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SUSTAINABLE DEVELOPMENT, LAND USE AND GROWING MOBILITY IN CZECH CITIES

Introduction

Essential changes in the settlement structure of European countries affect the style and life quality of their inhabitant; this particularly applies to senior citizens, who are generally less healthy, not too rich and less mobile.

Since the 1960s, a new phenomenon has started to occur in the statistics of cities and urban areas of East and Central Europe: the largest cities have stopped growing and marks of de-concentration have arisen. At this time, geographers of settlements have come up with the "general theory of modern urban development". This theory is based on the assumption that the development of cities consists of successive phases of urban development (for example Berg, Drewett, Klaassen, Rosi, Vijveberg, 1982, or Cheshire and Hay, 1989). According to this theory, which serves as a general model, certain cycles are always repeated in all cases of urban development; first of all they appear in innovative centres and then they are extended to the rest of the world. This conception is in compliance with the general theory specifying that urban process be determined by economic development and industrialization, which has a crucial impact on optimal location of population. The optimum is more or less independent of the political system or social and economic establishment, which only constitutes side and modifying factors. The basic urbanization model is partly modified by historical and national features of different regions.

Impact of transport on the development of 21st century settlements adn urban areas

Phase 1: Urban development

Cities have found a new place on the geo-political scene: municipal structure has become a dominant type of structure throughout the world. An ability of cities to integrate and civilize has sometimes collapsed as a result of municipal expansion, supported by rapid economic growth.

The basis is the urban development process: large industrial complexes are established in settlements and grow rather quickly; this means that workforce coming from rural areas can settle there. The development of technology is a key factor influencing the development of a modern city. It enables mass production, distribution as well as consumption of goods. Technological changes in one area are always accompanied by changes in a social structure. For example: changes of economic institutions induce changes in the structure and function of families. Rapid industrialization brings about the need for a new educational system that, in turn, produces a number of well-educated and skilled operatives. Industrial development is accompanied by a number of social and economic changes, influencing the speed of urban development. These changes can be measured, for example by measuring the changes of work productivity, participation in political life, participation in management, etc.

In open communities, rapid industrialisation and induced urban development enable a considerable amount of social mobility. The economic growth thereby induces the need for flexible adaptation of economic and social institutions, which can then stimulate the economic growth. The political and economic system is thus adjusted to follow the technological changes. Rapid urban development causes radical re-structuring of the social structure:

- It brings considerable social mobility, when the speed of changes depends on the current social structure, required changes and tensions among them.
- Change of roles and statuses: new professional roles, new positions and methods of management, new system of remunerations and sanctions, new standards of effective performance and new values.

New technologies and a new order thereby altered cities into something more than just the centres of religion and government. Settlement structure changed significantly: apart from the development of a capital or several major elements, a number of industrial cities were formed. In the cities themselves, residential development took place in the proximity of factories and centres - due to the underdeveloped public transport. Further up growth was experienced as a result of developing transport, building railways, constructing water supply and sewage networks, and establishing basic forms of residential development and city formation. A usual form was that of a radial-concentric city - a star-shaped urban conglomeration the arms of which extend in the shape of roads. Industrial urban development culminated by establishing coherent urbanized areas. The term conurbation is sometimes used; this term was invented in 1915 by Patrick Geddes to describe large city regions such as Great London, New York - Boston conurbation or the Ruhr Basin. It is not a statistic concept; it depicts a large city or conglomeration of large cities. In this way, coherent urban and industrial estate is

formed. In many cases transport systems provide for the connection of all parts of the conurbation, thus forming a single municipal labour market and traffic channels. The term "urban conglomeration" is also used as well as "metropolis" in the United States.

In Central Europe and in Eastern Europe in particular this process bears some special features different from the general model: in comparison with Western Europe, changes are often delayed by several decades and the transformation of the settlement structure is not so aggressive - depending on various political factors and slow changes in agricultural production. At the beginning, gradually liberated labour force can merely find a few job positions in the industry. This process is only accelerated later on. In some areas, intense urban development takes place during the controlled, so-called "socialist urban development" after the World War 2nd; optimum infrastructure, however, is not created. The term "suburban development" is used to describe the situation in former socialist countries where the growth of industrial conglomerations is not accompanied by corresponding development of habitation and urban infrastructure to serve the labour force. Urban development is thus delayed as regards two aspects: the number of people working in cities significantly exceeds the number of those who can settle there; this has resulted in a great number of commuters. The level of infrastructure is not in balance with the amount of urban population, and newcomers therefore usually settle in housing estates on the outskirts of the cities.

Even though rapidly growing conurbations in developing countries seem to be the greatest problem, the share of urban population in Europe has exceeded eighty percent; it means that Europe as a whole has reached the "ceiling of urban development". The European Union has responded to this situation by the scheme supporting the country, but good intentions have still remained more or less on paper. It is beyond any doubt that the issue of growing cities will become a central topic for permanent sustainability of life viewed from the environmental point of view.

Phase 2: Suburban development

The suburban development is the accompanying phenomenon of a new phase of the socio-economic revolution, when the focus of economic activities is shifted from the industrial production to services that are demanding in terms of knowledge, skills and supply of information. This "economy of services", based on the vision of technological and managerial revolution according to the theories of Daniel Bell, John Kenneth Galbraith, Zbygniew Brzezinsky, Kenneth Boulding and Amitai Etzioni constitutes the economy of information based on education, schools, science and specialized management as a critical resource of development. Research and development people as the "workers of

science" and the people working with information constitute a crucial element in the post-industrial society which again puts emphasis on planning; an interconnected network of corporations and governmental bureaucrats is formed controlled by managers and technical specialists who, rather than owners and politicians, represent the elite of power and prestige.

The 2nd phase changes in the settlement structure are thus induced by the changes in economy and society. This process is influenced by the attenuation of heavy industry and departure of workers to the tertiary area and light industries producing on assembly lines requiring single-floor industrial halls with large areas. The easiest thing is to construct such halls in the green belt; due to the sophisticated equipment used, they require extensive capital. They are mechanized and automated and do not therefore require many employees; as a result they can be built in greater distances from city centres. This is the reason why such high-tech operations are built in suburban areas where their construction does not cost so much; due to the character of their production, they employ more qualified labour force. Traditional production, which employs less qualified and less paid labour force, remains in city centres.

Administrative and research parks with pilot operations thereby follow industrial parks in suburban areas which enable to take advantage of new, fast roads, cheaper construction plots and ample parking space, and to avoid the drawbacks of the city, such as bad quality of environment, crime, growing poverty in central areas and other negative phenomena. Administrative parks represent cheap locations for companies that are not established yet and need cheap start-up conditions. Due to the overpressure of investments, new, mainly storage and commercial constructions proliferate "in the green belt" in the proximity of urban conglomerations. Shopping centres have grown almost spontaneously along outward-bound roads and motorways are rimmed by tens of kilometres of metal-sheet assembly halls, warehouses and shops. Cities are thereby chaotically extended at the expense of agriculturally utilized countryside, which again increases pressure on non-ecological intensification of agricultural production.

We can witness the stopping pace of traditionally fast urban development, typical for first post-war period. Extensive urban development is slowing down and increasing numbers of population are leaving large cities; on the other hand, living environment and infrastructure in the suburbs are improving (shops and facilities have followed people) as a result of a growing number of job opportunities and increased income of people living there (mostly middle-aged qualified "white-collars"). Tertiary aspects affecting the society in most advanced countries have lead to changed requirements for housing. People who have an opportunity to get means of individual transport change their places of living. An increased use of cars enables greater groups of population to move quickly between their homes and workplaces. Leaving the city is

becoming more characteristic of richer population, for whom satellite or villa towns, adjacent to suburban areas or neighbouring villages, are built in the proximity of larger cities. The term of "social exclusiveness" of new locations is starting to be used, which causes the increased concentration of socially similar groups. Newcomers usually do not come in contact with the original village population because of their considerable social distance.

The uncontrolled growth of cities further reinforces all unhealthy social trends regarding both power consumption and agricultural areas. Weekend trips of city population to the country will start reminding us of moving of nations polluting the environment with exhalations - if, however, it is at all enabled by the collapsing transport system. Under these circumstances we need to view the countryside utilization and the structure of population distribution more pragmatically as this view will highlight transport requirements. The cities suffer from the fact that in many places cars have pushed out life represented by pedestrians. Cars took over roads, pavements, squares and embankments. The reason behind it was the desire to be able to reach any point by car, which often relates to the feeling of freedom. The following applies here: the denser the population within the city, the lower the requirements for transport and the greater space for free countryside and wild nature. From these findings, the European Transport and Environment Federation have derived principal recommendations for urban and regional planning. Various surveys of power consumption in transport have shown an unambiguous link between the population densities, distances between individual cities and power consumed in transport. The project says:

"... the need for travelling sharply declines if the population density of a given place increases to 50 persons per hectare. If the population density is lower than 30 persons per hectare, the dependence on cars seems to be inevitable... The cities with the population density of 17 persons per hectare and with the most decentralized residential structure use 70% more power than cities with 33 persons per hectare and with high concentration of flats" (Greening, Urban Transport, 1999).

The figures shown are quite clear and supportive of the pragmatic view of the relationship between the country and city centres. From the transport point of view, living in the fresh country air near the nature but with a necessity to commute to the city is much less healthy than living in city centres.

Suburban development, depicting the growing of the city at its outskirts, is closely linked to the process of spatial specialization and segregation. It entails the concentration of certain branches of industry in certain parts of the city and the concentration of certain groups of population in specific zones of urban structure. The specialization and segregation for example lead to an increased distance between homes and places of work. As these processes are usually not coordinated and occur independent of the existing transport system, distances are ever increasing, put pressure on the use of cars and disadvantage public transport (De Boer, 1976). This is a gradual process in which public transport looses its meaning and subsequently ceases. As a result, numerous categories of population, senior citizens in particular, have an aggravated access to transport and their spatial mobility is decreasing.

Phase 3: Suburban de-development

This phase has been induced by changing production technology when the production on assembly belts has been replaced by a cooperating network of smaller operations, active in great distances from city centres. Statistics show that small-sized and medium-sized companies account for an essential part of the economic growth; an average size of companies decreases. Export articles are increasingly de-materialized; they consist of information, services or innovations. The growing role of tertiary sector (services) contributes to the migration of population to smaller settlements. Companies providing services also migrate to places with cheaper land and labour. This trend has instigated an immense development of distant transmission of information (faxes, mobile telephones, computers connected in networks, the Internet, telecommunication satellites, etc.). Thanks to the telecommunication technology, both companies and financial operations can be controlled from more distant locations. Due to traffic congestions inner parts of cities are becoming less accessible for their inhabitants. This is accompanied by non-regulated growth of cities, crises of transport systems and increased individual use of cars due to the construction of commercial shopping centres and residential zones, and sometimes due to non-coordinated residential building.

To deal with the issues of traffic and parking, costly transport and parking facilities are built. Conditions for enabling the transport to become more intense are also established. In consequence we can witness a massive mobility of people and devastation of the environment even beyond the borders of the affected regions. Historical centres of cities are often damaged and the environment deteriorates. It is paradoxical that the construction of speedways connecting suburban developing locations with the central part of the city can contribute to the destruction of the central parts of the city by enhancing the dispersion of functions crucial for the centre. It means that if the concentration of retail, light production, recreational, cultural and educational functions, vital for this part of the city, decreases, the centre will be destroyed. The road system supports spatial distribution of population, but also enables the shifting of vital activities to new, more distant centres.

Another problem has been created by ill-considered and non-regulated growth of administrative buildings in European city centres. Where new buildings could not be built, old buildings were used. Bad luck for people who lived there, senior citizens in particular. Adjacent historical squares then automatically became parking places. We

recognize such derelict places according to their negative attitude towards pedestrians. Buildings are so close to the roads that there is no space left for pavements and great distances do not enable access other than by cars to these places. We all know this situation from our shopping centres at the outskirts of cities. Very little is gained by this approach, and the tendency of inhabitants to leave cities is increasing as the cities become uninhabitable; all negative civilization aspects are often concentrated there. This induces an increased desire of people to spend as little free time in cities as possible; and they have more and more free time. Urban population thus drives out of the city, first of all to places in their vicinity; due to the extending suburban areas, however, they are forced to drive longer distances in their objective or subjective effort to get to the contact with intact nature and spend time in undistorted country. The increased use of cars dramatically damages the environment; this phenomenon has also approached places that so far have been affected less. The term "urban sprawl" is used to describe this tendency. Shopping and cultural centres are also built outside the city in the proximity of motorways to enable the mass of customers to park. And this again aggravates the transport conditions (congestions, combustion gases and dustiness, incidents, etc.) near large cities.

In European cities senior citizens comprise relatively big portion of the inner city inhabitants. Due to urban development and not appropriate urban planning policy they lose the access to the facilities they need (shopping, sport, leisure and medical care). Cities are endangered by the leakage of investments from central parts, the so-called "urban sprawl", growing social separation arising from different income levels and social statuses, deteriorating living environment in cities, loss of agricultural land and original countryside environment, and erosion of architectural monuments. The image of city centres is aggravating; the press refers to the "crisis of cities", "decline", "pathology", "alienation" and decreasing investments in these areas. Changed accessibility and deteriorated quality of the environment (noise, air pollution, vibrations, etc.) may induce migration. People of higher status move out of these locations because they feel that they are becoming less inhabitable. The population migrates to less urbanized places which, however, must be easily accessible. Then it is followed by services that contribute to a fast development of new settlements, often at the expense of the quality of the environment. Increased mobility becomes a feature of the era; it has, however, some drawbacks. In reality, attachment to a certain place is nothing restricting; it enables, for example, intensification of human relationships. Every year several hundreds of inhabitants leave our large cities. As we mainly experience migration of families with medium and higher income, we lose their contribution in the form of taxes, which could be used for restoring neglected and declining parts of the city. The same applies to companies and institutions moving out of the city; in a certain sense they are lost for restoring existing industrial areas, the so-called "brownfields".

The settlement network thus becomes more balanced. The city centre population is quickly declining; the same applies to the number of job opportunities. As a result, we experience the transformation of formerly overpopulated inner parts and transition zones. Some parts of the city lose their function or become inhabited by groups of lower status. These groups occupy the emptied areas; consequently, social problems start to occur. In the last twenty years, the power of globalisation gave rise to a strong social polarization, which is mainly distinct in urban residential areas: they are considerably socially fragmented and segregated. Sooner or later there will be no other option but to rehabilitate the living areas that are becoming redundant. At some places this process have gone that far that some functionless areas have been grassed or restored.

Phase 4: Urban re-development

Urban re-development is closely linked to the world economy: some metropolises have got into a special, positive situation and become nodes of increased flow of information and capital (which gave rise to the term "nodal urban development"). The new expansion of some city centres may be caused by decline of traditional industries and increased role of information processing and services. Another factor is the response of large cities to suburban de-development: restoring central parts, adopting legislative measures slowing down the suburban de-development, decreasing volume of transport (micro-electrotechnics) and evener distribution of job opportunities in the city structure. An effort to make the cities attractive again is quite distinct; it is done by the application of permanently sustainable development procedures, prevention and restriction of social exclusiveness, cooperation among managers, new approaches, cooperation and mediation. Urban development has become a tool for making the cities more attractive for business, investments and tourism and for increasing their value in the highly competitive global market. This is demonstrated by renewing the formal image of the cities, for example by restoring street systems, urban avenues, embankments and squares for municipal celebrations, building new and restoring old parks, or building shopping streets and parking areas. This brings some groups of population back to the cities. To make this trend sustainable, central urban parts are renovated to become attractive for industry, business and tourism. In newly restored inner parts of the cities, more solvent groups move to renovated houses, thus pushing lower classes out of the habitation market. Habitation is often replaced by administration and business. It is not always necessary to tear down older buildings; it is often possible to find a new use for old warehouses, breweries or assembly halls. These buildings, abandoned in the past by the middle class and businesses, are offered by prudent and enterprising administration of some cities to attract companies and international capital to re-invest in these locations. The

efforts made aim at restoring existing city centres with coherent urban regions, reconfiguring rapidly growing large city suburbs to communities with positive neighbouring relationships, and maintaining natural environment and architectural legacy of past generations. This process is described in different ways: revitalization, gentrification, renewal - when the transformation of the negative, "dead", "poor" and "non-productive" environment into something positive, "live", is emphasized; the quality of the environment and the commercial price of land is increased in a costly manner, and this results in the situation when the city centres adopt the features of sub-urban administrative parks.

At the end of the 20th century and in the 21st century, Europe experiences the renaissance of cities. City centres, often considered as bad and therefore ignored and abandoned after repeated waves of suburban development, have again become the centre of life. The renewed cities have restricted individual transport, supported and developed public transport, ecology, and have given preference to humans over cars. We can see increased investments and economic movement, which instigates the growth of job opportunities in city centres. We are witnesses to the expansion of cultural facilities, innovation of retail, growth of urban tourism and consequent new image of some cities or their parts. New "urban" or "street" sports have been re-invented (for example streetball, skateboarding, jogging, roller skating), social, conference and entertainment complexes have been built. The demand for habitation has risen, which may result in increased numbers of population. An important objective is to maintain a certain share of habitation in city centres so that they do not become a single, huge office which is dead at night. Permanent inhabitants provide for the feeling of occupancy, warmness and life, which is mainly felt at night when the streets are enlightened by the light from windows.

It is important that public opinions have also altered. The attitude to cities is changing. The image of city centres is improving; they are mentioned in a number of articles in the press. Despite the burden of the heritage of the past, economic, social and cultural forces have come up, united in the name of traditional city values and urban life. The scattered house building in the areas caused by the suburban development is criticized and disadvantages of suburban lifestyle are discussed including boredom and stereotype in suburban areas and their negative impact on children and adolescents. There is often saturated demand for habitation in suburban areas and their commercial facilities. On the other hand, new job opportunities in urban locations increase the purchasing power of urban population. Demographic characteristics are changing and new types of family structure and ways of living are arising. More qualified and wealthier population needs diversity and stimulation, it searches for "the spirit of the community" and the "identity of the place". Environmental awareness is increasing as well as protective approach to the city values. The cities thereby re-attract people who wish to live and work in them or visit them for tourist or cultural reasons.

Conclusion:

Generalized findings of individual cases of successful urban re-development show that ideal would be to have a compact city with the mobility protecting the living environment. Such a city would not only be able to stop the draining of people away; it could even increase the population. This would have positive consequences on social diversity, protection of land resources, concentration and optimisation of urban services, possibility of building intra-city optimised transport routes, constructing cycling routes and pedestrian zones. The use of good quality city public transport would increase. It has been proven that the intra-city passenger transport by people's own cars can be limited by introducing effective public transport which can decrease the volume of private transport by up to 20-30%. Compact urban structure and mobility protecting the environment will also result in a higher economic effectiveness by making the city centres more attractive; costs of infrastructure, such as transport routes, will also decrease.

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