

# Perspective Vienna – A Comparison of Planning Scenarios and Real Development

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## 1 INTRODUCTION

With the suspension of national borders in unions of nations, cities and their regions gain in significance for the economic, social and cultural development. This is particularly valid for Vienna, which lies close to the eastern boarder of the European Union, which should fall with the enlargement of EU in the near future. Of prominent importance is therefore to obtain a comprehensive understanding between proposed and defined aims for an urban development, the related measures and their extent of implementations and their actual or real effects. This paper attempts to give a strategic analysis of the Viennese urban and traffic development programs, from 1962, 1972, 1984 and 1994, on the one hand, and the data analysis of the statistical year books beginning from 1960 until 2000, on the other. The results show that adjustments have been made not only in response to certain trends, but also to a change of philosophy of urban development. It can be seen that certain assumptions of, for example, economic and transport measures can have the opposite outcome in relation to the intended objectives. Hence, one main question remains to be answered: How should Vienna deal with the challenges ahead, to secure and foster a sustainable development under such circumstances on a long-term basis. In this respect, some measures are given, which should make it possible to overcome successfully these challenges.

## 2 GENERAL BACKGROUND

The aim of this paper is to compare the goals of Viennese city development program with the development of the reality. The task is to check if (i) the aims have been achieved, (ii) if the measures taken were successful and (iii) in which direction the development has progressed. The analysis will be undertaken on a strategic level, which means that the data will be used on an aggregated level with a distinction on the district level and there trends will be analysed. A more detailed analysis would require an intake of many more factors. The data in response to the urban development plans are in regard to living, working and, as means for their facilitation, daily travelling. These indicators should suffice for a general assessment since they constitute the most important functions of everyday life.

Vienna has a radial arrangement of districts with the first district at the centre, then the inner or one digit districts, i.e. 2 to 9, in the first “belt”, followed by district number 10 to 23, forming the outer belt (Figure 1). These two belts are separated by circling roads, i.e. the Ringstrasse and the Kai between the first and the one digit districts and the so-called Gürtel and the city motorway A22 and A23 between the two district belts. This distinction will be used as a basic classification for the following analysis since

## 3 URBAN DEVELOPMENT PROGRAMS AND STATISTICS

After the second world war, the first urban development program in Vienna was developed in 1962 which were followed by other concepts in the years 1972, 1984 and 1994 (RAINER, 1962, STADTFORSCHUNG, 1973, WIEN, 1985, WIEN, 1994b, WIEN, 1994a). In recent years, other master plans have been designed and their concepts are partly included in this paper (WIEN, 2001a).

The different aims and measures of the development programs are described according to population, the city expansion, economy and mobility. Although other areas such as cultural institutions, which are also essential parts for a city structure, have been left out due to the limited space available. The data in the paper has been taken from the Statistical Yearbooks of Vienna between 1961 and 1991 (WIEN, 1973, WIEN, 1977, WIEN, 1980, WIEN, 1989, WIEN, 1993, WIEN, 1998, WIEN, 2001b, HERRY and SAMMER, 1999). The 2001 population data have been also used. The economic data related to number of jobs and companies are available for the time period between 1961 and 1991 and the data related to motorisation are only available between 1971 and 1991. The transport and travel related statistics are available in respect to motorisation from 1971 to 2001 and for commuting from 1961 to 1991. Although the latter two sets of data do not cover the whole period of the population data, nevertheless it should be possible to infer certain trends and correlations.

### 3.1 Population

#### 3.1.1 The Urban Programs

The aims in 1962 were a stabilisation of the population since a decline was forecasted and, in 1984, redefined as a minimisation of the population reduction. This should have been achieved through migration, which was not specifically defined in 1962, but in 1972 should be achieved through migration from foreign countries. In 1984 a migration from the Austrian federal states was aimed at, with an integration of the foreign population. Currently, a city-compatible migration is the goal. In terms of the inner city development, in 1962 and 1984 the city centre should be reduced or “alleviated” in population, counterbalanced with an increase in the outskirts districts.

### 3.1.2 The Population Statistics

The stabilisation of the total population could be achieved at around 1.6 Mill. inhabitants. The beginning decline of 5.7% in 1971 could be stopped in 1981 and since then the population has increased slightly with 0.6%. The statistics do not provide detailed information about migrational patterns, however, foreign inhabitants were mainly responsible for the prevention of the decline with an increase from around 50 000 to over 200 000 inhabitants in 2001. These numbers have also to be seen from the perspective of integration, where foreign inhabitants, after living for a certain period of time in Austria, become Austrian citizens.

On the district level, there has been considerable changes in populations. 15 out of 23 districts lost inhabitants between 1951 and 2001. The biggest losses had the first district with 50% followed by 7., 8., and 9. with a decrease of 44 to 49%. The largest group of 7 with a percentage decline in the 30% range is a mixture of inner districts (3., 4., 5. and 6.) and outer districts (15., 17. and 18.). If the one digit districts are put together then they lost in total around 208 000 inhabitants. The biggest winners were the 22. and the 23. with an increase of 156% and 129% followed by the 21. and 11., with 88% and 78% respectively and the 10. and the 19. with 30% and 10%. If these changes are summed up, then the gains amount for around 270 000 inhabitants. The biggest changes took place in the late 60-ies and early 70-ies with decade gains of up to 54% and losses of up to 22%.

The “counterbalancing” of the districts can be seen even more clearly in Figure 1 in respect to the difference in population density. Here, a distinct pattern emerges with the biggest gains in the north-east and south, and the biggest losses in the middle, especially between the 5. and the 9. district.

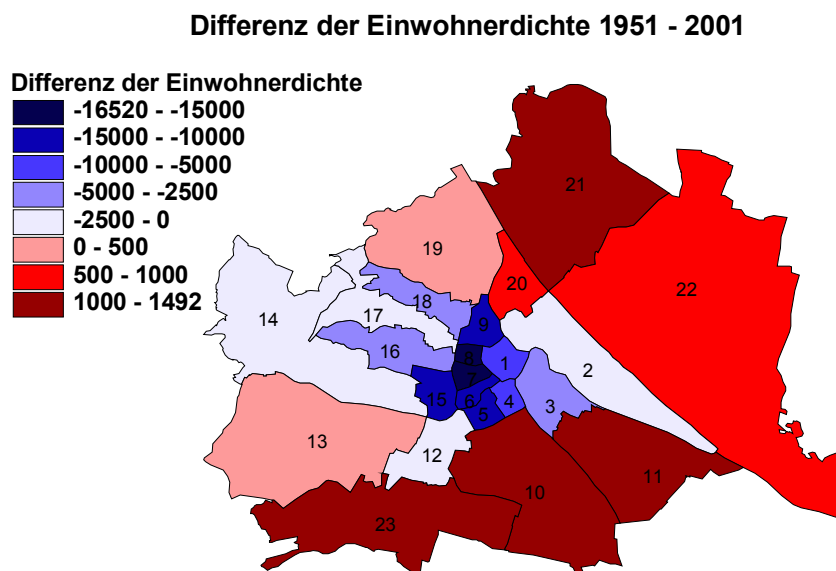


Figure 1. Differences in the Densities between 1951 and 2001.

In reflection to the urban development programs, it can be seen that the objective regarding population stabilisation has been fulfilled. However, the question remains if the losses of up to 50% in the central districts for a “counterbalancing” were really intended.

## 3.2 The City Structure and Economic Development

Urban structure and economy are treated in a combined manner, as it is the case in the urban development concepts. From a methodological point of view, this assumption is justified, because the location of companies reflect one main aspect of the functional mix of a city structure in combination with the people, who “change” from inhabitants to employees and shape the structure through the commuting between these locations of functions. Statistically, the city structure is therefore characterised by the number of companies in the respective districts with the number of employees. The structures in regard to traffic and travel will be dealt with in the consecutive section.

### 3.2.1 The Urban Programs regarding City Structure

In 1962, a spatial expansion of the city was aimed to the west and the south. Further aims were a stronger regulation of the land-use, a separation of functions on a small scale with urban regeneration and the planting of trees in the dwelling areas. The related measures were an increase of the outskirts densities, small industries were removed from housing estates and house gardens were developed. In 1972, there was a change from city expansion to city regeneration. In 1984, urban development was fostered along the axis of public transport. The different functions were now designed side by side in the inner city in combination with an urban regeneration, a strengthening of the district centres and the creation of green areas between the districts. The juxtaposing of different functions should again be related to decrease of the densities. One current aim is still the creation of major urban centres around the inner city

The movement of working places to the outer cities in 1962 with a development of new district centres was changed to relocation of companies with restricted space in 1972. In this year ensuring the supply of local shops has been also an objective. In 1984 a mix of functions on a small scale was approached but there is still the aim in current concepts of linking the industrial sites with new neighbourhoods for on-site employment. The economic growth has been a major aim in 1972 and 1984. A full employment in 1984 has been currently reformulated in creation of jobs.

### 3.2.2 The Statistics of Employment and Companies

The statistics about employment shows a comparable picture to those of inhabitants, only the extent of the changes was not as dramatic. Overall, the job losses of 10% in 1971, could be partially regained in the following decades, so only 22 500 or 2.6% jobs were lost. On the company sector, the same loss in the late 60-ies could not be recovered completely and there is still a shortfall of 5.2%, or 3 900 companies.

On the district level, 14 out of 23 districts lost jobs and 16 district have lost companies or enterprises. The 5., 6. and 7. district have lost 32, 40 and 47% of jobs respectively, which is related to around 18% of loss of companies. 28% or 20% of companies has lost the 16. and 15. districts which means 19% and 14% of job losses. One third of the districts have lost jobs between 10 and 24%, which is related to 14. up to the 20. districts (except 19. ) and the 1., 4. and 8. district. Because of the companies size, these losses cannot directly linked to the districts, which differ slightly. The majority of job loss occurred around 9 to 19%, mainly related to the inner districts, i.e. 1. – 9. and 17. and 20. The biggest winners were 23., 22., 21., and the 13. district and the percentage gains in jobs and companies were respective in percentages 140/89, 114/56, 55/30 and 39/34. This development reflects the movement of the population, where the companies and the jobs follow the people. The biggest changes with up to 50% took place in the 1970-ies, especially in the 21., 22. and 23. district, but since then a stabilisation process has taken place.

In respect to the urban development programs, the different programs have different main targets, with partly contrary intentions; for example, small scale segregation versus a side-by-side development of functions. The strong development of the 21. – 23. districts has lead on the other hand to the concept of city regeneration, i.e. a refraining from the city expansion. The strengthening of the economy with and ensuring of the jobs may be seen as partly fulfilled on the overall level. However, such aims could not be satisfied on the district level, even the first district has losses of 24 in jobs and 13% in companies. Nonetheless, in terms of companies there is an upward trend and with stabilising numbers of employment.

## 3.3 **Transport and Travel Development**

### 3.3.1 The Transport and Travel Programs

In 1962, integrated city and transport planning was introduced which should reduce the demand for mobility. A minimisation of the travelling need by a functional mix and a densification along public transport in 1971 meant an explicit disapproval of the Charta of Athens as a reference concept (Hilpert, 1988). The expansion of the transport connection to the hinterland with an increase in commuters was seen as an alleviation of the working force deficits. A securing of the satisfaction of transport needs for the whole population was stated in 1984. Currently, the aim in regard to the modal split has been a reduction of private car use from 37 to 25% by 2010 which should reflect the impact reduction of traffic on the society.

An adjustment, i.e. a widening, of roads in 1962 has been change to an expansion of the road network in 1972 with a further expansion, especially of motorways and the already required reconstruction, in 1984. In the same concept, a traffic calming in the inner city and living areas was proposed. Currently, there are no defined aims although reconstruction and a widening of the motorway is still continuing. The parking management was first introduced in 1972 with a supply of parking space off the streets to secure also the parking for the economic traffic. This objective has currently been restated.

The improvement of public transport has been a constant objective between 1962 and 2001. In 1972, the introduction of the PT integration in terms of ticketing and scheduling was undertaken as an enhancement of the attractiveness. In 1984, the extension and building of the underground and railway lines was combined with an acceleration of tramway and bus.

In terms of pedestrian and cyclists, a separation from other modes of transport was designed in 1962. Since 1972, the promotion of cycling has been a constant issue, which has been amended with an expansion of the pedestrian and cycling network in 1984. Currently, it is stated that there should be even more space for these modes of transport.

### 3.3.2 The Transport and Travel Statistics

There has been a general trend in motorisation of the population, i.e. an increase from 272 cars per 1000 inhabitants to 505. The biggest changes took place in the 1970-ies with growth rates between 40 and 70%. In the last decade, the increase was between 10 and 20%.

The modal split has been measured in relation to the number of trips. The categories are distinguished between internal commuters, who live and work in a district or Vienna, incoming commuters, who do not live but work in Vienna or in an other district, and outgoing commuters, who live but do not work in Vienna or the same district. The considered modes of transport are pedestrians, cyclists only in 1991, individual transport, i.e. car driver, car passenger and motorbikes, public transport in regard to railway, i.e. tramway, underground and railway, and public transport in regard to bus, and others. From Table 1 it can be seen that in Vienna, the pedestrian is the determining mode, followed by car, rail and bus. Cyclists are on the raise. Similar is the car on the increase in all three categories with around 3.5%. PT, when taken together, are on a slight decline.

The influence of the different transport systems can be observed in the commuting behaviour between the districts, where the same trend is also valid for Vienna as a whole. Only the first districts, which differs in magnitude, had usually a relatively high influx of

commuters, (i.e. internal commuters form 52 to 20%, incoming from 48 to 79% and outgoing of around 1.6%). The district and Vienna internal commuting, has decreased from nearly 90% to 75%. In-coming commuters has more than doubled and the out-going commuters has also doubled. The biggest changes took place again during the 1970-ies and currently the changes seem to decline, which can be interpreted as a finalisation of the restructuring of the commuting behaviour (Figure 2).

Year	commuter	pedestrian	Bicycle	IT	PT-rail	PT-bus	other
1981	internal	45,5%	n.a.	29,9%	15,4%	6,8%	2,4%
	in coming	4,3%	n.a.	42,9%	42,9%	8,1%	1,8%
	out going	4,8%	n.a.	43,4%	43,0%	7,6%	1,2%
1991	internal	40,3%	2,5%	33,6%	14,6%	8,8%	0,2%
	in coming	2,6%	0,8%	46,7%	40,5%	9,2%	0,2%
	out going	3,1%	0,9%	46,5%	39,4%	9,8%	0,3%

Table 1: Modal Split in terms of Number of Trips

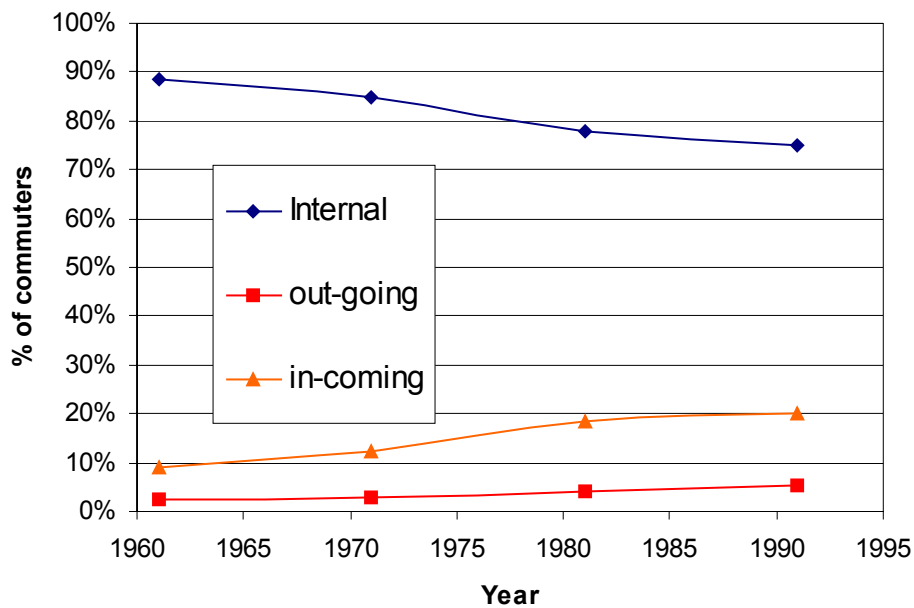


Figure 2: Trends for different commuting types in Vienna and its districts.

In regard to the urban development concepts, there were again contradictory objectives. A densification along PT-lines cannot be successful with an expansion of the road network. This development can be seen in the motorisation and the respective share in modal split which has increased from a supposing small share in the 1950-ies and 1960-ies to around 40%. This means that the policy of “predict and provide” has taken full effect and the increasing percentage means that this development is still continuing. The attractiveness of the PT has not increased in terms of modal split. Even the bringing into service of the underground with a closure of the respective tramway lines could not raise the value. The increase of bus could be interpreted as a replacement of tramway lines. The policy regarding pedestrians did also not have the intended effect. In regard to cycling, the cycle network seems to have a growing effect.

## 4 DATA ANALYSIS

### 4.1 Methodology

The aim of the analysis is to detect the cross-over effects of certain measures. In order to achieve that, a ranking in terms of population, employees and number of companies will provide a list of the districts according to the changes. To distil a representative development pattern, different districts are chosen which rank on the same level in all three categories. The trends of these districts are then combined with those of the transport and travel data to obtain the extent of the effects of the urban development.

From the ranking, four classes are chosen: a class with the biggest losses, one with small losses - and in reverse – a class with small and big gains. The selected districts are the 6. and 7. district for the first class, the 12. for the second, the 11. for the third, and the fourth class is with the 22. and 23. district.

## 4.2 Winner and Loser

### 4.2.1 “The big loser”

The development in relative changes for both districts is nearly identical. The trends in population, companies and employees have similar tendencies, although population seems to be more volatile than the latter two. The motorisation displays a mirror image of the population development. In the 1980-ies, an increase in population had a decrease in motorisation but this was reversed in the 1990-ies. Another mirror image displays internal versus in-coming commuters with an opposite tendency. Whereas in the 1970-ies, the changes in-coming commuters here high with a declining tendency in the 1980-ies, the internal commuter had a low with a growing tendency at the same periods.

### 4.2.2 “The small losers”

The changes in population of the 12. district had a dip during the 1960-ies and 70-ies but since then it balances wavelike around 0%. The number of companies declined similar to that of the population during the 70-ies. But during this decade, there has been a positive increase in employment, which declined afterwards again. This has been met by a high value for in-coming commuters but was afterwards balanced out by internal commuters. The increase in motorisation has declined from 53 to 18% and seems now to have stabilised by 13%.

### 4.2.3 “The small winner”

The development of the population in the 11. district changes follow also in a wavelike shape, with a high in the 1960-ies with 19% and with a low of 2% during the 1980-ies. Since then, it increases by 15% during the 1990-ies. The high increase in motorisation of 66% during the 1970-ies has continuously declined and holds now at 9%. Employment, companies and all commuters form all a convex-shaped curve during the 1970-ies, which occurred a decade later than the maximum in population. In-coming commuters have equalised the deficit in population but since then they are on the decline. The changes in companies showed a sharp increase from -23% to +17% during the early 1970-ies and stand at 13% during the 1980-ies.

### 4.2.4 “The big winner”

The development of 22. and 23. district show similarities until the 1980-ies but since then they have taken slightly different directions. The big increase in population of 53% (23.) and 40% (22.) in the 1960-ies declined to 12% (23.) and 7% (22.) during the 1980-ies. In the 1990-ies the 23. district has further declined to 3% whereas the 22. district has increased to 28%. The motorisation during the 1970-ies and 1980-ies were nearly equivalent from around 65% to 26%. But, whereas the changes of motorisation of the 23. district has not very much further declined to 23%, the motorisation rate of the 22. district has declined to 12%. Similar to “the small winner” are the development of employment and commuters with the hill-shaped curves with their highs during the 1970-ies. In terms of companies, the sharp increase of the 22. district has level out in the 1980-ies whereas the 23. district had still a fairly sharp increase in the same period.

## 4.3 The General Trend

The relational development of population and economy depends on the degree of urban development, i.e. if the urban system is already established or if it is in development. In the established case, there is a fairly parallel development and in the developing case there is a time-lag of around one decade. There is no direct relationship between number of companies and employees, which means that the number of companies can decrease but the number of jobs can increase. The indicator of jobs per company may provide some clarification but these might also depend on the type of company.

In terms of a restructuring of an established urban system, the supply for jobs can be compensated with in-coming commuters but they will decrease as the newly local population will then take over. In this way, high internal commuting increases the local development. The question, if in-coming commuters can compensate the loss of population for economic development, can be answered in a negative way, which means that the local population provides jobs and companies.

But the indirectly proportional influence on the urban population can be observed in respect to motorisation. The general trend for the established urban structures is that is the motorisation creates losses in population, and later on in jobs and companies. This development can also be observed in the established districts and in developing districts. Although gains of population in the early stages take place, but, after around 20 years, where the local population enters the stage of stabilisation, the reverse effect will take place. These shows that the development of the transport system with motorisation and commuting patterns can be used as an active tool for the urban development in both directions, i.e. positively as well as negatively.

Despite these results it should be noted that the mentioned time periods might be dependent on the measuring period. But since they are held in a fixed interval, a statistical or system analysis would provide a more detailed answer. The analysis also shows that, the Viennese hinterland should be considered in a more comprehensive analysis, since the commuting migration may play a considerable part in the development of Vienna (BRUNTSCH, 2002).

## 5 DISCUSSION AND CONCLUSIONS

### 5.1 Population and Migration

It can be assumed that the argument behind the counterbalancing policy was the creation of a “healthy” population density. On the other hand, the statistics already gave some evidence for a decline of population, which was correctly adopted. The migration from

outside, especially that from foreign countries, has helped to prevent a further decline since that of the federal states was not enough. This would also mean that without any measures such a decline in population density would have taken anyway and the development was emphasised through the measures of “counterbalancing”. Also the migration to the outer districts could already be observed in late 1950-ies where increases up to 20% for the outer districts and loss of around 10% in inner districts have occurred. In combination with the motorisation and the expansion of the road network, the population development has received a further impetus since, as it can be assumed, a decline of up to 50% was not intended. In future, a policy of healthy population density should again be adopted with a value of around 25000 inhabitants per square km, which is also mentioned in the Charta of Athens (Hilpert, 1988, KNOFLACHER, 1996). If this value is compared with current values then only two district would satisfy this criterion, the 5. and the 8. district. The 4., 6., 7., 15. 16. and 20. district have values between 15000 and 20000. All other districts are below these measure. (see Figure 3). This would also have a positive effect for the economic development.

## 5.2 Urban Structure and Economy

The idea behind the strengthening of the local centres could be associated with the idea of sustainability, which should be combined with the notion of self-sufficiency. This would also mean a minimisation of commuting with a maximisation of internal commuting. The analysis shows that this can be assumed to be a natural development. In a similar way, jobs per inhabitants would provide another indicator for a sustainable urban structure, which would mean a correct mix of functions that has not taken place. A ratio of around 0.75 would constitute a self-sufficient and sustainable mix. Above this ratio there are too many commuters, which would be missed in the surrounding areas, and below that ratio, it would mean that the area is mainly for living. Figure 4 shows the number of jobs per inhabitants. It shows that the mix of functions with the establishment of local centres has not taken place and there is a disproportional commuting from the Viennese surrounding regions. A further influence can be expected from quick means of transport, which enable the establishment of a large catchment radius and increase further the separation of functions.

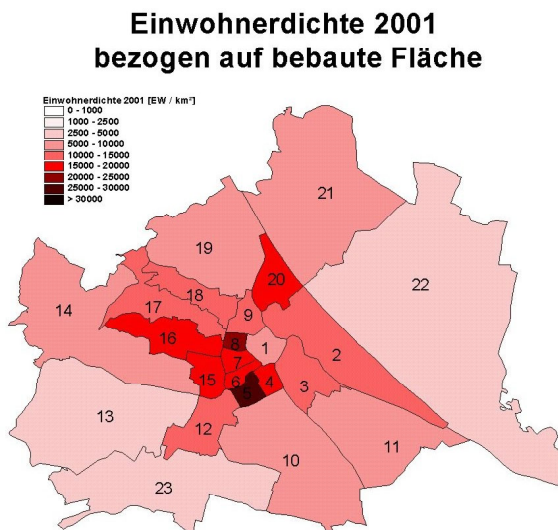


Figure 3: Population density in relation to the building area in 2001

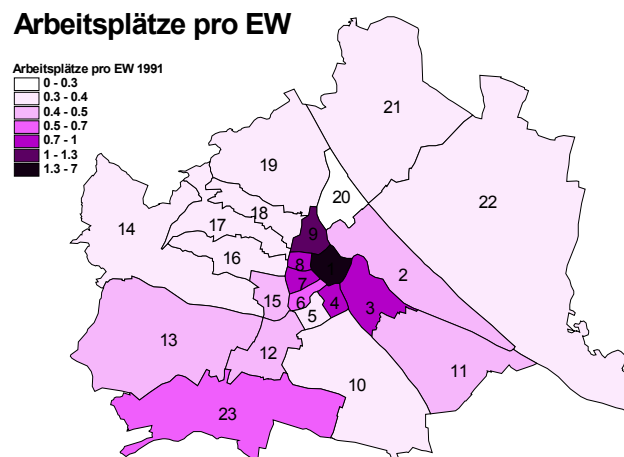


Figure 4: Jobs per Inhabitants in Vienna 1991

## 5.3 Transport and Travel

In the data analysis, it could be shown that the transport system has a direct influence on the urban structure and the population. With the technical development of quick means of transport and their greater reachable distances (KÖLBL, 2000), the migration and restructuring of the city would have taken place in any case. In addition, with the motorisation of the population (due to the economic progress, etc.), this development would have added further impetus. However, the biggest influence came from the expansion of the road network and with that went the chance of an active control of urban development. This measure has turned nearly every well-intended goal in the contrary. Thus, the “hindsight argument” could be used as an excuse. But the Austrian economist Leopold Kohr has already shown in his Speed Theory of People (with the mass of people times its moving or circulating speed, in relation to its living area) that the problem is not the mass of people or the living area but the moving speed (KOHR, 1962). And it should be noted that the book was published in 1962, at the time of the first Viennese urban development concepts.

Although the development of the road network has been taken off the agenda, either out of necessity, (i.e. since there was no more space available) or intentionally, (because the negative developments were already visible), a certain stabilisation has taken place. This stabilisation seems now to be interpreted as a kind of stagnation and, therefore, further plans have been drawn up for another major expansion of the road network with a ring road around Vienna (the old B301 and B302 and newly called as S1 and S2) and the North Motorway A5. In reflection to the analysis, it can be seen that such plans would additionally “drain” Vienna and would further stimulate an outward development. This should also be seen in view of not being able to learn from other cities such as London or Paris, apart from many American city, and a blindly following of the “idea of eternal economic progress”.

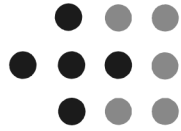
If the aims of the urban development programs, such as the car reduction in modal split from 37% to 25% in 2010, are taken seriously, the following measures should be introduced.

1. Direct measures: A reduction and redesign of roads and road network, a densification of the PT systems with shorter intervals, an expansion of the pedestrian areas and the cycle network, and last, but not least, a parking management according the equidistance concept (KNOFLACHER, 1996).
2. Indirect measures: Attractive design of the street space, planting of trees, densification of housing, etc.

Implemented on a large scale, these measures would provide the correct basis for the above objects and thus strengthen the economic development of Vienna. Furthermore, Vienna could display a positive example, especially for those cities, which enter the EU zone, so these “developing” cities do not have to make the same mistakes as the so-called “developed” cities.

## 6 REFERENCES

- BRUNTSCH, S. (2002) Stadt-Umland-Verflechtung und Verkehr - Möglichkeiten zur Reduzierung des Verkehrsaufwandes. In Institut für Verkehrsplanung und Straßenverkehr TU Dresden, Dresden.
- HERRY, M. and SAMMER, G. (1999) Mobilitätserhebung österreichischer Haushalte - Bundesverkehrswegeplan. Arbeitspaket A3-H2,, Wien.
- Hilpert, T. (Ed.) (1988) Le Corbusiers "Charta von Athen" Texte und Dokumente: Kritische Neuausgabe, Verlag Vieweg, Braunschweig/Wiesbaden, Germany.
- KNOFLACHER, H. (1996) Zur Harmonie von Stadt und Verkehr: Freiheit vom Zwang zum Autofahren, Böhlau, Wien.
- KOHR, L. (1962) The overdeveloped nations, Econ-Verlag, Düsseldorf, Wien.
- KÖLBL, R. (2000) A Bio-physical Model of Trip Generation/ Trip Distribution. In Department of Civil and Environmental Engineering University of Southampton, Southampton.
- RAINER, R. (1962) Planungskonzept Wien,, Wien.
- STADTFORSCHUNG, I. F. (Ed.) (1973) Wiener Stadtentwicklungsenquête,, Wien.
- WIEN, M. D. S. (Ed.) (1973) Statistisches Jahrbuch der Stadt Wien,, Wien.
- WIEN, M. D. S. (Ed.) (1977) Statistisches Jahrbuch der Stadt Wien,, Wien.
- WIEN, M. D. S. (Ed.) (1980) Statistisches Jahrbuch der Stadt Wien,, Wien.
- WIEN, M. D. S. (Ed.) (1985) STEP Wien - Stadtentwicklungsplan Wien 1984,, Wien.
- WIEN, M. D. S. (Ed.) (1989) Statistisches Jahrbuch der Stadt Wien,, Wien.
- WIEN, M. D. S. (Ed.) (1993) Statistisches Jahrbuch der Stadt Wien,, Wien.
- WIEN, M. D. S. (Ed.) (1994a) STEP 94 - Stadtentwicklungsplan für Wien,, Wien.
- WIEN, M. D. S. (Ed.) (1994b) Verkehrskonzept Wien - Generelles Maßnahmenprogramm,, Wien.
- WIEN, M. D. S. (Ed.) (1998) Statistisches Jahrbuch der Stadt Wien,, Wien.
- WIEN, M. D. S. (Ed.) (2001a) Stadtentwicklungsbericht 2000,, Wien.
- WIEN, M. D. S. (Ed.) (2001b) Statistisches Jahrbuch der Stadt Wien,, Wien.



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