

PARTICIPATORY MEASUREMENTS OF SUSTAINABLE URBAN DEVELOPMENT AND QUALITY OF LIFE IN POST-SOCIALIST ZADAR, CROATIA

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Over the last two decades, there has been an intensive discourse and research about measuring sustainable urban development. Many cities, regions and countries have decided to introduce indicators for monitoring and measuring the progress towards sustainability. Today there is a wide spread perception that information on the environment in general, and urban environment in particular, is the determinant of effective rational decisions and allocation of resources. Such information would enable planners and decision makers to formulate redistributive policies and programmes to address some of the disparities that exist in a post-socialist city. Cities of the post-socialist world characterized by sharp disparities, socio-economic contrasts and environmental degradation provide an excellent laboratory for tracing information on the quality of urban life. The current situation in the emerging Croatian coastal city of Zadar reflects the diversity of the post-socialist urban change in a very fragile Mediterranean landscape.

This paper takes a critical look at sustainable development and its measurements. It describes the participatory approach through which different local communities in Zadar were evaluating quality of life based on basic pillars of sustainable development. The identification and collection of their opinions provide valuable data base and community input into urban governance and development planning decision making.

Key words: sustainability, urban indicators, monitoring, sustainable urban development, GIS

THEORETICAL BACKGROUND

Measuring the quality of urban life has a long-standing tradition and abounds in both academic and technical literature (Gahin, Paterson, 2001; Ghosh, Vale & Vale, 2006). These measurements were developed within social sciences (Sawicki, 2002), mostly in urban sociology and ecology as antecedents of inter-disciplinary urban studies (McDonald & Patterson, 2007, Wong, 2002). Their specialised applications in urban planning and governance based on principles of sustainable development (Flood, 1997) became recent phenomenon. What is to be said about measuring the quality of urban life nowadays, especially when new urbanism is emerging through the influences of globalisation and glocalisation? In today's dynamic urban world, where both major and small key players strive to achieve their interests, urban indicators are useful "instruments" for decision making. Although significant progress has been made, few efforts have explored local participation in developing indicators which can be used for preparation, implementation, monitoring and

review of urban projects (Revi and Dube, 1999; Fraser et al. 2006).

A contemporary system of sustainable urban indicators helps in giving answers to several important questions such as: Does our city become a better or worse place for living and working? Do its plans and programmes address citizens' requirements and needs? Do they contribute to the improvement of the overall urban environment? Do they effect displacements, in what sense and to what degree? Naturally, all these queries require the availability of a very specific type of information which can be generated from different sources framed by an information pyramid composed of **indexes**→**indicators**→**information**→**data**¹ (WRI, 1995), all shown in Fig. 1.

Urban indicators are simple instruments for multidimensional measuring of the well-being or quality of life in urban settlements which include a natural, built, economic, social and political environment. In a technical sense, urban indicators are the presentations of information that show changes and trends through the course of time. In organised and established systems, the indicators are usually illustrated as diagrams, maps, graphs, schemes, tables, and figures, enabling people to see the trends in the simplest and fastest way. Laurini (2001) especially points out the prominence of multi-media and geographical information systems (GIS), which affect the extreme processing precision, presentation and information use in urban systems and e-government applications. Nevertheless, there are many forms of transforming information into comprehensive indexes using audio-visual media, graphical design, arts, web and similar.

¹ Indicators contain the information based on primary and analysed data. They are utilized in order to quantify the information, stressing out its importance, as well as to simplify the comprehension of information on complex and composite phenomena such as a

sustainable development (World Resources Institute – WRI, 1995).



Fig. 1 The structure of the information pyramid
Source: Modified based on Spreng & Wils (1996)

Although, there are many differences how indicators can be used in urban sustainability applications, one option is to use them in order to improve **awareness** of the needs for sustainable development in a city. The other function may be within the

sphere of **monitoring** wherein the indicators have to be selected in order to describe situations susceptible to changes. Indicators of facilitation and the process of **decision-making**, where it is of utmost importance to implement adequate development methods and compare development alternatives with their various effects. When used in **development control**, indicators provide the information on the distance from the proclaimed objective. In this case they combine the function of measuring the sustainable development progress with functions that indicate the necessity to take actions. And finally, indicators are used as **reference points** for performances testing, i.e. so-called benchmarking. Hence, individual cities may get a clear idea of their positions in relation to other cities in the country or an international level, i.e. they may easily compare their own comparative advantages and shortcomings and on the basis of which can take relevant measures and activities.

In the context of sustainable urban development, indicators are effective tools for the monitoring of urban progress congruently with the formulated objectives (Innes and Booher, 2000). At the same time they indicate how far the realisation of proclaimed objectives is from the present stage of urban development and what the deviations from the planned course are. In the case of preventive actions, indicators of sustainable urban development contribute to the increased efficiency of implemented plans and programs, making decisions important for a city and its complex

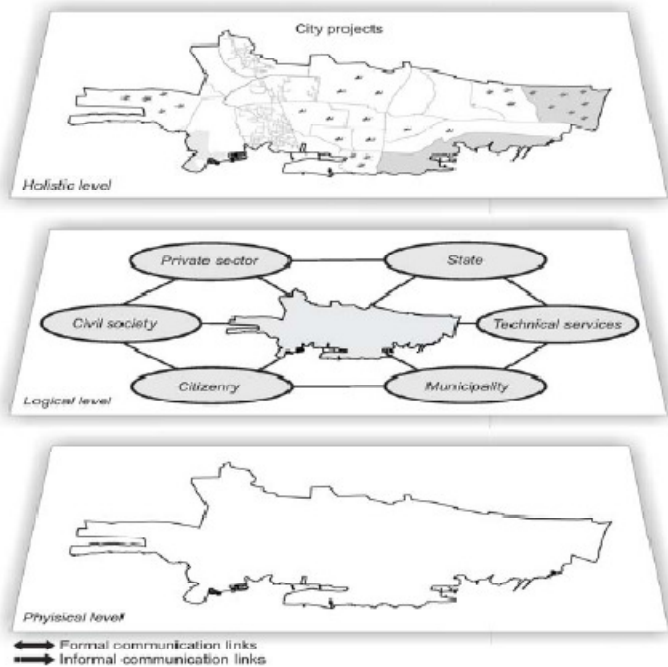


Fig. 2 Systemic approach to urban planning process, its components and stakeholders
Source: Modified based on Rappeti and Prélaz-Droux (2003)

social, economic, built and natural environment systems.

The most common criticism refers to the development of indicators in isolation and without consulting complex experiences such as work on "casual networks" which may contribute to more appropriate environmental policies and better management decisions (Niemeijer & Groot, 2008). Similar to this, Gustavson and his team (1999) argue that the indicators are usually developed along political boundary lines, while in reality, the ecosystems and natural zones do not conform to them. In this case, the indicators of sustainable development lack so-called "design perspective". It is also stressed that important issues cannot be ignored simply because some of them are not measurable by adequate indicators and that measurement plays an important role and helps in understanding the quantitative and qualitative aspects (Hodge et al., 1999).

These findings are certainly important for our approach where, in the process of creating a model for selected coastal cities in Croatia, the

intention was to avoid problems facing authors in other countries (Moles, Foley, Morrissey & O'Regan, 2008). Due to this reason it was essential in the case of Zadar, to test the "bottom-up approach" in combination to various other models, wherein the citizens and their opinions on a multidimensional environment are placed in the centre of information gathering and their transformation into indicators. Participation, individual capacities and coordination by local authorities have been identified as key factor for improving the efficiency of the system of actors in charge of urban management. Therefore, our research method focuses on the information retrieved from citizens as the special group of stakeholders in diverse urban arena (see Fig.2)

THE PROBLEMS OF URBAN SUSTAINABILITY IN A POST-SOCIALIST CITY

For the last 20 years most cities in Central and Eastern Europe have passed through a process of intensive political, socio-economic and physical transition. Growing disparities and the influence of a capitalist model of economy are

reflected in all pores of society, and have affected the planning, construction and management of cities. A shift from central planning to a market-oriented economy offers huge opportunities for improvement of economic prosperity and quality of life for the urban population (Tsenkova, 2000). The principles of allocation and distribution of various social groups change rapidly, especially in the domain of residential building and office and commercial complex developments by example of (sometimes too hastily) adopted western models. Furthermore, urban forms are also transformed with an adverse effect on the environment, mostly noticeable on so-called soft locations in suburban zones. Uncontrollable urban expansion better known as "urban sprawl" becomes one of the pressing issues in the activities of a series of actors with different interests in use and construction of urban land (Cavrić & Nedović-Budić, 2007). A definite influence of the urban sprawl and development of a consumer mentality, even though still not in compliance with productivity and purchasing power become dominant processes in Croatian and other cities of the former Yugoslavia (Budić & Cavrić, 2006; Berke & Conroy, 2000). In such a situation, the questions of sustainability, quality and control of future urban development arise.

Today, Croatia finds itself in a gap between demands for faster economic development and demands for protection of the urban environment and natural heritage. Numerous governmental, parastatal and non-governmental agencies, together with civic groups are trying to find compromise solutions to meet public and private requirements, to direct and decide upon urban resources. Simultaneously, a large number of domestic and foreign developers act on strict profit principles only, which is usually opposed to proclaimed public interests. Independently or with the assistance of well established political and economic lobbyists, they usually do not take care of social justice requirements, subject to which all citizens are entitled to have an access to basic urban services and resources and to enjoy a good quality urban environment. These contradictions are especially noticeable in larger cities such as Zagreb (the capital) in which, at the beginning of 1990s, market urban

economy and legislation – different from those of the socialist times, prevailed (Cavrić, Nedović-Budić, 2007). Nevertheless, this process slowly triggered even the medium-sized and smaller cities outside the Zagreb influential zone.

Unfortunately, at present, sustainable urban development in Croatia is still practiced mainly within a declarative sphere full of rhetoric, although this concept has been implemented worldwide since 1987². Urban dwellers of small and large cities, throughout the world, were governed by additional ideas of "healthy", "intelligent", "safe", "global", "informational" and "computerized" cities (Castells 1989, Tarik 1991, Atkinson 1996, Saskia 1991, Stephen 1997, Hall 1999). Almost in all these cases the maintenance and improvement of the "quality of urban life" as a whole or the parts thereof (districts, neighbouring communities), were a priority. Notwithstanding the requirements and messages they sent, the citizen wish to ensure that future generations inherit healthy, vital and interesting places for living. Furthermore, a basic concept of sustainable development has been also improved through theoretical considerations of "survivalability", "equity", "evolutionability" and "good heritage", proclaimed by several scientists (Meadows 1995, Marcuse 1998, Keiner, 2004 & 2006, Veenhoven 2000). All these together offer new positive dimensions in the processes of comprehension of cities as sophisticated systems where it is essential to provide efficient control and co-operation mechanisms between different influential actors and groups.

Following the UN guidelines of the conferences held at Rio de Janeiro in 1992, most of the countries in the world adopted the protocol "Agenda 21" which suggests that "indicators of sustainable development should be created in order to ensure a solid base for decision-making on all levels (United Nations 1993; Chapter 40). Shortly afterwards, new sets of indicators were developed in many countries. There are well known projects at regional level in the United Kingdom (Regional Planning Guidance), New Zealand (Canterbury Regional

² World Commission on Environment and Development, WCED 1987, also known as the Brundtland Committee.

Council) and Germany (North-Rhine-Wesphalia). Cities also started developing sets of indicators, especially in Canada (Vancouver), United States of America (Pittsburgh, Santa Monica, Seattle) and England (Bristol, Coventry). The Global Urban Observatory of UNCHS develops a data base for measuring the quality of life in over 1100 cities worldwide. Simultaneously, the European Committee initiates a Sustainable Cities campaign where more than 100 cities sign the Charter of sustainable development of European cities and towns. European Committee and Eurostat initiate an Urban Audit campaign.

There is an interesting example from the period 1999-2000 wherein a European work group established a set of 10 indicators for measuring of sustainable development on local levels in over 90 cities throughout Europe (Mc Mahon 2002, Bosch 2002). The proposed set of indicators is based on the need to protect the environment, equity and social inclusions; local government authorities; democracy; local-global relations; local economy, cultural heritage and the quality of built environment. (Spangenberg & Bonniot 1998, Holden 2006). A conclusion from all these previous efforts is that the establishing of "sustainable urban development indicators" becomes a global and European trend, and that the aim is to ensure that future generations inherit healthy and vital living spaces on local levels and in urban settlements above all. This actually means the implementation of a basic idea of sustainable development subject to which the needs of present generations must be met, whilst not changing the conditions whereupon future generations would also fulfill their needs.

RESEARCH FRAMEWORK AND GOALS

The phenomenon of a post-socialist city and main challenges in monitoring and controlling of its sustainable development were the light motive of the scientific project proposal: **"Developing the System of Indicators for Sustainable Urban Development in selected coastal cities of Croatia"**. This proposal was approved by the National Foundation for Science, High Education and

Technological Development (NZZ) of the Republic of Croatia in February 2007. Upon the evaluation procedure the project started in February 2008, within the programme "GUEST" which anticipated the engagement of a guest researcher (coordinator) and his work with associates from the host institution which was in the case of the NZZ project the Department of Geography, University of Zadar.

In summary, the overall goals of the NZZ Project are as follows:

- To make a relevant contribution in developing new solutions for the improvement of sustainable urban development in smaller and medium-sized cities of Croatia.
- To elaborate proposed systems of indicators of sustainable urban development for the two selected littoral cities in Croatia (Zadar and Pula), on the basis of theoretical and practical experiences; principles, regulations and international and European community standards in this segment of an interdisciplinary urban research.

CASE STUDY AREA

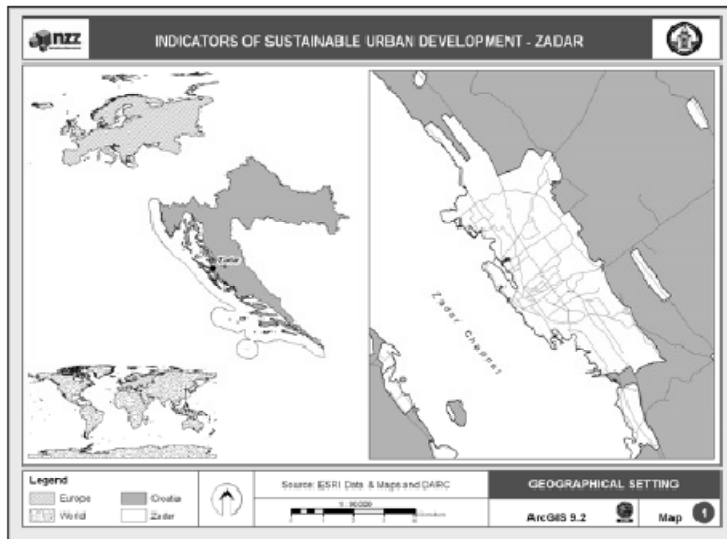
The cognisance of sustainable urban developments in a transitional setting and measurements thereof (Budić, Cavić, 2006; Keiner et al. 2004), directly influenced the selection of Zadar and Pula, as the case study cities where the selected model of urban indicators system could be tested. Naturally, the basic issue was also how to implement a dynamic, integral, and interdisciplinary research whose results are suitable for the urban decision makers. In respect of the present progress this paper presents the summary of the first findings for the city of Zadar³ (see Map 1). By analysing post-socialist processes in Croatia, and especially in its coastal regions, our research team have created a hypothesis that Zadar is turning into one of the most attractive urban centres of coastal Croatia, wherein Rijeka, Split and Dubrovnik have traditionally dominated for many years.

³ The extent of Zadar study area includes the land mass of 25.01 km² within the boundaries of the city master plan (GUP) with 21 neighbourhoods and 69,556 citizens based on 2001 census.

Nevertheless, the situation changed significantly in favour of Zadar due to the construction of the highway A1, and its direct link to the industrial-harbour zone of Gaženica, located 3 km from the city centre. Furthermore, Zadar's vicinity has geo-morphologically unobstructed agricultural hinterland. It has sufficient quantities of potable water, and the sea and coastal zone with multipurpose potential. It is also characterised by a high concentration of natural and man-made landmarks. All these opportunities distinguish Zadar as a new development hub and the fifth largest city in the Republic of Croatia, a regional centre of the Zadar County, the most northern Dalmatian county with approximately 200,000 people gravitating towards its urban core.

Comparing to other Croatian coastal cities

decreased in time. This further resulted in the increase of population density, in urban structure and services efficiency, and in environmental impacts. Especially interesting are their skylines, where the high-rise silhouettes influenced by socialist and Le Corbusier architectural styles are domineering. The shortage of land for expansion and a long-standing physical isolation have resulted in poor transport connections with their countryside so that the population moved in or moved out to other parts of Croatia. When compared to them, Zadar and Pula (our other case study city), are more open and in a much better position considering the extent of the land with less slopes, better soils, more drinking water and more possibilities for integral transport and development of sustainable mixed-land use zones.



Map 1 Geographic setting of Zadar

such as Sibenik, Dubrovnik, Split or Rijeka, the hinterland of Zadar has no limits for further spatial expansion. Such a problem is obviously related to the terrain physiognomy and their topographic location on the terrain with steep slopes. Their urban belts are limited by mountainous façades parallel with the coast and leaving free only narrow littoral zones.

Due to such a situation, these cities were to grow vertically as the available free space

RESEARCH METHODOLOGY

Following theoretical background and discussion of Zadar's comparative advantages, the NZZ team has decided to focus on its post-socialist changes, through analysis of the five essential aspects of sustainable urban environment (e.g. natural, built, economic, social and political). Our approach aimed to:

- include the whole city within its built-up area and local communities;

- reflect local visions and values;
- discover connections and system relations;
- balance the means and advantages with local needs and issues;
- be creative and action-oriented.

Therefore, the first step was to get a broad understanding of the city of Zadar and its sustainable profile with the expertise knowledge of the NZZ team members. In order to eliminate possible doubts, these findings informed the selection of the city neighbourhoods where further field survey and population interviews conducted. This created a high level of objectivity in comprehending the quality of the urban environment of Zadar. Practically, the study was intended to combine a "top-down" with the "bottom-up" approach. Thus the opinions of the citizens were intersected with the knowledge of the NZZ team members, so that the result was a reliable expert-public perception of the integral quality of the urban environment. This also confirmed numerous literature findings indicating that the mixture of empiric measured trends and the public opinion offer best results in the sphere of measuring the urban quality and sustainability.

Apart from collecting primary data, the NZZ team applied the latest GIS technology for data base management and high quality mapping. The GIS enabled a detailed analysis and automatic overlay, classification and presenting data at the neighbourhoods and at the city levels inside the boundary of the built-up area (see illustrative Maps 2-6)⁴.

In respect of the available time and budgetary constraint, the NZZ team has decided to conduct a massive field work and to cover 1% of the total city population. The team has administered 30 individual interview papers with 59 indicators related questions in all 21 neighbourhoods, which resulted in more than 8,000 pages of detailed survey records. The data collected during fieldwork was further improved with the data from other sources, whereby some of them are still in process of being acquired and analysed (e.g. State Statistic Bureau). This research enabled better quality of analysis of the Zadar built-up area, due to the fact that the field sample was

characterised by different demographic, economic and social structures. The sample was designed by type as **stratified** and by selection as a **rand** because it was subject to the public opinion. The field survey was performed in May-June 2008, with participation of 40 interviewers and 4 field work co-ordinators.

A whole process envisaged use of indicators for initiating dialogue between residents, planners, developers and service providers in order to highlight conditions in all 21 neighbourhoods. The answers to the questions from the poll, whereupon a cumulative result for each question was obtained; had several optional answers offered. Each answer to the particular question was divided by 30 (the number of poll participants per neighbourhood) in order to get percentage values. The statistical data processing results were entered into the joint GIS data base using GIS ArcGIS 9.3. The data base contained earlier created layers of primary spatial data obtained from the ortho-photo and base line maps (in scale of 1:5,000). A system of coordinated spatial units with clearly defined boundaries (e.g. built-up area, enumeration areas, neighbourhood areas) was created for the whole territory within the city planning limits.

DISCUSSION OF RESULTS

The results described in this part of the paper envisage the state of typical urban environmental problems and qualities in selected neighbourhoods, giving attention to indicators that reflect critical paths of sustainability. The following review emphasises a specific autochthonous area of **Arbanasi** personalized through the exceptionally closed and specific social group. The area of **old Bokanjac**, even though within the boundaries of city master plan, stands out as an urban agriculture enclave. It is followed by **Novi Bokanjac**, which is particularly distinguished as a continuous residential development quarter occupied mostly by the newcomers and refugees in the last 15 years. The neighbourhood of **Diklo** is also deemed to its specific economic situation since most of the residents are involved in the tourist industry and its townscape is dominated by multi-storey (5+) residential houses and urban villas. The

area of **Poluotok** is selected as the oldest district of Zadar. It has a distinctive multi-ethnic and multi-cultural mix and ageing population, living largely in historical buildings surrounded by famous archaeological and contemporary land marks. The local community of **Bili brig** gives an evidence of the two types of developments. It melts collective socialist and post-socialist mid-rise developments with detached individual housing. Unfortunately in both constitutive parts there is deficiency of adequate social facilities. Finally our research snap-shot discusses the quarter of **Ploče** where large chunks of land have been designated to urban greenery, small agricultural fields, infrastructure reserves, but also to NIMBY⁶ land uses such as landfills and stone industry which are not supported by residents.

Quality of the Natural Environment

The quality of the natural environment in Zadar is measured using the following indicators:

- Air quality
- Potable water quality
- Seawater quality
- Soil quality
- Noise impact
- Green areas ratio
- Landscape quality
- Level of human impact
- Level of natural elements affection
- Most endangered sites
- Level of natural hazard risks
- Most affluent natural risk
- Efficiency of early warning system
- Level of negative land use impacts

The obtained results differ from neighbourhood to neighbourhood and show that the respondents levelled most criticism against noise (29%), and were most pleased with air quality (31%). At Poluotok and Arbanasi respondents describe noise as the major threat. This is certainly due to the distribution of important traffic routes, a high concentration of people and noise producing activity. The residents of Arbanasi worry also about the

⁴ Due to space limits only 5 maps were selected for this paper.

⁶ Not in my back yard - NIMBY is an acronym describing unwanted land use and opposition to the new projects by residents, even if they themselves and those around will benefit from the construction.

quality of the sea, which is logical as most of its population live close to the sea. For example in Diklo, the most critical element was the soil quality and suitability shown on the Map 2.

The majority of respondents underline the responsibility of city dwellers in the worsening quality of the natural environment. They also argued that there is need for addressing issues of sensitive locations such as landfills, ruins and brown fields. With regards to the degree of risk against various natural disasters, the bulk of opinions is almost the same in all local communities. The majority of respondents (56%) answered that the likelihood on natural disaster is very low or virtually non-existent (44%). Residents of communities closer to the sea are afraid of storms, flood wave or rise in sea level, while those living in outskirts neighbourhoods fear most the possibility of fire due to higher density of vegetation in their vicinity. In summary, the environmental quality and risks were not evaluated at an alarming

rate; consequently the results showed that more than half of the population believe they live in a healthy and hazard free environment.

Quality of the Built Environment

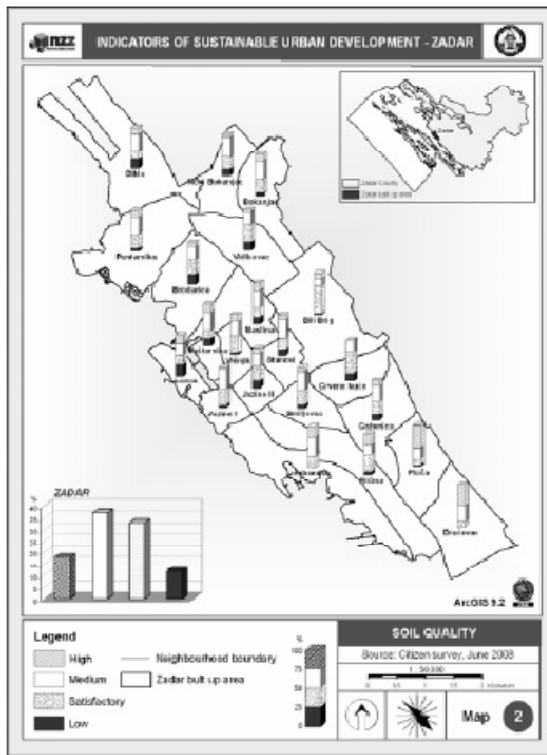
The quality of the built environment is measured using the following indicators:

- Extent of the built-up coverage
- Structure of housing development (e.g. building types)
- Extent of social services
- The most needed social services
- Extent of physical infrastructure services
- The most needed infrastructure
- Quality of cultural & heritage landmarks
- Application of sustainability principles
- Level of compatibility of man-made features and landscape framework

One third of respondents testify that the built environment is overdeveloped, while the rest believe it is moderately developed. There is a significantly smaller number of those who think

that the land is insufficiently developed or underdeveloped. Depending on the landscape and townscape character, developer's behaviours, and available finances, the citizens of Diklo, Arbanasi, Ploče and Novi Bokanjac have affirmed the low-rise residential buildings (1-3 storeys). In contrary, the medium rise development (3-8 storeys) is popular amongst those from Poluotok and Bili Brig. No one favoured high rise development (8-14+ storeys). The most common construction building type is the mixed (60%) and this established the judgement of respondents illustrated on Map 3.

Furthermore, the respondents emphasised access to urban services and illegal construction as burning problems for some social groups. The survey indicates a general dissatisfaction with availability and quality of social services. Especially younger age groups stressed the lack of leisure and entertainment facilities. The elderly are not happy with the availability of cultural, health, educational and



Map 2 Soil quality



Map 3 Building types

child care facilities, old age people homes, and access roads for the disabled. The highest level of dissatisfaction was recorded in Arbanasi, while the most satisfied were residents of Poluotok.

Quality of Economic Environment

The quality of the economic environment is based on the following indicator's quantifications:

- % of people living & working in the same neighborhood
- Impact of proximity of housing & working places on quality of life
- Local businesses distribution
- Level of cooperation between local businesses & communities
- Dominant activities
- Most important development activities
- Average salary level
- Expected salary for curbing living costs
- Impact of newly developed shopping &

- commercial centers
- Level of current economic status

There is clear dominance (50-90%) of tertiary economic activities in all selected neighbourhoods (Diklo, Poluotok, Bili Brig, Arbanasi and Novi Bokanjac), while primary activities dominate only in Ploče. The majority of interviewed believe that tertiary and quarterly activities contribute to faster economic development. Also, there is prevalent opinion that the shorter distances between residences and working places may secure a better quality of life.

Citizens have very different attitudes towards the location of industries and businesses in their neighbourhoods. They support the opening of new industrial outlets, as a way of securing employment prospects and improving quality of life. However, there is the NIMBY type of opposition to companies located in some neighbourhoods. There are 44% of those who think that the local businesses do not participate in social welfare, environmental and

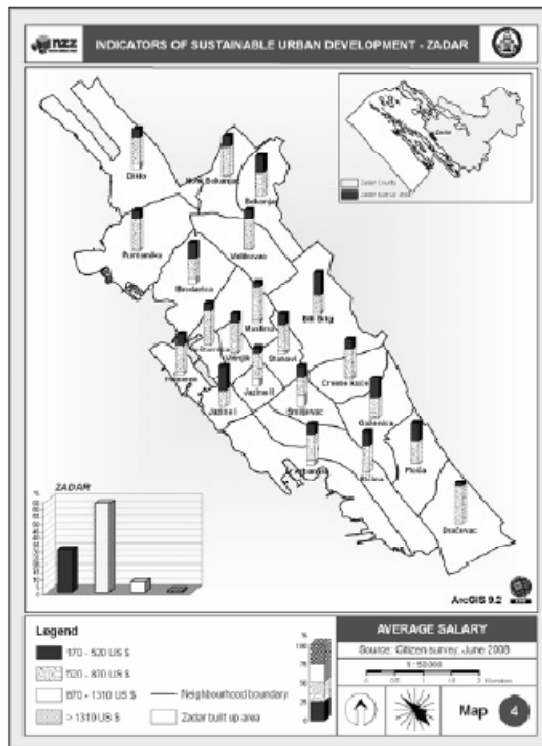
infrastructural programmes. Nevertheless, most of them agreed that the companies benefit the general economic, planning and spatial framework of local communities. Also, there is a suggestion that the companies' management should be more in touch with the local community leaders and public at large.

An average monthly income for almost 2/3 of respondents was in the 500-1,000 US\$ bracket. Only 0.5% of the population had monthly income above 1,300 US\$ (see Map 4). These figures suggest that the mass of wages is within the national average. However, 3/4 of those interviewed expect to have a better income in order to meet all the needs of their families.

Quality of Social Environment

The quantification of social environment was based on the following indicators:

- Reasoning behind setting in a particular neighborhood



Map 4 Average salary



Map 5 Neighbour's relationships

- Quality of neighbor's relationships
- Support to individual & group rights
- Impacts of domineering social groups
- Satisfaction with social activities & gatherings
- Negative behaviours
- Positive behaviours
- Quality of leisure time
- Social attractiveness of visiting different places
- Social attractiveness of visiting people

It was stressed that the social context and free time are very important aspects of daily life for more than 3/4 of people living in Zadar. The character of natural setting, opportunities "to see and to be seen" along the waterfront promenade (riva) and to have access to numerous central landmarks, are the most important ingredient in residence selection and daily liveability. Another significant indicator was linked to the venue and social backgrounds in which they prefer to spend their free time. In most cases preference is given to those who wish to spend their free time with families or friends at home or popular spots. The closeness of relatives, friends, neighbours, people with similar social status and preferences were also considered essential for their habitation in certain city quarters. An illustration of these fine aspects of local community life is given through graphical presentation of a neighbourliness indicator (see Map 5). The residents of Arbanasi were described as proud and influential, and residents of Dikin as economically strong but stingy. The residents of Bokanjac are diligent and kind, and those from Poluotok, classy and kind.

The research team has also recognised people's demands for more public participation, communication and information concerning urban development frameworks, as well as, for the integration of particular social groups. People's responses are generally proof of conservative opinions that prevail in these areas. The results differed for the categories of children and minors, women and single-parent mothers, elderly people and pensioners, those living on social welfare, refugees, etc., but the results were generally the same for the category of addicts (52%) and homosexuals (71%) whose integration was not supported.

There are huge differences between the social groups that dominate in certain local

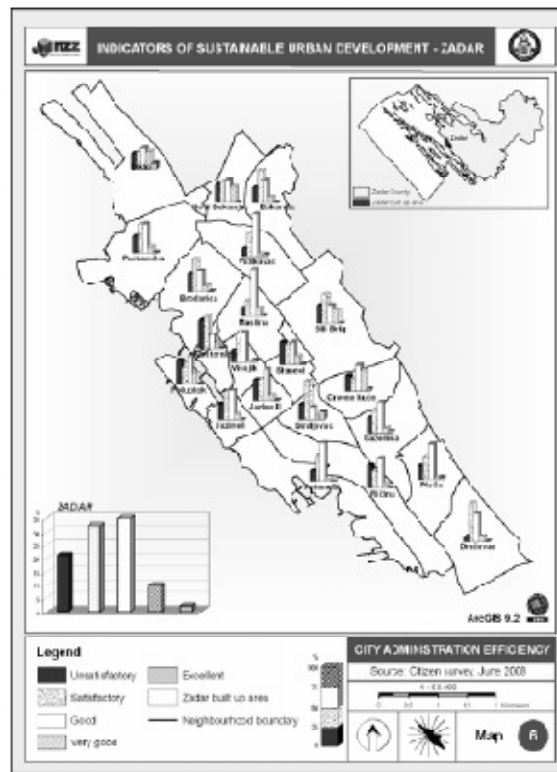
communities. Most of the original settlers of Zadar live in the area of Arbanasi, while the autochthonous settlers from surrounding districts of Zadar and islands live in Poluotok, newcomers from Zadar and the islands are settled in Bili Brig, while the newcomers from other parts of Croatia and overseas live in Novi Bokanjac.

Quality of Political Environment

In quantifying the political environment and its peculiarities the NZZ team covered the following reference indicators:

- Level of influence of the key land development actors
- Implementation of EU standards
- City administration competence & effectiveness

These quantifications show a soaring degree of dissatisfaction and distrust towards the efficiency and promptness of public institutions at the both local and city levels (see Map 6). More than 3/4 of respondents witness that a possibility to participate in public debates does not exist, or even when there is such a possibility, the level is low. The efficiency of local authorities is rated as average. The most satisfied with administrative



Map 6 City administration efficiency

- Effectiveness of local administration
- Citizen participation in local programs
- Acceptance of citizen's opinions
- Level of citizen's involvement in public debates
- General level of corruption
- Level of corruption by different powerful groups

services are the residents of Arbanasi, while the least satisfied are the residents of Bili brig and Ploča. The majority of respondents criticised the decision-making and communication networks as dominantly influenced by power holders.

The residents object by not being regularly involved in the process of public scrutiny together with other stakeholders for the

different categories of the city and local projects. As a result of such practice, there is a discrepancy in the perception of spatial and environmental frameworks of the sustainable development phenomena. Therefore, the level of acceptance of the citizens' opinions and suggestions related to public debate is rated very low or non-existent. The involved citizens agreed that this is exactly what worries them as a crucial political issue, the very absence of a possibility to participate in the spatial planning and development of the area and the absolute lack of influence on the decision making process. The most favourable situation is found in the local community of Diklo where 1/3 of the citizens believed that they have some opportunities to express their views and work hand in hand with relevant authorities.

Very alarming are the results qualifying negative effects of adverse social behaviours (i.e. corruption, nepotism, political connections, racketeering, black mailing). Almost, 3/4 of the interviewed said that this type of "social pollution" exists on a high degree, and presents a firm barrier to application of EU legislation practices. They believed that personal interests of influential individuals and groups were a main concern, while the general social welfare was neglected. Therefore, the question is in which interest are the decisions made in respect of spatial and urban development projects, i.e. who gains and who loses by these decisions? The respondents think that this decision-making process involves central government and local politicians, experts, businessmen and taicoons, and the citizens to a limited extent. Politicians at all levels of hierarchy, local and foreign investors, and religious communities act as the key players in land use development arena. Therefore, 1/3 of the citizens believe that their influence is high, and another third that their influence is moderate, but still existing.

CONCLUSION AND THE WAY FORWARD

The very first results of the NZZ project and case study of the city of Zadar (Croatia) are in many ways challenging due to breaking new ground in a curious area of expertise. This is the first interdisciplinary and comprehensive

effort in Croatia in attempting to encompass complex issues of urban sustainability in specific conditions of the post-socialist and coastal city. The research team has applied a variety of methods manoeuvring with limited manpower, budgetary and technology resources. However, integration of neighbourhoods and the city level aspirations and sensitising the dialogue between community and experts presents an innovative approach to urban indicators studies. This implies that an indicators toolbox may be useful in urban planning, development control and monitoring on a regular annual basis. Without any doubt it could help urban administrators and governors to make wise decisions about priorities and actions but in a participatory manner where all stakeholders should have their say.

The study opened up a question about development of the standardised urban indicator's set. A preliminary indicators checklist has been tested in all of Zadar's neighbourhoods. The first results show that urban management is a complex task, which depends on an adequate information base and coordination among key urban players on one side and the citizens on another. The approach applied here is also innovative due to limited financial and human resources, but with a strong emphasis on use of GIS technology. Starting from these facts it is expected to apply an improved model in another case study of the city of Pula, including the smart growth and EU Urban Audit indicators. The current and future findings will then be presented during a joint workshop with community and city agency representatives. The final version of acceptable indicator's listing will form the base for its regular production and use as a participative planning and management tool in the Republic of Croatia.

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