws and introduced local regulations (cf. Heising P. & Baba L., 2011).

Over the last 10 years, these state level laws and regulations have particularly influenced the regional conditions of the promotion of today's social housing.

This paper is part of a PhD at the Chair for Real Estate Development at the RWTH Aachen University, within which the regional and local differences between the laws and regulations are examined. Thereby, several federal states are compared with one another. Several project partners such as construction and project development companies, architectural firms/ companies, municipal and private partners support the examination in the German region. Based on the research and evaluation of realized construction projects, the aim of this investigation is to ascertain the impact of laws and regulations on the typologies of the arisen buildings and flats. Furthermore, it is examined whether these typologies correspond to the actual needs of particular regions. Within this paper the named issues and results are exemplary described for the federal state NRW.

Problem Definition

The current deficit of affordable living space in a lot of German cities has several causes. Many public building contractors have increasingly withdrawn from the sector of social housing promotion. In addition, most of the private housing market players have invested their capital based on higher yields in free-lance, rather than in subsidized housing construction.

Due to these developments, according to estimates from the Federal Institute for Research on Building, Urban Affairs and Spatial Development, only a quarter of the nationwide rented apartments can be classified as cheap (cf. BMVBS, 2011).

According to this overall increase in demand, residential construction activity has increased noticeably since 2011 (cf. Held T. et al., 2015). In 2014 about 245,000 apartments were built (cf. Neitzel M. & Walberg D., 2016). Although there are about 23 million rental flats in Germany the current construction activity is still not enough to guarantee sufficient affordable living space in growing regions for the coming years (cf. Held T., 2015; EPI, 2009). To supply the entire population with sufficient living space, a total of 400,000 new apartments would be needed every year until 2020 (cf. EPI, 2015).

In Figure 1 (Relevant developments for social housing market), the relevant developments related to the housing market in recent years are illustrated. The divergence of the increasing number of private households due to a decreasing population and the declining share of social housing in the only slightly increasing total housing stock is shown. In addition, the graph shows the steeply rising

rent index of recent years. Considering the rising demand and the simultaneously declining stock of publicly subsidized residential construction, the underlying conditions for the medium-term profitability of housing projects with rental control must be optimized. Thereby, the attractiveness of investment in subsidized housing is deemed to increase.

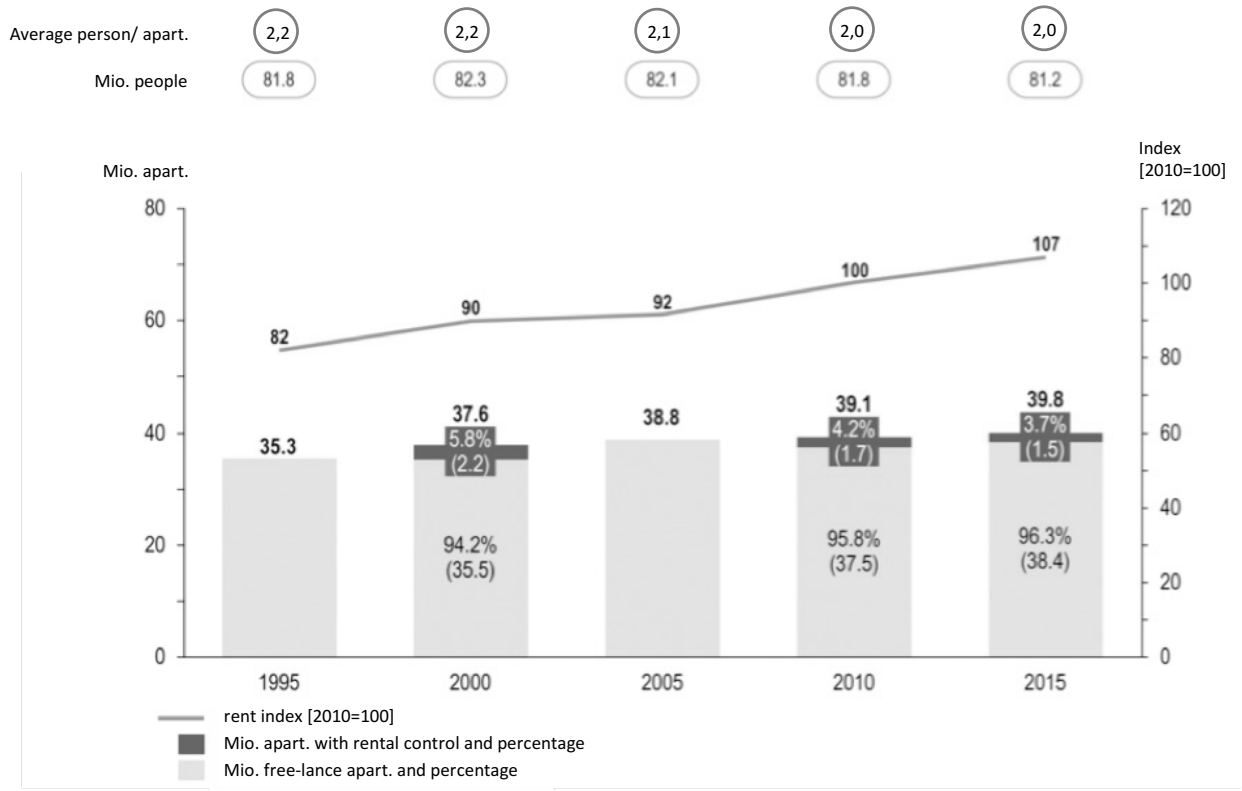

Fig. 1: Relevant developments for the housing market 1995-2015 (compiled by the author, 2017, cf. GENESIS, 2017; BiB, 2017)

Although there is a high demand for housing with rental control, this housing stock has declined in recent years. About 80,000 apartments fall out of rental control each year (cf. EPI, 2015; Neitzel M. & Walberg D., 2016). Furthermore, there is a current annual requirement of 140,000 new low-cost rental apartments, which consists of 80,000 fixed-price social apartments and 60,000 affordable privately financed accommodations (cf. EPI, 2015; Neitzel M. & Walberg D., 2016).

For this reason, the federal states are expanding public funding programs and particularly affected cities are introducing new methods to support the construction of price-bound dwellings. Within the investigation the support for particular typologies of buildings and apartments in different federal states is analyzed. This paper presents the results of NRW.

Within this analysis, three levels of investigation, ‘project’, ‘building’ and ‘apartment’, are examined. The fundamental question is how far do legal regulations influence the social housing sector. Figure 2 (Levels of investigation) illustrates the different levels of this investigation:

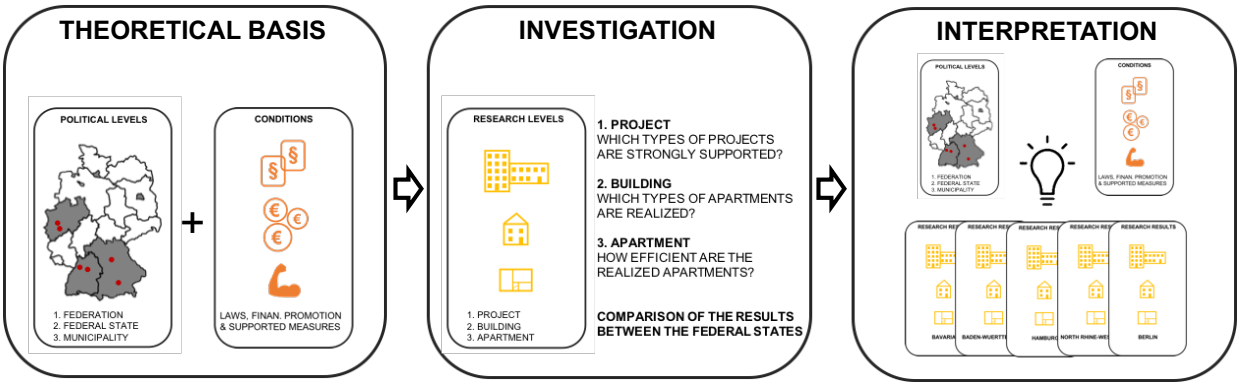

Fig. 2: Levels of investigation (compiled by the author, 2017)

The conditions of social housing are investigated and linked to the housing typologies that arise within a given framework**.** Thereby, constructed dwellings are analyzed at three levels of investigation. Finally, the results are compared and interpreted within the overall context.

The overall objective is to analyze to what extent the realized types of dwellings vary in selected federal states. Furthermore, it will be proven if this variation can be justified by differences in the funding guidelines.

First, several fictive types of projects with individual characteristics are defined. Thereby, these fictive types of projects emphasize different foci, e.g. apartments with reduced barriers or energy efficiency. For the defined types of projects the financial supports are calculated and compared.

Secondly, it is analyzed which types of apartments, e.g. 1-room or 2-room apartments, have been realized in recent years. In addition, the m^2 of living space of these different types of apartments are examined; it is proven if the variation of m^2 of living space differs in the federal states and if this is caused by the funding guidelines.

Furthermore, the relation of defined surfaces to one another is analyzed for different types of apartments. At this level, the focus is on the following three hypotheses:

1. The smaller a type of dwelling (1-, to 4-room apartment), the higher the share of ancillary space.
2. The smaller a type of dwelling (1-, to 4- room apartment), the higher the share of traffic area.
3. The bigger a type dwelling (1-, to 4- room apartment), the higher the share of living space.

For the federal state of NRW empirical data of subsidized residential units are therefore determined and the influence of the underlying conditions for publicly subsided residential construction on the typology of accommodations will be examined.

State of the Art

In the EU, there is an increased interest in research concerning publicly subsidized residential construction from a political point of view. Within the overall research context there are numerous publications concerning social housing development in Europe:

- **Affordable housing policy**
  (cf. Marom N. & Carmon N., 2015; Losasso M. & D'Ambrosio V., 2012)
- **Social housing strategies**
  (cf. KempenHugo Priemus R. van, 2016; Scanlon K. et al., 2015; Matznetter W., 2016; Priemus H. & Dielemann F., 2002; Heijden H. van der, 2002; Whitehead C. & Scanlon K. J., 2007)
- **Financial aspects of social housing**
  (Clarke L. & Herrmann G., 2004; Housing NSW et al., 2011; Lawson J, 2009)

Furthermore, there are several external influences which shape social housing in Germany. The following themes have a great impact and should be considered within this investigation:

- **Social and economic development**
  (cf. Lugger K. et al., 2006; Tornow B., 2007; Rein S. et al, 2014; DESTATIS, 2015; DESTATIS, 2016b)
- **Housing market development**
  (cf. SÄBL, 2011; GENESIS, 2017)
- **Housing policy instruments**
  (cf. EPI, 2012; Schürt A. et al., 2013; Held T. et al., 2015)
- **Profitability of construction projects**
  (cf. BBSR in BBR, 2012; Selle K. & PT, 2012; Neitzel M. & Walberg D., 2016; BMUB, 2016)
- **Building costs and Running costs**
  (cf. Beusker E., 2012; Beusker E., 2008; Möller D.-A. & Kalusche W., 2013; Pulletz W., 2014; BMUB, 2015)

Despite the above-mentioned research goal, it is still uncertain what impact these different topics have on publicly subsidized residential buildings. Furthermore, there is no clarity regarding the influence of the nation-wide framework conditions on the typology of subsidized housing construction. Therefore, there is a need for a critical investigation into the aforementioned uncertainties that I will pursue in this paper.

Method

Since this research focuses on social housing projects in NRW, the relevant social housing system and the social housing policy are examined regarding the regional need. Therefore, the above-mentioned levels of investigation are examined.

First, the general conditions of subsidized housing are analyzed. Furthermore, different types of projects are defined and analyzed focusing on the financial support they would receive. Besides the general support depending on the units of apartments, the fictive types of projects would get different additional support depending on their individual composition with regard to the following additional characteristics and measures:

- project size
- target group
- improvements for neighborhood/ residential environment
- apartments with reduced barriers
- apartments for wheelchair users
- small apartments
- construction with focus on energy efficiency/ sustainability
- alternative mobility offers
- supporting land purchase

The different project types are compared concerning the loan, redemption and the amount of total costs. For this investigation, costs and characteristic values for the types of projects were defined to make them comparable.

This examination is supplemented by a real estate analysis of recently built housing projects. Therefore, a sample of realized projects is evaluated. This sample is not statistically significant. Several construction companies, project development companies, architects, cities and private persons support this analysis with project data. Within this investigation, eight housing projects of NRW are analyzed regarding the above mentioned scientific hypotheses. The 104 provided apartments of these projects are examined by descriptive statistics.

Analysis

Several laws and regulations characterize the social housing market. Three political levels (federal government, federal state and municipality) are making guidelines and offering support. Although the federal states are responsible for social housing policy, the governmental laws WoFG (‘Wohnraumförderungsgesetz’) and WoBindG (‘Wohnungsbindungsgesetz’) form the basis for regional regulations. In Figure 3 (Guidelines and offered support), an overview of the guidelines and offered support is given:

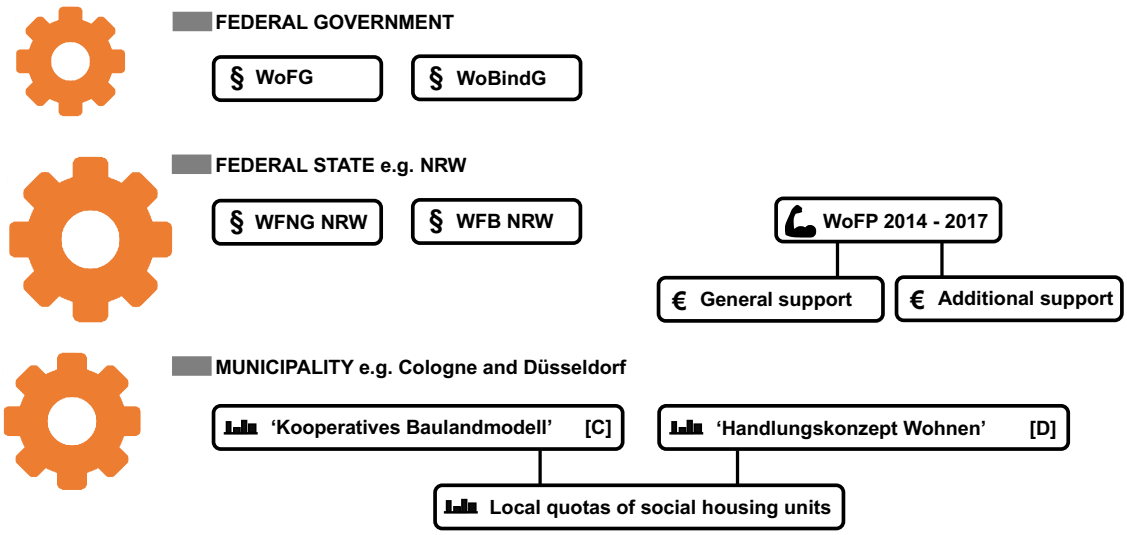

Fig. 3: Guidelines and offered support for social housing in Germany (compiled by the author, 2017)

The laws WFNG NRW ('Gesetz zur Förderung und Nutzung von Wohnraum für das Land Nord-Rhein-Westfalen') and WFB ('Wohnraumförderungsbestimmungen') NRW (2017) define the social housing market. Besides this, the state promotional programm WoFP 2014-2017 ('Mehrjähriges Wohnraumförderungsprogramm 2014 bis 2017') determines the political objectives and presents the funding programs. The program offers 'general support' for all social housing projects and 'additional support' for defined subsidized objects and measures (see Fig. 4: Subsidized measures). In the following, it will be analyzed if these support options influence the types of dwellings built.

Subsidized measures	**NRW**	**Cologne**	**Düsseldorf**
Rental apart.	●		
Condominiums to be rented	●		
Single-family houses to be rented	●		
Particular target groups	●		
Particular living arrangements	●		
Neighborhood concepts	●		
Site upgrading	●		
Small apart.	●		
Elevator systems	●		
Energy saving constructions	●		
Bathrooms for wheelchair users	●		
Outdoor facilities	●		
Concepts for alternative mobility	●		
Supporting land purchase		●	●
Indirect occupancy of subsidized apart.	●		
Supporting purchase of rental controlled apart.			●
Renewal of loan agreement/ follow-up financing	●		

Fig. 4: Subsidized measures (compiled by the author, 2017)

Furthermore, there are municipal regulations, e.g. in Cologne and Düsseldorf, which reinforce the application of the WoFP 2014-2017. In these cities set quotas of social housing units must be realized, if buying municipal property or planning permission is needed (cf. Köln, 2014; Düsseldorf, 2016).

By considering the influence of the given laws and regulations, the correlation between the actual need and the realized apartments can be proven. In Figure 5 (Development of housing stock) the development of the housing stock is shown over the last years. Between 2010 and 2015 the total housing stock has increased by 2 %. Simultaneously, the percentage of 1- and 2-room apartments stayed almost constant.

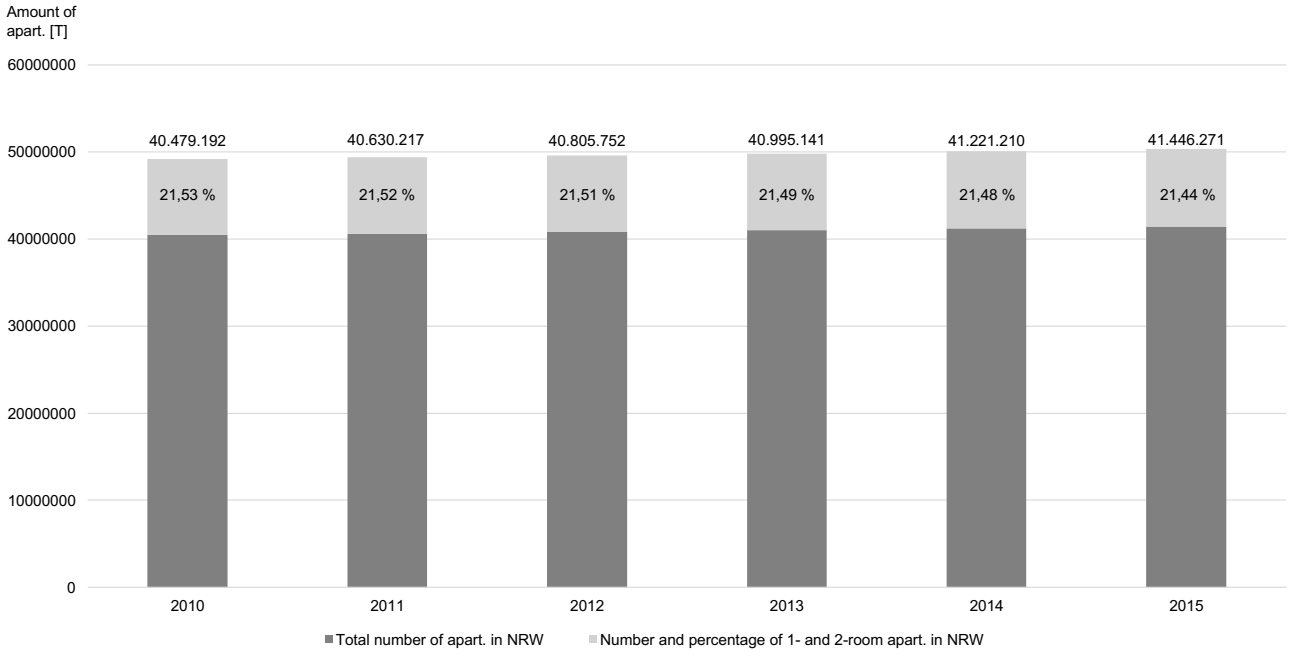

Fig. 5: Development of the housing stock in NRW between 2010 and 2015 (compiled by the author, cf. DESTATIS, 2016a)

With regard to the construction applications and completions, it becomes apparent that 36,698 apartments and 3,964,000 m^2 of living space were completed in 2015 (see Fig. 6: Construction applications and completions). This is almost 14 % less apartments and around 11 % less m^2 living space compared to the previous year. This could indicate that larger apartments have been finished in 2015 than in 2014. In contrast, in 2015 construction applications for almost 23 % more apartments and around 17 % more m^2 living space were granted, than in 2014. Probably, the amount of construction completions will rise in the years ahead and especially smaller apartments will be finished.

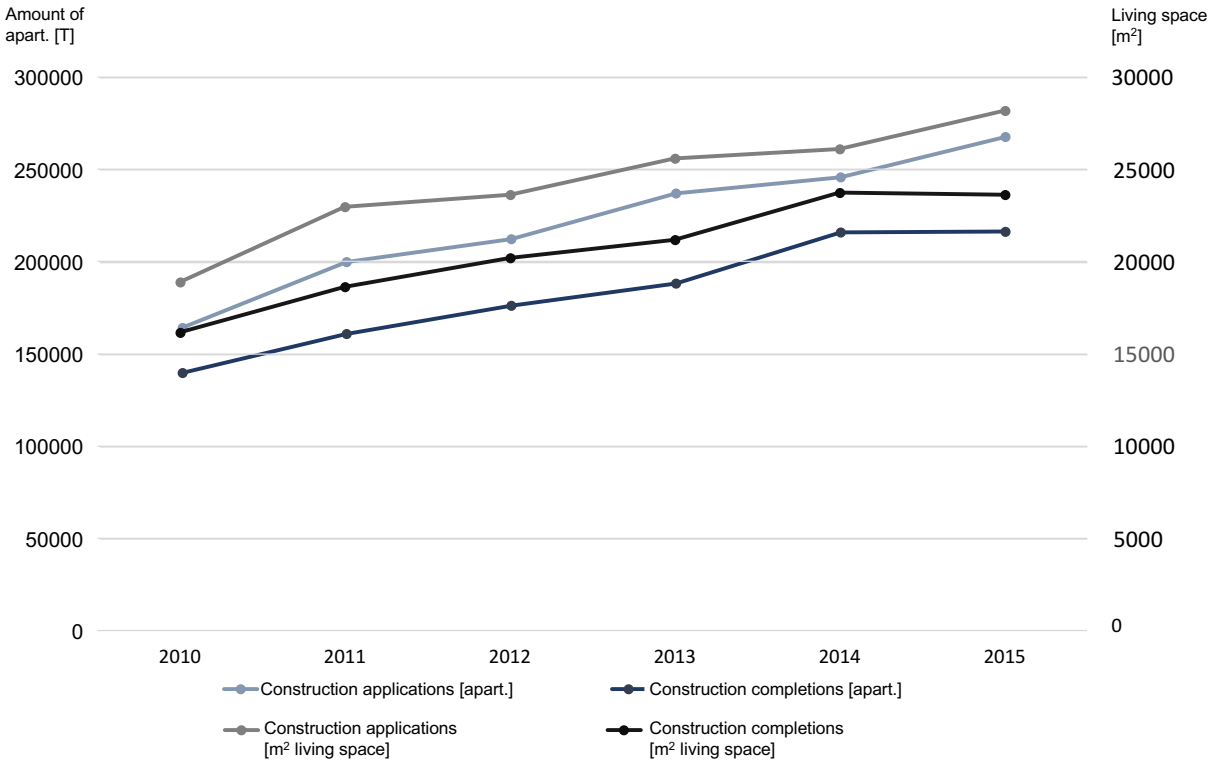

Fig. 6: Construction applications and completions in NRW between 2010 and 2015 (compiled by the author, 2017, cf. DESTATIS, 2016a)

From 2005 to 2015 the average population in NRW declined from around 18,063,000 to almost 17,752,000 people. This corresponds to a decrease of 1,7 %. Whereas in municipal areas, such as Düsseldorf and Cologne, there was an increase of 3,6 % and 5,2 % respectively over this period (cf. DESTATIS, 2016a). In growing cities, there is a high demand for new living space. At the same time, the average number of persons per household stayed constant with around two people, in the last ten years (cf. LB Information und Technik NRW, 2016). This indicates that the demand for smaller apartments stays high. From 2014 to 2015 the average floor space consumption per resident declined marginally by 0,6 % to 46,2 m^2 per resident (cf. DESTATIS, 2016a).

Next, the twelve defined fictive project types are compared. The aim is to find out which types of projects are particularly receiving financial support. In Figure 7 (Definition of project types) the different alignments are described:

PROJECT TYPE	Project size	Target group	Neigh-borhood	Reduced barriers	Wheelchair users	Small apart.	Efficiency/ sustainability	Alternative mobility	Land Purchase
Type A		€		✓	5%				✓
Type B		€				50%	✓	✓	✓
Type C		€	✓			50%		✓	✓
Type D		€		✓					✓
Type E		€		✓	5%	50%	✓	✓	✓
Type F		€	✓			50%		✓	✓
Type G				✓					✓
Type H							✓	✓	✓
Type I			✓	✓	5%			✓	✓
Type J		€							
Type K		€							
Type L									

Fig. 7: Definition of project types (compiled by the author, 2017)

Depending on nine categories the projects get a different amount of general and additional support. This comparison aims to determine which project types are particularly financially promoted. For this investigation, costs and characteristic values for twelve project types were determined (see Annex 1). The following Figure 8 (Loan and reduction of redemption) shows the relation of loan and total costs as well as the ratio of reduction of redemption and total costs:

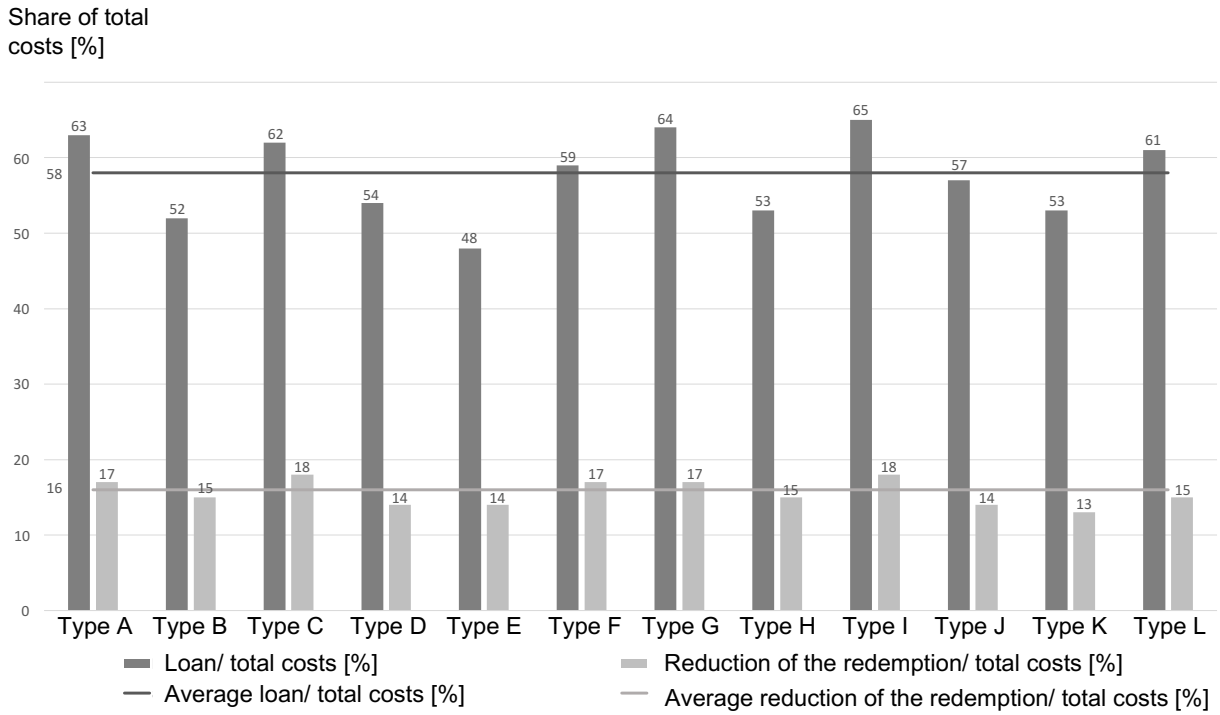

Fig. 8: Loan and reduction of redemption (compiled by the author, 2017, cf. annex 1)

The average percentage of loan of the total costs is 58 %. Six project types are located above this average. The types with proportionally the most loan in comparison to the total costs are type A, type G and type I. The only type with less than 50 % is type E. The average percentage of reduction of redemption of total costs is 16 %. Five of the project types get more than this average and type C and I get 18 %, which is the highest reduction of redemption of the total costs. Only type K gets less then 14 %.

In the following, the 2nd and 3rd level of investigation are going to be examined based on the assessment of the sample of apartments (N=104). Figure 9 (Types of dwellings) shows the relation of the types of dwellings to each other. 1- room and 4-room apartments make up just 12 % of all examined apartments. Whereas, the category of '2-room apartments' makes up 56 %. It needs to be proven if this correlation complies with the actual need.

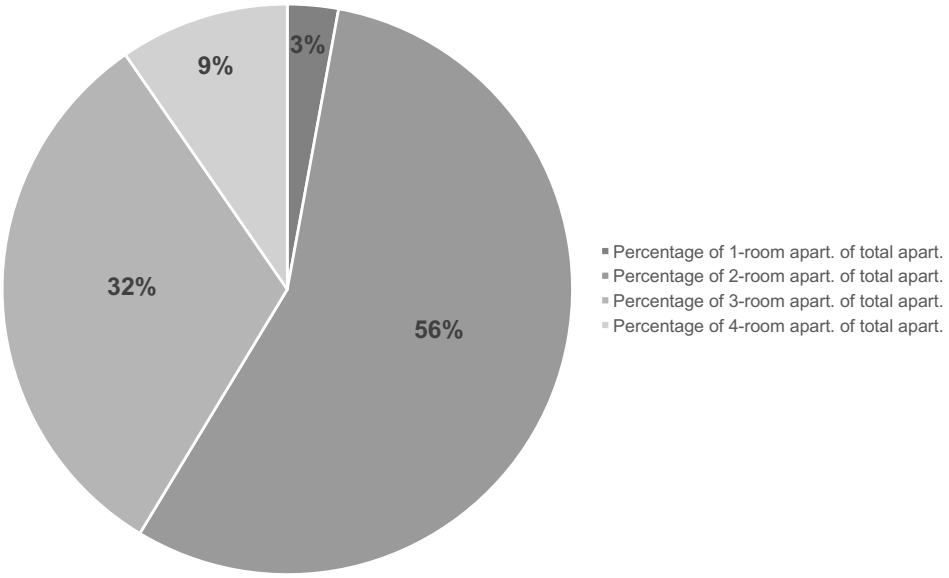

Fig. 9: Types of dwellings for the sample of subsidized apartments in NRW, N=104 (compiled by the author)

The following Figure 10 (Living space) describes the median of m^2 living space as well as the quartiles of m_2 living space for each type of dwelling. Moreover, the figure relates the results with the regulations, WFB (2017), of the federal state.

It is apparent, that the m^2 living space of 1- and 4-room apartments show little variation. The max. m^2 living space (cf. WFB, 2017) is apparently used for 1- and 4-room apartments. These results suggest that the 1- and 4-room apartment demands are similar. It is different with the 2- and 3-room apartments. For 2-room apartments there is a bigger variation concerning the size of the apartments. Regarding 3-room apartments, the interquartile range is small. Also, the given max. m^2 living space (cf. WFB, 2017) is apparently not necessary for 2- and 3-room apartments. The median as well as the interquartile range are located under the given max. apartment size (cf. WFB, 2017). This suggests, that rather small 2- and 3-room apartments are demanded. The bigger

variation leads to the assumption that there are more different target groups with their varying requirements for these two apartment types.

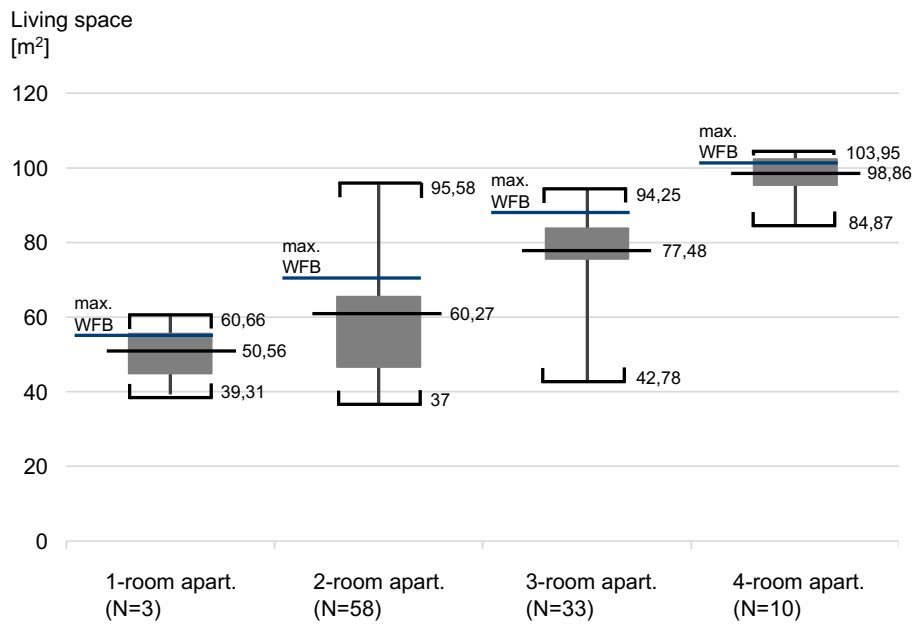

Fig. 10: Living space for the sample of subsidized apartments in NRW, N=104 (compiled by the author, 2017)

Hereafter, the correlation between different types of surfaces are investigated for each type of dwelling (N=104). Thus, the efficiency of the apartments is determined. Figure 11 (Ratio of ancillary space and main surface area) shows the ratio of ancillary space and main surface area. For the category '1-room apartments' the amount is 19 % and for '3-room apartments' 14 %. Only for the dwelling type '4-room apartments' the amount increases to 16 %.

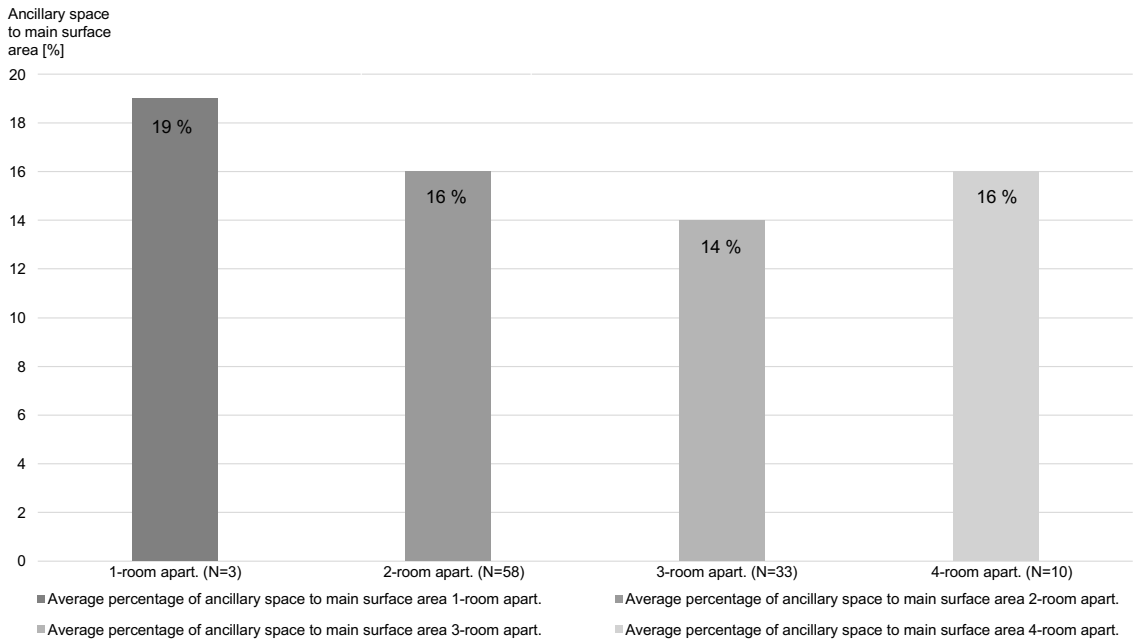

Fig. 11: Ratio of ancillary space and main surface area for the sample of subsidized apartments in NRW, N=104 (compiled by the author, 2017)

The next surface relation to be investigated is the ratio of traffic area and main surface area. Figure 12 (Ratio of traffic area and main surface area) shows that the highest amount of traffic area is 18 % for the dwelling type ‘4-room apartments’. In comparison, for 1-room apartments the amount is 14 % and for 2-room as well as 3-room apartments it is 12 %.

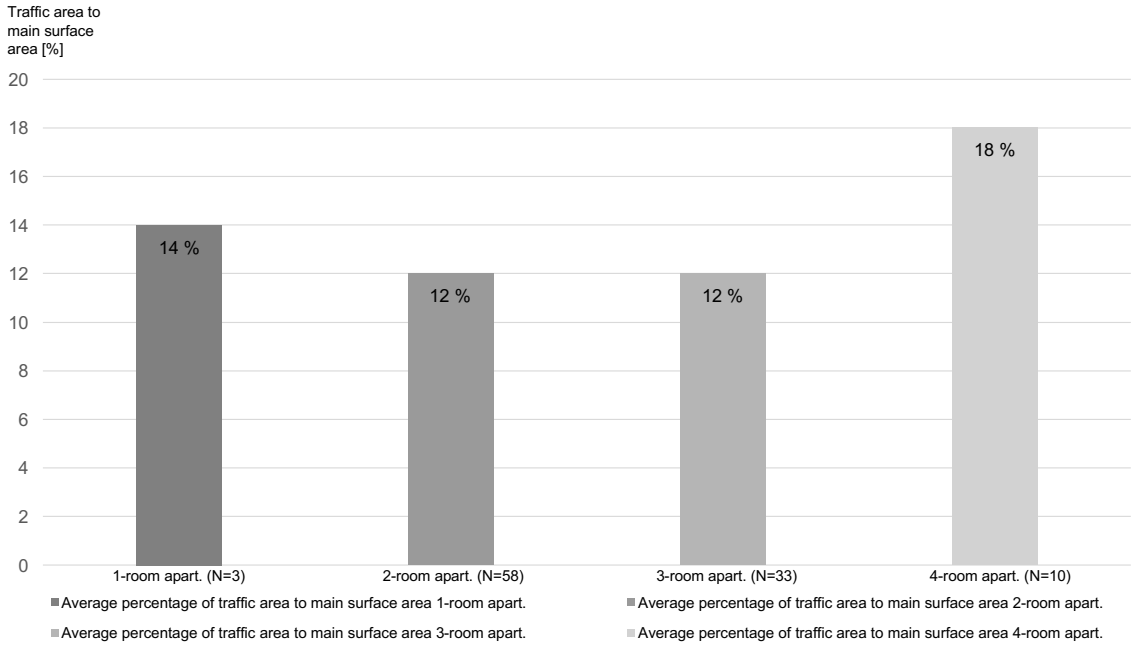

Fig.12: Ratio of traffic area and main surface area for the sample of subsidized apartments in NRW, N=104 (compiled by the author, 2017)

Finally, the ratio of main surface area and living space is analyzed. As shown in Figure 13 (Ratio of main surface area and living space), the ratio between main surface area and living space increases from the category of ‘1-room to 3-room apartments’. Whereas, for 1-room apartments it is 80 %, it rises to 86 % for 3-room apartments. Once more, the trend differs for 4-room apartments, it decreases to a min. of 78 %.

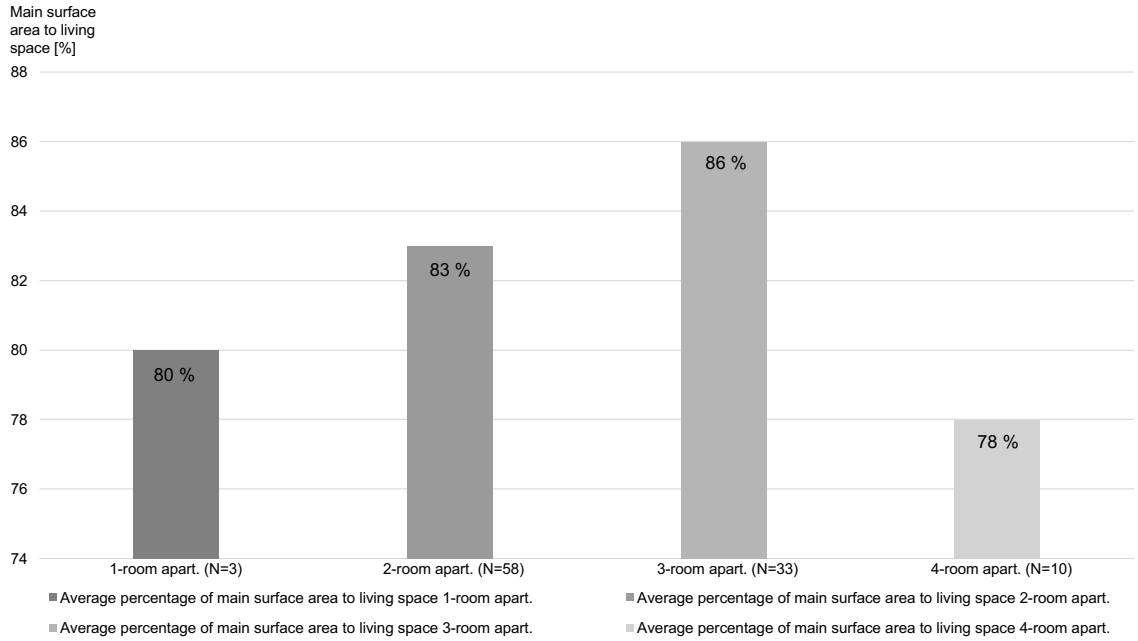

Fig. 13: Ratio of main surface area and living space for the sample of subsidized apartments in NRW, N=104 (compiled by the author, 2017)

In the next section, the results of this analysis are presented and interpreted in the context of the conditions of subsidized housing, as well as in the context of the actual need of living space.

Results

Based on this investigation, it seems that there is a strong influence of the laws and offers and the actual need of living space on the realized apartments in NRW.

In recent years, less accommodation has been completed but the amount of building applications has increased. This might be seen as an indication that in some years the construction competition will increase again. The relation between the requested number of apartments and the requested living space leads to the assumption that soon especially small apartments will be realized (cf. DESTATIS, 2016a).

In the last decade, the percentage of 1- and 2-room apartments stayed constantly high (DESTATIS, 2016a). Furthermore, the average size of households in NRW remained around two persons per household (cf. Landesbetrieb Information und Technik – Nordrhein-Westfalen, 2014). This constant development, in combination with the increasing population in municipal areas (DESTATIS, 2016a), leads to a high demand, especially for small apartments. This demand for small apartments corresponds to the housing market development. Therefore, the additional support for building small social apartments meets this need.

Further support alignments become apparent when regarding the alignments of the notably financial supported project types. Besides the construction of small apartments, the reduction of barriers and the construction of agglomerations for wheelchair users are provided. This complies to the demographic developments and the aging population. Generally, the focus seems to lie either on small or on big residential projects for target groups with low incomes. This orientation benefits households in municipal areas who cannot afford the high rents in this area. Furthermore, the ‘income combinations’ in accordance with the local quotas are supported. Whereas, a good social mix in neighborhoods is promoted less than expected. When realizing big residential projects, it is worthwhile to integrate measures concerning neighborhood and residential environment improvement, as well as to establish alternative mobility. This suggests that new neighborhood developments are necessary to create sufficient living space in municipal areas. To ensure the quality and acceptance of this developments the aforementioned measures are helpful.

Subsequently, the 2nd and 3rd level of investigation are evaluated. First, it was analyzed which types of apartments have been realized in recent years and the sizes of these different types of apartments have been examined. It can be proven, that the relation of realized types of dwelling to each other is caused by the funding guidelines of NRW. 56 % of the examined agglomerations are 2-room apartments (N=104). This fits the support measures and the current need. But it should be

questioned if the very small amount of 1- and 4-room subsidized apartments, in total 12 %, is reasonable (N=104). Furthermore, the median and the variation of m^2 living space of the four types of dwellings is indeed linked to the funding guideline (cf. WFB, 2017). In particular, the sizes of 1- and 4-room apartments remain close to the guidelines of the federal state. For these types of apartments, the max. m^2 living space seems to be needed. The small variation may indicate that these types are demanded by homogenous target groups with similar requirements. In contrast, the max. m^2 living space seems not to be needed for 2- and 3-room apartments. It is worth asking, if an adjustment of the guidelines would be reasonable. The bigger variation may indicate that 2- and 3-room apartments are demanded by different target groups with individual requirements.

With regard to the 3rd level of investigation, 'apartment', the relation of defined surfaces to one another for different types of dwelling were investigated. Regarding the data sample (N=104), the hypothesis 'The smaller a dwelling, the higher the share of ancillary space' could be confirmed to a great extent. Which means that the floor plans become more efficient the bigger the type of dwelling. Every type of apartment need a min. of space for the bath- and storeroom. Especially in the case of subsidized apartments the needed space for these rooms doesn't vary widely for 1-, 2- and 3-room apartments. This makes bigger apartments more efficient. This hypothesis is correct concerning 1-, 2- and 3-room apartments. Only for 4-room apartments the percentage raised again. Regarding the sample of apartments, this could be caused by the high amount of apartments for wheel chair users of total 4-room apartments. Apartments for wheel chair users have special requirements and need larger bathrooms as well as more traffic area.

Regarding the ratio of traffic area and main surface area, it has been investigated if the smaller the type of dwelling, the higher the percentual share of traffic area of main surface area. From 1-room apartments to 2- and 3-room apartments the percentual share decreases a little. But, for 4-room apartments the percentual share is extremely high and greater than for 1-room apartments. Accordingly, this hypothesis could not totally be proved. The reason could also be the high amount of apartments for wheel chair users of total 4-room apartments and the involved high need of traffic area.

Also, the results of investigating the last hypothesis could be influenced by this. It could be proved that the bigger the type of dwelling, the higher the percentual share of main surface area of living space concerning 1-, 2- and 3-room apartments.

Conclusion

The investigation focuses on the relation between current laws, regulations and offers for social housing projects and the actual supply and demand for housing with rental control regarding the realized subsidized apartments.

Based on the results described above it can be summarized that there is a strong influence of the conditions concerning social housing projects on the realized apartments in NRW.

The high amount of and the special support for 2-room apartments complies to the current need. For the future it should be proven, if a wider mixture of types of dwellings would be better.

Reducing barriers and the construction of apartments for wheel chair users are strongly supported. This complies to the current demographic developments and the aging population. Thus, it makes floor plans less efficient concerning the relation of surface types.

The averages m^2 living space as well as the inherent variations for the respective types of dwelling are linked to the funding guideline but probable also influenced by the requirements of the different target groups.

In conclusion, the hypotheses concerning the relations of the surfaces generally complies with the results of the investigation. Only the type ‘4-room apartments’ is conspicuous. This could be caused by the high amount of apartments for wheel chair users.

Within this investigation, first findings are described for NRW. Subsequently, a comparison of the results of this investigation with other federal state will allow further conclusions.

References

BBSR in BBR, Bundesinstitut für Bau-, Stadt- und Raumforschung in Bundesamt für Bauwesen und Raumordnung ed. (2012): Kommunale Strategien für die Versorgung einkommensschwächerer und sozial benachteiligter Haushalte. Pdf, Bonn, http://www.bbsr.bund.de/BBSR/DE/Veroeffentlichungen /Sonderveroeffentlichungen / 2014/Kommunale Strategien.html?nn=445420 [assessed 16.06.2016].

Beusker, E. (2008): Lebenszyklusorientierte Objektplanung. Grundlagen, Konzepte, Methoden. Saarbrücken, Vdm Verlag Dr. Müller.

Beusker, E. (2012): Occupancy Cost Planning and Benchmarking. A Survey for Public Real Estate Management. München, Oldenbourg Verlag.

BiB, Bundesinstitut für Bevölkerungsforschung ed. (2017): Zahl der Privathaushalte* und durchschnittliche Haushaltsgröße in Deutschland, 1991 bis 2035. Online, http://www.bib-demografie.de/DE/ZahlenundFakten/ 13/Abbildungen/a_13_02_durchschnittl_hhgroesse_d_1991_2030.html?nn=3073286 [assessed 31.05.2017].

BMUB, Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit ed. (2015): Memorandum zum Bündnis für bezahlbares Wohnen und Bauen. Pdf, http://www.bmub. bund.de/fileadmin/Daten_BMU/Download_ 29.05 2016PDF/Wohnungswirtschaft/buendnisforum_memorandum_unterzeichnet.pdf [assessed 29.05.2016].

BMUB, Bundesministerium für Umwelt, Naturschutz, Bau und Reakorsicherhiet ed. (2016): Bericht zum Bündnis für bezahlbares Wohnen und Bauen und zur Wohnungsbau-Offensive. Pdf, http://www.bmub.bund.de/fileadmin /Daten_BMU/Download_PDF/Wohnungswirtschaft/ buendnis_bezahlbares_wohnen_bauen_bf.pdf [assessed 25.05.2016].

BMVBS, Bundesministerium für Verkehr, Bau und Stadtentwicklung ed. (2011): Fortführung der Kompensationsmittel für die Wohnraumförderung. Endbericht. Pdf, http://www.bbsr.bund.de/BBSR/DE/WohnenImmobilien/ RahmenbedInstrumente/ProjekteFachbeitraege/Wohnraumfoerderung/Fachgutachten_Wohnraumfoerderung.p df?__blob=publicationFile&v=2 [assessed 29.05.2016].

Clarke, L. and Herrmann, G. (2004): Cost vs. production: disparities in social housing construction in Britain and Germany. In: Construction Management and Economics, vol. 22, 5/2004, pp. 521-532.

DESTATIS, Statistisches Bundesamt ed. (2015): Mikrozensus. Bevölkerung und Erwerbstätigkeit. Stand und Entwicklung der Erwerbstätigkeit in Deutschland 2014. Vol. 1, 4.1.1/2015, pdf, https://http://www.destatis.de /DE/Publikationen/Thematisch/Arbeitsmarkt/Erwerbstaetige/ StandEntwicklungErwerbstaetigkeit.html [assessed 02.07.2016].

DESTATIS, Statistisches Bundesamt ed. (2016a): Datenbank GENESIS-Online. Online, https://www.regionalstatistik.de/ genesis/online;jsessionid=6F7723526460D6083CCA826973EE72C5?Menu=Willkommen [assessed 05.12.2016].

DESTATIS, Statistisches Bundesamt ed. (2016b): Volkswirtschaftliche Gesamtrechnungen. Inlandsproduktberechnung. Detaillierte Jahresergebnisse 2015. Vol. 18, 1.4/2016, pdf, https://http://www.destatis.de/DE/Publikationen/ Thematisch/Volkswirtschaftliche Gesamtrechnungen/Inlandsprodukt/Inlandsproduktsberechnung Vorlaeufig.html [assessed 02.07.2016].

Düsseldorf ed. (2016): ZUKUNFT WOHNEN DÜSSELDORF. Ein Handlungskonzept für den Wohnungsmarkt. Pdf, https://www.duesseldorf.de/stadtplanungsamt/stadtentwicklung/handlungskonzept-wohnungsbau.html [assessed 08.05.2017].

EPI, Eduard Pestel Insitut e.V. ed. (2009): Wohnungsmangel in Deutschland? Regionalisierter Wohnungsbedarf bis zum Jahr 2025. Pdf, http://www.dgfm.de/wohnungsbaupolitik/ sv/artikel/eduard-pestel-institut-studie-zum-wohnraumbedarf-in-deutschland-bis-2025.html [assessed 19.06.2016].

EPI, Eduard Pestel Insitut e.V. ed. (2012): Bedarf an Sozialwohnungen in Deutschland. Pdf, https://http://www.igbau. de/ Binaries/Binary16372/Pestel_Bedarf_an_Sozialwohnungen_August_2012.pdf [assessed 15.06.2016].

EPI, Eduard Pestel Insitut e.V. ed. (2015): Kurzstudie Modellrechnungen zu den langfristigen Kosten und Einsparungen eines Neustarts des sozialen Wohnungsbaus sowie Einschätzung des aktuellen und mittelfristigen Wohnungsbedarfs. Pdf, http://www.bdb-bfh.de/bdb/ downloads/Kurzstudie-sozialer-Wohnungsbau-und-Wohnungsbedarf.pdf [assessed 18.06.2016].

GENESIS, GENISIS-Online Datenbank ed. (2017): Datenbank des Statistischen Bundesamtes. Online, https://www-genesis.destatis.de/genesis/online [assessed 14.04.2017].

Heijden, H. van der (2002): Social Rented Housing in Western Europe: Developments and Expectations. In: Urban Studies, vol. 39, 2/2002, pp. 327-340, http://owens.mit.edu/sfx_local?sid=google& auinit=H&aulast=Van+ der+Heijden&atitle=Social+rented+housing+in+Western+Europe:+developments+and+expectations&title= Urban+Studies&volume=39&issue=2&date=2002&spage=327&issn=0042-0980 [assessed 15.04.2017].

Heising, P. and Baba, L. (2011): Neue Ansätze für kommunale Konzepte zur Wohnraumversorgung von Haushalten mit niedrigem Einkommen. In: Information zur Raumentwicklung, vol. 9/2011, pp. 521-533, pdf, http://www.bbsr. bund.de/BBSR/DE/ Veroeffentlichungen/IzR/2011/9/Inhalt/DL_HeisingBaba.pdf? __ blob=publicationFile&v=2 [assessed 25.06.2016].

Held, T., Waltersbacher, M., BBSR im BBR, Bundesinstitut für Bau-, Stadt- und Raumforschung im Bundesamt für Bauwesen und Raumforschung ed. (2015): Wohnungsmarktprognose 2030. Pdf, http://www.bbsr.bund.de /BBSR/DE/WohnenImmobilien/Wohnungsmarkt prognosen/ Fachbeitraege/Prognose2030/Prognose2030 _node.html [assessed 17.06.2016].

Housing NSW, Department of Families and Communities NSW Government ed., Pawson, H., Lawson, J. and Milligan, V. (2011): Social housing strategies, financing mechanisms and outcomes: an international review and update of key post-2007 policy developments. City Futures Research Centre, University of New South Wales, Sydney, Australia, pdf, www.be.unsw.edu.au/sites/default/files/upload/research/centres/cf/ publications/ cfprojectreports/International_Social_Housing_Review.pdf [assessed 17.04.2017].

KempenHugo Priemus, R. van (2016): Revolution in Social Housing in the Netherlands: Possible Effects of New Housing Policies. In: Urban Studies, vol. 39, 2/2016, pp. 237-25, pdf, http://journals.sagepub.com/doi/abs/10.1080/ 00420980120102948 [assessed 14.04.2017].

Köln ed. (2014): Das Kooperative Baulandmodell Köln. Leitfaden für Projektentwickler und Investoren. Pfd, http://www.stadt-koeln.de/mediaasset/content/pdf61/baulandmodell-broschuere2014.pdf [assessed 08.05.2017].

Lawson, J. (2009): The Transformation of Social Housing Provision in Switzerland Mediated by Federalism, Direct Democracy and the Urban/rural Divide. In: European Journal of Housing Policy, vol. 9, 1/2009, pp. 45-67, pdf, http://www.tandfonline.com/doi/abs/10.1080/14616710802693599 [assessed 15.04.2017].

LB Information und Technik ed. (2016): IT.NRW. Online, https://www.it.nrw.de/ index.html [assessed 09.12.2016].

Losasso, M. and D'Ambrosio, V. (2012): Eco-districts and Social Housing in Northen Europe. In: TECHNE Journal of Technology for Architecture and Enviroment, vol. 04/2012, pp. 44-52, pdf, http://dx.doi.org/10.13128/Techne-11489 [assessed 14.04.2017].

Lugger, K. ed., Amann, W. ed., Ball, M., Birgersson, B. O., Ghekeire, L., Lux, M., Mundt, A., Turner, B. (2006): Der soziale Wohnungsbau in Europa - Österreich als Vorbild. E-book, Vienna, TypoDruckSares, http://webcache. googleusercontent.com/search?q=cache:mGuzL5JFnDwJ: www.immobilienforschung.at /deutsch/portfolio/ wohnen/downloads/Lugger_Amann_Sozialer Wohnbau 060505.pdf+&cd=1&hl=de&ct= clnk&gl=de&client= firefox-b-ab [assessed 18.06.2016].

Marom, N. and Carmon, N. (2015): Affordable Housing Plans in London and New York: Between Marketplace and Social Mix. In: Housing Studies, vol. 30, 7/2015, pp. 993-1015, pdf, http://dx.doi.org/10.1080/02673037.2014.1000832 [assessed 14.04.2017].

Matznetter, W. (2016): Social Housing Policy in a Conservative Welfare State: Austria as an Example. In: Urban Studies, vol. 39, 2/2016, pp. 265-282, pdf, http://journals.sagepub.com/doi/abs/10.1080/00420980120102966 [assessed 02.06.2016].

Möller, D.-A., and Kalusche, W. (2013): Planungs- und Bauökonomie. Wirtschaftslehre für Bauherren und Architekten. Edition 6, München, Oldenbourg Wissenschaftsverlag GmbH.

NAI apollo group ed. (2015): Zahlen & Daten. Wohnungsmarktbericht Deutschland 2015. Pdf, www.nai-apollo.de/.../ NAI_apollo_Wohnmarktbericht_Deutschland_2015_HQ.pdf [assessed 10.04.2017].

Neitzel, M. and Walberg, D. (2016): Instrumentenkasten Wohnungsbau. Wichtige Handlungsfelder der Wohnungsbaupolitik. Pdf, http://www.impulse-fuer-den-wohnungsbau.de/medien-infos/pressemitteilungen/sv/instrumentenkasten-fuer-wichtige-handlungsfelder-der-wohnungsbaupolitik.html [assessed 17.06.2016].

Oettgen, N. and Metzmacher, M. (2011): Wenn das Einkommen nicht zum Wohnen reicht - und wie der Staat hilft. Instrumente, Empfänger und Leistungen zur sozialen Absicherung des Wohnens. In: Informationen zur Raumentwicklung, vol. 9/2011b, pp. 505-520, pdf, http://www.bbsr.bund.de/BBSR/DE/ Veroeffentlichungen/IzR/2011/9/Inhalt/inhalt.html?nn= 422250 [assessed 25.06.2016].

Priemus, H. and Dielemann, F. (2002): Social Housing Policy in the European Union: Past, Present and Perspectives. In: Urban Studies, vol. 39, 2/2002, pp. 191-200, http://owens.mit.edu/sfx_local?sid=google&auinit=H&aulast=Priemus&atitle=Social+housing+policy+in+the+European+Union:+past,+present+and+perspectives&title=Urban+Studies&volume=39&issue=2&date=2002&spage=191&issn=0042-0980 [assessed 15.04.2017].

Pulletz, W. (2014): Objektfinanzierung. In: Murfeld, E. e.d., Spezielle Betriebswirtschaftslehre der Immobilienwirtschaft, edition 7, Freiburg, Haufe Gruppe, pp. 581-695.

Rein, S., Schmidt, C., BBSR im BBR, Bundesinstitut für Bau-, Stadt- und Raumforschung im Bundesamt für Bauwesen und Raumordnung e.d. (2014): Ausnahmeposition des deutschen Bausektors in Europa. In: BBSR-Analysen Kompakt, vol. 12/2014, pdf, http://www.bbsr.bund.de/ BBSR/DE/Veroeffentlichungen/AnalysenKompakt/2014/AK122014.html?nn=415476 [assessed 25.06.2016].

SÄBL, Statistische Ämter des Bundes und der Länder ed. (2011): Demografischer Wandel. In: Bevölkerungs- und Haushaltsentwicklung in Bund und in den Ländern, vol. 1/2011, pdf, https://http://www.destatis.de/DE/Publikationen/Thematisch/ Bevoelkerung/DemografischerWandel/BevoelkerungsHaushaltsentwicklung.html [assessed 02.07.2016].

Scanlon, K., Fernández Arrigoitia, M., Whitehead, C. (2015): Social Housing in Europe. In: European Policy Analysis, vol. 2015/17, Sieps Swedish Institute for European Policy Studies, pp. 1-12, pdf, http://eprints.lse.ac.uk/62938/ [assessed 14.04.2017].

Schürt, A., Brack, N., Nielsen, J., BBSR, Bundesinstitut für Bau-, Stadt- und Raumforschung ed. (2013): Wohnungsengpässe und Mietsteigerungen. Aktuelle Mietentwicklungen in den Städten und Regionen. Pdf, http://www.bbsr.bund.de/BBSR/DE/Veroeffentlichungen/ AnalysenKompakt/2013/AK072013.html?nn=446674 [assessed 16.06.2016].

Selle, K. ed., PT, Lehrstuhl für Planungstheorie und Stadtentwicklung RWTH Aachen ed. (2012): IBA Berlin 2020. Sonderpapier "Wohnungsbau und öffentliche Förderung". In: PT_Materialien, vol. 29, 2012, pdf, http://www.pt.rwth-aachen.de/index.php?option=com _content&view=article&id=135&Itemid=93 [assessed 05.06.2016].

Selle, K. (2011): Blick zurück nach vorn - 20 Jahre Wohnungsbau. Trend zurück in die Stadt? ETH Forum Wohnungsbau 2011. Transcription, pdf, http://www.wohnforum.arch.ethz.ch/de/eth-forum-wohnungsbau/eth-forum-wohnungs bau-2011 [assessed 29.06.2016].

Thies, T. (2016): So sozial wohnt Europa. In: Immobilienzeitung – Fachzeitschrift für die Immobilienwirtschaft, pdf, http://www.immobilien-zeitung.de/136521/so-sozial-wohnt-europa [assessed 30.05.2017].

Tornow, B. (2007): Wohnungsgenossenschaften in Dänemark - Akteure in der sozialen Quartiersentwicklung. In: Informationen zur Raumentwicklung, vol. 4/2007, pp. 263-274, pdf, https://http://www.econbiz.de/Record/wohnungsgenossenschaften-in-d%C3%A4nemark-akteure-in-der-sozialen-quartiersentwicklung-tornow-britta/10003462215 [assessed 24.06.2016].

Whitehead, C. ed., Scanlon, K. J. ed. (2007): Social housing in Europe. Pdf, http://vbn.aau.dk/en/publications/social-housing-in-europe(dfbbc820-7d7a-11dc-97b9-000ea68e967b).html [assessed 15.04.2017].

WFB, Wohnraumförderungsbestimmungen NRW (2017)

WFNG NRW, Gesetz zur Förderung und Nutzung von Wohnraum für das Land NRW (as of 08.12.2009)

WoBinG, Wohnungsbindungsgesetz (as of 31.08.2015)

WoFG, Wohnraumförderungsgesetz (as of 02.10.2015)

WoFIV, Verordnung zur Berechnung der Wohnfläche (as of 25.11.2003)

WoFP 2014-2017, Mehrjähriges Wohnraumförderungsprogramm 2014 bis 2017 (as of 09.01.2017)

Annex 1: Costs and characteristic values for defined project types (compiled and defined by the author, 2017)

Project type	Basic costs [€]	Additional costs [€] (additional measures)	Total costs [€]	Total costs/ m2 living space [€]	BGF [m2]	Living space [m2]	Site area [m2]
Typ A	6.748.718	0	6.748.718	2500	4.154	2.700	3.462
Typ B	10.706.276	282.125	10.988.401	3381	5.417	3.250	4.514
Typ C	16.838.477	889.950	17.728.427	2727	10.833	6.500	9.028
Typ D	6.994.444	0	6.994.444	2591	4.500	2.700	3.750
Typ E	10.706.276	282.125	10.988.401	3381	5.417	3.250	4.514
Typ F	16.838.477	889.950	17.728.427	2727	10.833	6.500	9.028
Typ G	6.994.444	0	6.994.444	2591	4.500	2.700	3.750
Typ H	14.824.074	390.625	15.214.699	3381	7.500	4.500	6.250
Typ I	23.314.815	1.193.750	24.508.565	2723	15.000	9.000	12.500
Typ J	11.657.407	0	11.657.407	2591	7.500	4.500	6.250
Typ K	11.657.407	0	11.657.407	2591	7.500	4.500	6.250
Typ L	11.657.407	0	11.657.407	2591	7.500	4.500	6.250

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