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**THE CHALLENGE OF BUILDING PROPER URBAN INDICATOR SYSTEM:
A PROPOSAL FOR CROATIAN CITIES**

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Abstract

In this paper, urban indicator system is investigated in the context of urban policy processes. Indicators are seen as a tool to enhance urban management and special attention is given to their role in providing assistance in monitoring municipal development and performance. The paper will present desirable features of useful indicators from the city perspective, as well as framework to include these indicators in urban policy and management successfully. Formulation of proper indicator system requires a good understanding of the utilization, diffusion and dissemination of information in policy processes, so the paper will consider basic constraints related to these preconditions such as existing knowledge gaps within the indicator developer community vs. their theoretical limitations, communication concerns, human and technical capacities, policy issues etc. This paper will elaborate modest Croatian experience in developing urban indicator system and lessons learned will be used as guidelines in making illustrative proposal for Croatian cities. In addition, this paper will try to define particular environmental, economic and governance variables/indices that should be adopted as urban indicators, taking in account Croatian specificities. We conclude this paper by addressing future challenges related to integration of urban indicator system within urban policy in Croatia.

Keywords: urban indicators, urban policy, Croatia

1. Introduction

The aim of this paper is to consider the role that urban indicators can play in urban management and in monitoring municipal development and performance. The paper will present basic features of urban indicators that will determine their usefulness in urban management.

The second section discusses urban indicators. They are seen as a tool that would help policy-makers in formulating urban policy that would lead the cities towards sustainability and provide assistance for monitoring their development and municipal performance.

The third section describes basic features and constraints related to good urban indicator system.

The fourth section elaborates Croatian experience in developing urban indicator system. In this part of the paper environmental, economic and governance indicators are presented.

The final section presents future challenges of urban indicator system within urban policy in Croatia.

2. Urban management and urban indicator system

In order to improve quality of life in urban settlement profound changes in urban policy will be needed. In modern world, the main role of city management is to provide urban services including amenities by establishing system of urban management that will provide adequate living conditions and wellbeing to all urban citizens. In many countries shift from government to governance is observed, and it is accompanied by shift and change in the form of organization in providing public services. The term new public management has several meanings, takes different forms, and sustainability is one of them.

Sustainability is a general and vague concept and it is difficult to achieve. Majority of European policy documents as the most important activities for achieving urban sustainability states the following: enhancing economic prosperities in urban areas, promoting social inclusion and equality; protecting urban environment and support good governance. These impose big challenges for local authorities in terms of organizational forms as well as human and other resources.

What are the main features of effective urban management? There are different approaches to urban management. One of the more innovative is *ecosystem approach* to urban management. It should "allow a comprehensive, integrated analytic approach based on a variety of statistical and scientific methods to characterise and measure the functioning and capacity of a city and its environmental support system".¹ Alternative approaches to urban management are metabolism (materials flow) analysis², footprint analysis³, carrying capacity analysis⁴, systems diagramming and systems modelling. Based on these analyses, points of non-

¹ Available on www.iclei.org.

² It is a model of the city's input and output of resources. Parameters include fuel, oxygen, water, food, timber, paper, plastics, glass, cement, bricks, sand, metals, wastes, and sewage sludge, CO₂, SO₂ and NO_x.

³ It is calculation of the total area of land and water required for the city's current level of resource consumption to be ecologically sustainable.

⁴ It is the measurement of the operating limits of a particular system beyond which is seriously damaged or becomes dysfunctional. It requires separate assessments of the different loads on the system and the possible response to these cumulative pressures.

sustainability or instability in the functioning of the city can be identified for corrective action⁵. Lafferty (2002) conceptualized sustainability as an issue of “policy integration”. Therefore, sustainability can be seen as “a form of inter-sectoral and inter-temporal integration”.⁶

Following the principle of “policy integration”, as well as “integral approach” in order to be effective and efficient, many urban authorities try to develop and implement urban policy, where monitoring and evaluation of urban performances is its integral part. Based on monitoring and evaluation, activities and measures are commenced in order to improve city’s competitiveness. In such a scheme system of urban indicators, become crucial.

What is an indicator? Indicators are representatives for complex information that cannot be directly measured. Among many definitions, we prefer the definition, which states, “each indicator is actually a kind of small model in its own right, implying elements of cause and effect of social norms that constitute progress, and of policy actions and outcomes”⁷. A proper indicator should be comprehensive, clearly defined, reproducible, unambiguous, understandable and practical, i.e. meaningful for decision makers, but based on theoretical insights.⁸ Formulating a good set of indicator is a difficult task. There are critiques about recent development of indicators and there are usually targeted at the development of *single* indicator which should comprise all aspects of development including environmental, economic, social, technological, etc. There is a general agreement that we cannot define a single indicator of development, which will incorporate all dimensions⁹. Furthermore, it is widely accepted that indicators are influential if they measure something highly valued and that their main influence is in the process of formulation. There is also intense debate regarding the process of indicator development. Basically, there are two different approaches to this issue. There is large body of literature¹⁰ recognizing cooperation and broad participation in the process of formulating indicators as precondition for building meaningful set of indicators. Participation of broad stakeholders provides credibility to the whole process and guarantees consensus about problems and priorities. Another stream of literature emphasizes¹¹ that process of formulation of indicators has a profound scientific dimension, and therefore involving citizens in the whole process raises many concerns regarding their insufficient knowledge about technological, ecological, sociological, economic and other issues. Some authors argue that such participation process could lead to recommendations that are not scientifically based.¹²

Each of these two basic approaches has its own pros and cons. Today, everyone is aware of a fact that *scientific method provides framework* for determination of indicators, *participation*

⁵ In the context of sustainable development planning, this ecosystem approach should point to the systemic issues that cause and reproduce economic, environmental and social problems and solutions.

⁶ Grigoriadou, Swianiewicz (2003).

⁷ The phrase is from de Villa, Westfall (2001).

⁸ For references see Kuik and Gilbert (1999).

⁹ Huenting and Reijnders (2004).

¹⁰ Common formulation of indicators with participation of key actors provides development of collective learning and feedback to decision-making. Cooperation implies presence of adequate institutions (proper allocation of responsibility with horizontal and vertical coordination, etc). See in Hezri (2004).

¹¹ Becker (1997).

¹² Innes and Booher (2000) and Sawicki (2002) argue that most indicator projects in the USA tend to have “weak conceptual and methodological basis” and usually result in “information overload and unfocused development” For details refer to Wong (2003).

of local stakeholders *enables consensus* on priorities and values, and the *choice of indicators is influenced by political orientation*.

As there are many definitions of indicators, there are also numerous classifications of indicators¹³. Because of the need of this paper, we present classification according to the applied approach in their development. There are three main approaches applied by different international agencies. First, there is a *policy-related* approach originating in the social indicators movement in late 1960s which is now used by World Bank, United Nations Centre for Human Settlements (UNCHS) Indicators Program and the Global Urban Observatory. The main features of these indicators are that they arise from government concern in particular area and therefore they are closely related to urban strategies and policies. They function by developing inventory of major social goals and then defining indicators to measure progress towards these goals. These indicators are holistic (they monitor and evaluate cities as a whole), inclusive (connect different management structures) and promote cooperation between different stakeholders in urban areas.

Second, a *thematic* approach is used in State of the Environment report and by United Nations Development Program. Specific multidimensional and complex themes are examined, such as sustainability, energy efficiency and good governance for which different sets of indicators are used.

Third, there is *systems* approach, which includes physical model or systems diagram of the city where different subjects meet, and where different linkages and causalities exist.

There are also other different frameworks, which could be classified according to the nature of development process described by several questions¹⁴: whom are the indicators for; what are the indicators for; what is the urban perspective; what is their scope; what is the political and organizational context and by whom are they developed and implemented. These approaches are now commonly used by state agencies in developed countries where annual reports contain performance criteria and assessment of progress towards established objectives.

Urban indicators have many different roles and many potential users. They can be used as a learning tool¹⁵, communication tool and management tool by policymakers, citizens, researchers, private sector and international agencies. Due to many challenges related to decentralization issues, local government is a prime focus for urban indicators. There are several reasons for that. First, most local governments are multi-purpose units that deliver multiple services, which highlight the need to examine the whole activity of local governments in an enabling framework. Second, sectoral development efforts often fail because of institutional shortcomings, rather than technical problems, and these can be successfully measured by indicators and third, current trends towards the decentralization of service delivery from central to local levels are increasing the need for improved governance at the local level.

If considered as a management tool, which is in the focus of this article, indicators should be explicitly related to policy. Urban indicators should be helpful to urban managers and other developers and have to measure policy performance. Furthermore, they should deal with urban strategic goals and in their developing, participation process should be applied. Consequently, many urban authorities will prefer policy-related approach, which will equip them with

¹³ Based on de Villa and Westfall (2001).

¹⁴ de Villa, Westfall (2001).

¹⁵ For details, see Hezri (2004).

comprehensive set of indicators closely related to policy concerns. Literature shows that this approach is cost-efficient, but due to broad participation, the outcome and the final set of indicators highly depend on the preferences and values of the expert group.

The following paragraphs are devoted to basic features of sustainability indicators, issue-based indicators/economic indicator and performance indicators.

3. Basic features and constraints of urban indicator system

3.1. Major features of urban indicator system

3.1.1 Sustainability indicators

Recently, specific class of indicators gains in importance. It is framework of *sustainability indicators*¹⁶, which is seen as an umbrella for all urban indicators, but often with an environmental preference.

Sustainability indicators present broader picture of economy, environment and society, and they tend to describe economic security, ecologic integrity and quality of life. Today there is not a system of sustainability indicators, which is generally applied to urban areas, but there are cases where such indicators are incorporated in policy and there are many individual initiatives for developing and implementing urban sustainability indicators¹⁷. Europe's Environment project is a good illustration of such initiative.¹⁸

Resolving urban environmental problems requires that activities undertaken on various levels and within various sectors are part of integral approach including land-use planning and space management, efficient management of urban flows and environmental protection measures. This need for integrated approach is also recognized at EU¹⁹ and global level. Agenda 21 is a plan of action, adopted at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992²⁰. Its provisions could be very instructive in elaborating the role of local authorities in managing sustainable development processes, as well as regarding the role of indicators in policy process²¹. More precisely, chapter 28

¹⁶Debate on sustainability has produced a wealth of research of concepts, measures and feasibility of sustainable development. Extensive list of definitions of sustainable development can be found on www.sustainableliving.org.

¹⁷ Exhaustive list of such initiatives can be found on www.iisd.org.

¹⁸ In order to assess European urban environment 55 indicators are selected, for 51 European cities. These indicators are focused on urban patterns (on population, area, land-use, mobility and infrastructure), flows (energy consumption, water consumption and waste) and environmental quality (air and water quality, green areas, noise, housing quality and traffic safety). Importance of urban problems varies widely between cities, but the most important in all selected cities are air quality, traffic congestion and noise. These environmental problems usually have different causes, but root causes of urban degradation resulted from insufficient environmental consideration in land-use planning and urban management. Cities have a broad range of mechanism to improve urban environmental quality by reducing impact of flows from various activities on local, regional and global environment (measures for energy conservation, use of renewable energy sources and measures for fuel switching and technological innovation). See in Europe's Environment: the third assessment available at Internet site of European Environmental Agency <http://reports.eea.eu.int/92-826-4509-5>.

¹⁹ Refer to Green Paper on the Urban Environment, 1990. Institutional and organisational dimensions of integrated approach is elaborated in OECD (1990).

²⁰ UNCED, 1992.

²¹ It is adopted by more than 178 countries and has to be taken globally, nationally and locally in every area in which human impacts the environment. Local Agenda 21 (LA 21) was formulated and launched by the International Council for Local Environmental Initiatives as a framework for local governments worldwide to engage in implementing the outcomes of the Agenda 21.

identifies *local authorities as the most important level of governance for operationalizing the concept of sustainability*. Local Agenda 21 should balance the local and global aspects of development and international cooperation should help to achieve this goal. Furthermore, chapter 40.4 explicitly stated the need for *indicators* of sustainability as a solid base for decision making at all governmental levels.

Sustainability indicators are closely related to the system approach for developing indicators, especially with the Extended Urban Metabolism Model (EUMM) and Pressure-State-Response (PSR)²². EUMM views cities as system that needs input of resources to produce two key sets of outputs. The first is a human-oriented built environment, which is described through a range of indicators (from environment, health and social well-being of citizens), while the second set of outputs relate to pollution flows. Therefore, reports based on EUMM usually contain future orientation of city development, sustainability goals and targets, and linkages among economic, social, environmental and other factors²³. PSR approach is developed by OECD²⁴ and is used in environmental reporting. This approach induces the idea of cause and effect relationship covering human pressures on the environment, states of the environment and the policy responses to reduce environmental damages. Although it is a useful framework for environmental issues it has some major flaws: it lacks inter-generational perspectives, it distinguishes vaguely between pressures, state and response, and it accommodates human but not ecological responses²⁵.

3.1.2. Economic indicators

There are several economic indicators but the most useful are those indicators that link development goals to encouragement of business development at local level²⁶.

To achieve that major goal two sub-goals should be accomplished:

- to strengthen small and micro enterprises, particularly those developed by women,
- to encourage public-private sector partnership and stimulate productive employment.

Key indicator for realization of the first sub-goal is *informal employment*, which means share of the employed population, men and women, whose activity is part of the informal sector.

Rationale for that key indicator is the increasing role of the informal sector in a number of economies, which has a consequence of growth in the labour force without a matching response in the level of formal employment opportunities. The informal sector may generate substantial activity and may constitute a basis for the development of urban economies if adequate policies are in place to enable the sector to perform and expand productively. The informal sector has played an increasing role in the expansion of production in rapidly growing cities in transition countries. The increasing importance of the informal sector would suggest institutional changes for more flexible fiscal policies, better financial credit arrangements for small units of production, and legislation providing limited rights for employees in the sector.

²² de Villa (2000).

²³ It is used by WHO, for example WHO Healthy Cities Project.

²⁴ For details refer to OECD (1999).

²⁵ Based on de Villa (2000).

²⁶ United Nations Human Settlements Programme (2004).

The city product, measured as total product of the city as defined in national accounts procedures, as well as *unemployment*, measured as the proportion of labour force that does not have a job and is actively looking for work²⁷, are two key indicators for realization of the second sub-goal.

The most important reason for those key indicators is that cities are traditionally economic centers and providers of services. Cities are important locations for economic growth and development. In addition, cities currently generate more than half of national economic activities worldwide. Urban productivity, measured through the city product and unemployment, are important indicators providing a strong measure of the investment level, the efficiency of public and private enterprises and the generation of productive employment. The city product is the gross national product (GNP) of the city, an estimate of the economic output at city scale.

3.1.3. Governance and management indicators

Major strategy for urban governance and management indicators is connected to incorporate in city activities the four principles of good governance: accountability, predictability, transparency, and participation. Important strategy of governance and management indicators is associated to increase predictability in the application of legal and administrative procedures, enlarge transparency in public-private activities, increase community participation, including demand management to improve service delivery. There are several governance and management indicators but the most useful are those indicators that major goals relate to promotion of decentralization as an instrument for achieving more effective service delivery and strengthen local authorities. Most of the indicators, which have been developed thus far for local government, focus on financial management and promote financial independence of local government. Essential strategy is to define clear roles for public and private sectors in strategic planning, financing, and delivery of services.

To achieve that major goal several sub-goals should be accomplished:

- set benchmark indicators for delivery of services by city and contracted out to the private sector,
- set standards and regulations in different areas (e.g. for land transfer),
- to encourage and support participation and civic engagement,
- to ensure transparent, accountable and efficient governance of towns, cities and metropolitan areas,
- establish decentralization of key public functions, including private sector participation in some sectors,
- increase share of city revenues from property taxes, as well as user charges,
- increase assess potential for new sources of funds, including private capital, as well as city's long-term access to capital market,
- increase use of market-based pricing of public services in designated service sector such as water supply,
- assign roles for a service to one level of government, to the community or to the private sector.

²⁷ See more at ILO web address: <http://www.ilo.org/public/english/employment/strat/kilm/indicators.htm#kilm8>

Key indicator for realization of the first sub-goal is *local government revenue*, which means how much of local government budget come from independent local revenue sources.

Rationale for that key indicator comes from the fact that sustainability of local municipality can be achieved through the effective decentralization of responsibilities, policy management, decision-making authority and sufficient resources. The amount of local government revenues is an important indicator, which determines the level of effectiveness of local authorities. The level of revenue and the structure of revenue are important information, which indicates the level of income which municipalities are able to rise from their residents, the business and industries and from higher levels of government. In some cities, the high level of revenue and investment is because local governments are responsible for wide range of local services.

To give the answer to this question regarding the level of decentralization process in any country it is important to know that decentralization is part of the general goal of institutional development. Sustainable local municipality will increasingly depend on the capacity of all levels of government to reflect the priorities of municipality, to encourage, guide local development, and promote partnerships. To determine the level of decentralization and independence of action of local government it is important to know how the local government can set local tax level, user charges for services, borrow funds independently or with permission of higher level of government. It is considered particularly important that local governments should know the level of funding they will receive from higher levels of government, either as formula-driven transfers or as long-term allocation.

There are essential performance indicators, as important group of urban indicators, and interrelated budgeting procedures. In the focus of this relationship is *the role of budgeting as a critical tool of urban management and development*. There are several types of operating budgets - line-item, program and performance budget.

The line-item budget is a financial document that lists how much the local and regional government will spend on every item that it uses.

The program budget is generally related to goals and differs from the traditional line-item approach to preparing, reviewing and presenting the budget. A program budget allocates money to major program areas, focusing on the expected results of services and activities to be carried out. The emphasis on program projects is on the attainment of long-term local community goals. The primary goal of program budgeting is that it allows municipal leaders to plan a budget in a manner that allows for improved decision making regarding the organization's goals. In a program budget, revenues and expenditures are linked to multi-year community goals and objectives²⁸. A program budget identifies the anticipated results and outputs of these investments.

The most profound benefits of using program budgeting as primary operating budget tool are the following: financial data are presented in a transparent format; it encourages a more coordinated and efficient government administration and is more focused on the communities' priorities and financial capabilities.

The performance budget allocates money to various programs within an organization or local/regional government unit but also details the service level on which the budget is

²⁸Crain and O'Roark (2004).

predicted. The service level is identified by the use of performance measures. In addition to controlling costs, the primary orientation of the performance budget is that of improving the internal management of the program. The performance budget has measurable service objectives in terms of unit costs.

The program and performance budget use indicators to measure financial and operational performance, but they have a different focus. A performance budget emphasizes management efficiency, whereas a program budget emphasizes the benefits that the local community gains from municipal expenditures²⁹.

Budget performance information and performance measurement is a key point for strategic planning at the local and regional level. Modernizing municipal budgeting practices implies a shift away from control orientation and budgeting inputs to focus on outcomes (results) and accomplishments. Local and regional budgeting is such a complex process that the budgets are usually a combination of line-item, program and performance budgets. The primary objective is to make the budget process more efficient and effective. One of the tools used to achieve this is *the management plan*³⁰.

3.2. Major constraints

⇒ *Inappropriate data availability*

There are several constraints on local scale for establishment of urban indicator system in Croatia. Inappropriate data availability is one of the main constraints for organization of urban indicator system at *local and regional level*. We primarily think about data on urban economy and urban environment, while financial data are usually available and they are of good quality.

The lack of data unables research and policy oriented studies, as well as for urban indicator system. The applied methodology in Croatia is not standardised and in line with the EU methodology.

If we consider only period from 1991 onwards, it can be concluded that because of constant changes in administrative-territorial set-up of local and regional levels in Croatia, it was quite difficult to establish statistical database. Constant changes in applied methodologies, changes of the base period or accounting units, short time series are further obstacles in forming of a local and regional statistical database. Additional problem is that data were and still are not collected neither published at a single place.

⇒ *Weaknesses of statistical system*

In spite of the high volume of production, exemplified by the high number of surveys and the extensive publication catalogue, and in spite of significant improvements in individual

²⁹Schaffer (2000).

³⁰The management planning includes the formulation of long-term objectives and short-term goals, priority settings, elaboration of plans, and control and supervision of budget execution from a qualitative as well as quantitative perspective. The local or regional management plan should include mission statement, description, accomplishment and achievements, goals, objectives and performance indicators.

statistics as a consequence of the use of EU standards, the statistical system as a whole has a number of important weaknesses which it is now time to address in a co-ordinated way.

These weaknesses, which are obstacles to enhance both the productivity and efficiency of the system and the status of its major actor, are the following:

- Insufficient recognition of the importance of the statistical system for the society and of the specific role of the Central Bureau of Statistics (CBS) by the government³¹;
- Absence of a longer-term strategic plan for the development of the statistical system;
- Statistical programme which is adopted by the Parliament is not related to resources; this programme, once adopted, is a very rigid plan of itemised work that does not allow enough room for flexible adaptations, or for longer-term or horizontal considerations;
- There is no statistical business register which could serve as a sampling frame;
- High turnover of staff because of general working conditions in the administration, of which some aspects have a particularly negative impact on the CBS staff; there is no training programme in statistics for CBS staff
- Insufficient IT infrastructure.

⇒ *Weak co-operation between different institutions*

Regarding the Official Statistics Act, different institutions in Croatia are responsible for organisation of data collection, data processing and data publishing - The CBS as the central body, state administration offices within the counties and the administrative body of the City of Zagreb authorised to perform official statistics tasks, the Croatian National Bank and other authorised bodies of official statistics determined by the Programme of Statistical Research.

There are several institutional solutions to improve co-operation between these institutions in data collection, processing and publishing. The major source of improvement is continuous joint work on improvement of statistical methodology as basis for development of urban indicator system.

3.3. Challenges and areas of improvements

⇒ *The main objectives of the Croatian Statistical System*

The main objectives of the Croatian Statistical System are: to produce statistics in professional independence, to increase the public trust, to guarantee the confidentiality of individual data, to better consider the needs and requirements of data users and providers (through subcommittees to the Statistical Council) and to strengthen international co-operation notably with EU. The creation of an appropriate legal framework and the redefinition of the co-ordinating role of the CBS belong to the strategic objectives.

³¹ The role of the CBS is mainly limited to the production and dissemination of figures (with methodological explanations and statistical comments added), but of staying clearly away from more complete analysis and explanatory comments. As a consequence, the concentration of staff resources in the CBS on data collection and data processing (192 surveys), without sufficient time allowed for adding value to the results or for regularly checking their relevance.

⇒ Challenges and areas of improvements in the CBS

The CBS gradually adapt the data collections and the results to new classifications and definitions in line with EU or other international requirements, and in addition to introduce new surveys and new important results such as the consumer price index and national accounts. Specific objectives of the Croatian Statistical System are to reduce the burden on data providers, to intensify co-operation with data users, to harmonise the system with the European Statistical System (ESS) and to improve systematically the timeliness and quality of data (in accordance with the Charter on data quality). With respect to dissemination of statistics, one main objective is to raise the level of public trust and to introduce users satisfaction measurement system.

⇒ Steps being taken in CBS to comply with the EU requirements

A modification of the organisational status of the county state administration offices and the administrative body of the City of Zagreb responsible for official statistics matters in a manner as to adopt and establish a model ensuring the enhancement of the statistical system of the Republic of Croatia. Deadline to achieve compliance is 2007.

The CBS has made substantial progress in adapting its management culture to modern standards, in particular in strategic planning and monitoring of the compliance with EU and international requirements. The CBS is still faced with difficulties in the recognition of its role as co-ordinator of the statistical system. Although a new statistical act is in the process to be adopted, co-operation remains difficult with other producers of statistics. The CBS is defining a new strategy covering the period 2003 to 2012 which should take into account the users' needs and be compliant with EU standards. The question of the administrative responsibility of the 21 regional offices is still pending. Questions such as the reallocation of human resources and the definition of responsibility at a local level are hindering a quick solution.

A fruitful co-operation has been initiated with the Ministry of Finance, the Customs Administration and the Croatian National Bank (CNB) in the framework of the 2003 CARDS assistance programme. Project fiches part of the 2003 CARDS programme have been finalised in Public Finance statistics and employment statistics. An agreement has been met between the CBS and the EC Delegation to give a second priority to the project on regional statistics.

Co-operation programmes in Regional statistics should be delayed until widely accepted decisions are taken about the subdivision of the Croatian territory.

4. Croatian experience in developing urban indicator system

The goal of this paper is to present the framework to include indicators in urban management successfully in Croatia³². Frameworks are useful to structure work on indicators and to disseminate the results to potential users. Frameworks will have to integrate important dimension of development, have sound conceptual base, capture essential information and help to clarify relations between different indicators and between indicators and policies.

³² For more details see www.mzopu.hr.

Global trend of urbanization is reflected in Croatia very clearly, too. Urban areas in Croatia cover approximately 12 percent of territory, with approximately 63 percent of total population. Urban areas are divided into Zagreb as the capital (approx. 16 percent of population), macroregional centres (Split, Rijeka, Osijek with surroundings with 12 percent of population) and bigger regional centres (Zadar, Karlovac, Pula, Slavonski Brod, Sisak, Varaždin, Dubrovnik, Vukovar, Velika Gorica, Šibenik, Vinkovci, Bjelovar, Čakovec with 13 percent of total population), regional and subregional centres (which include 20 regional centres and 40 smaller subregional centres with 13 percent of the total population) and territorial and local centres (approx. 600 small towns, municipal centres and other development centres with about 27 percent of the total population). The main pressure of urbanization is recognized in cities along the Adriatic coast. Therefore, sustainable development of cities is one of the most important priorities as defined in strategic national document³³.

Selected framework should be easily replicated and applied by city managers. Today it is commonly agreed that it should be combination of *policy based* and *index-driven* approaches and *performance measurement indicators*. Policy-based approach guarantees that indicators will accompany urban strategies. In addition, it enables consultation with different stakeholders. Index-driven approach is helpful while cities always tend to compare themselves with other cities in terms of economic development, environmental quality, etc. Finally, performance measurement indicators are useful while they report about efficiency of public services. In addition to this, it is expected to design several urban indicators frameworks. Each of them should be suited for specific requirements regarding national, county or city level. One broad, general and flexible framework should be proposed for national level, while more specific will be for county level and very detailed for city level. Activities related to formulation and application of urban indicators framework are still lagging behind the legislation and declared goals, creating gap between policy measures and their implementation, as well as between regulation and enforcement.

Until now, the main activity regarding urban indicators in Croatia is associated with UN-Habitat Agenda³⁴. Within the context of implementation of the Habitat Agenda and collection of indicators in line with Habitat methodology, in 2002 four pilot projects were designed and educational program was prepared for city management.

The main objective of the project was taking into consideration diverse types of urban areas and impacts of these diversities on the selection of indicators. In this regard, these pilot projects included the City of Zagreb, the Primorsko-Goranska County, coastal town of Rovinj and continental town of Slavonski Brod³⁵. The pilot projects pointed to the conclusion that it would be useful if collection of data for urban indicator will become a permanent activity of CBS. The first goal therefore is to standardize collection systems and exchange of information used by different institutions.

Diverse types of urban areas should be also reflected in the types of indicators selected. This choice should reflect the strategic development goals of specific city/county. It should be recognized that selection of indicators should help in building capacity of city management,

³³ Strategy and the Program of Spatial Planning, available at Internet site www.mzopu.hr.

³⁴ In 2000 Croatian Government establish the National Committee for Habitat.

³⁵ Pilot projects included 20 key urban indicators grouped in six areas: housing, social development and poverty reduction, environmental management, economic development, governance and international cooperation. For details refer to Habitat bulletin (2003) on www.mzopu.hr.

develop approaches and methodologies for monitoring and evaluation of city government, monitor and assess efficiency in providing public services and quality of these services, as well as identify proper investments and development urban strategy. The indicators should be selected based on their relevance for preliminary assessment, taking into account information constraints. Therefore, it is suggested to begin with smaller set of indicators where data are of reasonably good quality and gradually expand this set with other indicators. Good starting point for selection of indicators is set of 20 key urban indicators from Habitat Agenda. As previously mentioned to be efficient and credible, the whole process of formulating indicators should be participatory including all stakeholders in specific area. This requires coordination among different sectors, different levels of government and different institutions. Institutional shortcomings in this field are more severe than technical problems related to collection, processing and dissemination of data.

City administration should be fully aware of the fact why urban indicators are introduced. This whole process requires time and effort. In Croatian case, it is plausible to consider cooperation of several counties to develop urban indicator framework, probably for NUTS 2 statistical region³⁶.

The next section gives more details on data sources and data availability at regional and local level. Explanation of each data consists of short explanation of available data, data methodology and adjustment of data with EU requirements. All of these data are base for establishment of urban indicator system.

³⁶ Habitat bulletin (2003) available at Internet site www.mzopu.hr.

Table 1 **Data Sources by Institution**

Institutions	Data Coverage	Comments
CBS	<ul style="list-style-type: none"> - Employment <i>Persons in paid employment, by activities and counties</i> <i>Persons in employment in crafts and trades and free lances, by counties</i> - Unemployment - Labour Force <i>Labour force in the Republic of Croatia, by counties</i> - Number of registered companies (the Register of Business Entities) <i>Number and structure of business entities, by counties</i> - Foreign trade <i>Foreign trade of the Republic of Croatia, by counties, towns and municipalities</i> 	<ul style="list-style-type: none"> - data is collected on the territorial principle (headquarters of the firm), by sectors according to NCEA, available at national and regional level (county) - data are collected through Labour Force Survey, available at municipal level according to NCEA, available at regional level (county) - available at regional level (county) and municipal level
Financial agency (FINA)	<ul style="list-style-type: none"> - Number of companies at sector level - Data on firm formation - Information and data from annual, quarterly and monthly reports of companies - Information and data on payments of obligatory contributions, taxes and local taxes - Register of Business Entities Accounts - Register of annual financial reports of legal and physical entities 	<ul style="list-style-type: none"> - data are available at commercial basis
Ministries		
- Ministry of Sea, Tourism, Transport and Development	<ul style="list-style-type: none"> - information on island and regional policy and planning - information on implementation of island and regional economic and social programmes 	<ul style="list-style-type: none"> - information available upon formal request
- Ministry of Justice and Central State Administrative Office for Public Administration	<ul style="list-style-type: none"> - Number of cities and municipalities in county - Structure of government at county level - Structure of government at city and municipality level 	
- Ministry of Finance	<ul style="list-style-type: none"> - Budget - Revenue structure - Expenditure structure by economic and functional classification 	<ul style="list-style-type: none"> - according GFS, available at regional (county) and municipal level
- Ministry of Economy, Labour and Entrepreneurship	- information about energy sector, industry and privatisation issues, trade policy and foreign economic relations	<ul style="list-style-type: none"> - information available upon formal request
Public Sector		
- Croatian Employment Service	<p>Employment</p> <p>Unemployment</p>	<ul style="list-style-type: none"> - data on employed persons from the Croatian Employment Service Register available at regional (county) level - data on unemployed persons, by gender, by the level of education, available at municipal and regional

		(county) level
- Croatian Health Insurance Institute	<ul style="list-style-type: none"> - Number of insured persons - Data on active insured persons or employees 	<ul style="list-style-type: none"> - by status of insured persons, by gender, by age structure, available at municipal level on residence principle
- Croatian National Bank	- Monetary statistics	
- Croatian Chamber of Economy	Croatian companies directory Number of entrepreneurs and employees in small business industry	<ul style="list-style-type: none"> - data is collected on the territorial principle (headquarters of the firm), by sectors according to NCEA, available at regional level (county) - data is collected on the territorial principle, available at national and regional level (county) , micro, small and medium entities of small-scale industry
Associations and NGOs		Unofficial statistics
- Union of Association of Towns and Association of Municipalities of Republic of Croatia	Information regarding organisation, structure, problems etc. in municipalities and cities	Unofficial statistics

Source: Authors' sistematization.

In the following tables, we present potential indicators suitable for Croatian case. They are grouped into environmental, economic and governance and management indicators. Each group contains outcome, output and input indicators.

4.1. Environmental indicators

Table 2 **Environmental indicators for monitoring environmental management**

Outcome indicators	Output indicators	Input indicators
Ambient air and water quality.	Percentage of households with access to piped water, sanitation, power, heating, and social services. Percentage of solid waste adequately disposed. Percentage of wastewater treated.	Investment and system efficiency improvements to expand coverage and quality of water, sanitation, power, heating, and social services.
Satisfaction with quality of life expressed by urban residents.	Percentage of households with secure tenure. Percentage of income spent by low-income households on housing, water, energy, transport, food, and social services. Crowding (floor space per person). Housing affordability (ratio of housing prices to incomes). Availability and use of public transport.	Reform of land and property rights and cadasters. Reform of building codes and land development requirements to speed housing supply.
Promote effective and environmentally sound transportation systems.	Travel time.	Improved management of public transport (for example, by promoting private commercial operations).
Manage supply and demand for water in an effective manner.	Water consumption.	Price of water.
Reduce urban pollution.	Wastewater treated. Solid waste disposal.	Improved management of solid waste collection and disposal (for example, by contracting out collection).

Source: Authors' sistematization based on de Villa and Matthew (2001) and UNHSP (2004).

4.2. Economic indicators

Outcome indicators	Output indicators	Input indicators
Growth and diversity of urban employment. Growth of urban employment in informal sector.		Collaboration among the business sector, local government, research community, and other civil society organizations in promoting a positive business climate for broad job growth. Technical assistance, and microcredit provided to small and informal sector firms.
Growth of median urban incomes.		Transparent and targeted subsidy and equalisation policies.
City product per person ("city GDP").		
Growth and structure of investment in urban areas.	Trends in infrastructure service quality and efficiency.	Investment, management, and maintenance improvements in infrastructure, including through private financing operation as appropriate.
Growth of foreign direct investment in urban areas.		Reorganization of business and real estate regulations. Reorganization of city information for potential investors.
Local government capital investment as share of its budget.	Repayment record of municipal credit funds.	Investment evaluation procedures used and capital budgets prepared.
Local government creditworthiness ratings (actual or proxy).	Development of municipal credit market (percentage of banking system lending to municipalities, percentage of bank assets for municipal credit, municipal bond issues). Local government debt service ratio.	Government regulations providing a clear framework for municipalities' access to credit. Percentage of local governments eligible for and with access to municipal credit (for example, in municipal development funds).

Source: Authors' sistematization based on de Villa and Matthew (2001) and UNHSP (2004).

4.3. Governance and management indicators

Outcome indicators	Output indicators	Input indicators
Promotion of decentralization and strengthening of local and regional authorities.	Tax collection rates (or tax effort relative to revenue base). Structure of local and regional government revenue.	Clear frameworks for intergovernmental assignment of responsibilities. Extent of devolution of functions and corresponding authority to local government.
Encouragement and support participation and civic engagement.	Citizens participation (voters participation and civic associations). Extent of regular public consultation in local government's budgeting and investment selection process. Extent of strategic intent or vision developed in partnership with stakeholders which guides local government activities.	Extent of citizen participation or representation in local government (direct election of mayor and council active involvement of community organizations in planning functions). Clear institutional framework for private sector participation in local public services.
Efficiency and competency of local government in fulfilling essential responsibilities.	Percentage of local government services that are subjected to competition with the private sector to assure efficient and effective service delivery. Percentage of local government staff with professional qualification.	Training of local government staff. Manuals of procedures for major administrative functions that follow good practice.
Extent of trust and satisfaction with local government performance expressed by citizens and other stakeholders in representative surveys.	Public access to information about local government decisions (e.g. policy and regulatory, contract awards, procurement service delivery and budgetary performance etc.).	Independent and objective framework for reporting on local government integrity and performance.

Source: Authors' sistematization based on de Villa and Matthew (2001) and UNHSP (2004).

Experience shows that the development of sustainable indicators used to measure progress in that direction are most effective when they are "owned" by community stakeholders. Accordingly, we propose that our framework should be based on partnerships (it should define organisational structure for planning by all relevant stakeholders), community-based issue analysis (it should incorporate assessment of priority problems), action planning (provide a methodology for scenario planning and reaching agreement on action goals, setting targets and triggers, and for the creation of strategies and commitments to achieve these target; that will be set out in such a way as to facilitate their incorporation into the city's action plan), implementation monitoring (identify and organise the partnership structures needed for implementation and the internal management systems required for municipal compliance) and evaluation and feedback (periodic performance evaluations using target-based indicators). The proposed framework should be very practical and focused on development planning.

5. Future challenges of urban indicator system

Previous chapters briefly examine available data at regional and local level in Croatia. Different data collection institutions are responsible for collection, processing and publishing available official regional and local data. Majority of data sources and data availability in Croatia responds to internationally standardised local and regional data. Internationally comparable data is especially important in order to create and implement local and regional policy and to compare some solutions, proposals and measures for local and regional development between different countries, as well as to establishment of urban indicator system.

One of the major goals for establishment internationally comparable data in Croatia is to give sources to analyze and describe a manner of impact of local government's policies on local development in Croatia, as well as for the international comparison. Other important goals refer to explain the policy incentives and constraints to economic development. One of the possible solutions for that is through creation of urban indicator system. Despite all of their imperfections, indicators can be a useful tool for evaluating the progress towards sustainable urban settlements. To do this they have to be policy relevant and linked to targets and formulated in a participative manner with the input from different stakeholders. As mentioned before there are various indicator initiatives on all levels but many questions are still opened and numerous issues are still on research agenda.

In Croatia, urban indicators can help in many important areas such as growth management³⁷, decentralization³⁸, governance³⁹, decentralized cooperation and many others, so future researches in this area will be critical.

There are several important recommendations regarding usefulness of regional and local data and urban indicators. First, all stakeholders in Croatia need to be informed regarding major constraints and possible improvements to establishment of internationally comparable database and urban indicators. Second, establishment of a statistical background and urban indicators for policy-oriented research, which should enable research focused on challenges in the legal, institutional, administrative and financial systems of Croatia that are important for future local economic development.

In Croatia, policy-related approach to framework development is recommended and in order to guarantee that local priorities and values are represented, the whole process should be participatory. Implementation of urban indicators as management tool is still at the beginning. Although indicators gained growing importance, their effectiveness in influencing policy in Croatia is limited. We can identify three major groups of reasons for that – institutional, methodological and technical. Integrating indicators in policy process would ensure its effectiveness and relevance. As city governments within Croatia concern themselves not just with what they do, but also how well they do it policy-based urban indicators will become commonplace.

As the most profound future challenges related to formulation of sustainability indicators framework we found the following:

³⁷ Growth management is important issue because city size will undoubtedly continue to increase. Unbalanced urbanization is the most important dimension of growing urban population in Croatia

³⁸ Decentralization is issue, which arises from the growth of the economic, political and administrative autonomy of cities. Urban indicators could be very insightful in finding solutions in terms of institutional and legal arrangement, which will allow local authorities to assume increased administrative, economic, fiscal and environmental responsibilities. In addition, urban indicators can answer how the financial and legal questions surrounding intergovernmental relations can be addressed.

³⁹ The development of modern approaches to governance has already begun, but it will be possible to establish mature and sophisticated forms of participatory governance only in the medium and long term. There are numerous factors, which hinder improvement of city governance. Just to name the most important bureaucratic inertia, lack of strategic vision and political will to govern in transparent way, inability to plan and manage the urban region, scarcity of instruments to monitor and evaluate public and private service providers, and the lack of capacity of social organizations to take active roles in the management of public affairs.

- The transition from policies and practices for *environmental protection*, to policies and practices for *sustainable development* - How to relate environmental effects to underlying economic and political pressures? Introduction of indicator framework will have pronounced policy implications.
- How to relate local issues, decisions and dispositions to global impacts, both environmentally and with respect to global solidarity and justice?
- Formulate a more focused policy for achieving cross-sectoral integration of environment-and-development concerns, values and goals in planning, decision-making and policy implementation.
- How to increase community involvement into the planning and implementation process with respect to environment-and-development issues?

At the end we have to emphasize that introduction of indicator framework will also provoke new researches in central-local authority patterns, government reaction, local-community reaction, and in forms of social networking.

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