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Selecting Sustainability Indicators for Local Community – Case Study of Milanówek Municipality, Poland

Dobór wskaźników zrównoważonego rozwoju lokalnej społeczności na przykładzie gminy Milanówek

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Abstract

Actions for sustainable development at the local community level are the key elements of *Agenda 21* but they also prove to be a difficult challenge. The governance of this process needs sustainability indicators to assess changes in local socio-economic and environmental systems to date. This article presents results of research on the local sustainable development assessment in Milanówek Municipality in Poland. This is an attempt to use a mixed, reductionist-participatory approach to selecting sustainability indicators for one local community in Poland. The paper shows how to develop and use, at the time of broad theoretical debate on implementation of sustainable development strategies, a set of indicators helping us to shape the development strategy of a municipality to fully satisfy its requirements.

Key words: sustainable development, indicators, local communities

Streszczenie

Działania na rzecz zrównoważonego rozwoju na poziomie lokalnych społeczności są kluczowym elementem *Agendy 21* i zarazem niezwykle trudnym wyzwaniem. Do skutecznego zarządzania tym procesem, potrzebne są wskaźniki zrównoważonego rozwoju, które pozwolą na bieżąco oceniać zmiany zachodzące w lokalnym systemie społecznym, gospodarczym i środowiskowym. W niniejszym artykule przedstawiono wyniki oceny zrównoważonego rozwoju gminy Milanówek (woj. mazowieckie) jako przykład wykorzystania na polskim gruncie mieszanego, redukcjonistyczno-partycypacyjnego podejścia do doboru wskaźników zrównoważonego rozwoju społeczności lokalnych. Wyniki pokazują, że można podczas toczącej się obecnie szerokiej dyskusji teoretycznej nad zrównoważonym rozwojem wypracować i zastosować zestaw wskaźników pomagający kształtować strategię rozwoju gminy w celu jak najpełniejszego zrealizowania jej założeń.

Słowa kluczowe: rozwój zrównoważony, wskaźniki, lokalne społeczności

Introduction

The rules of sustainable development, promotion and implementation on the level of local communities are the essential elements of the *Agenda 21* programme (UN, 1993; Tuziak, 2010). Translation of the term *sustainable* into the Polish language

itself proved to be problematic and brought many competitive proposals: the most popular *zrównoważony* (balanced) (Polish republic constitution), but also *trwały* (lasting) (Śleszyński, 1997), *sustensywny* (from latin *sustenso/sustineo* – sustain, maintain, withstand, nourish, last, etc.) (Janikowski, 2004), *samopodtrzymujący* (self-sustaining) or

ekorozwój (ecodevelopment) (Borys, 1996). Translating the concept of sustainable development into an action plan for a community as well as local governance to meet the sustainable development objectives, are comparable, if not more challenging, for the local communities than the translation from English to the Polish language.

Many communities in Poland started implementing the rules of sustainable development with passing a resolution on a sustainable development strategy. However, in practice, local decision-makers' activity only begins from this step, because the tasks specified in a strategy must be then realized. Activities aiming at sustainable development as well as the key elements of the local social-environmental system should be systematically monitored. In such a case, indicators will remind local actors of the importance of the goals that are covered in the indicator set (Eckerberg and Mineur, 2003). This is why the sustainability indicator set, enabling assessment of changes in the municipality, should be developed. The diversity of local communities and the need for taking into account the given area characteristics while working on the local sustainable development makes it imperative for the local indicators selection to be specific for each community (Śleszyński, 2000; Valentin and Spangenberg, 2000). The diversity of approaches to sustainable development and its indicators (Eckerberg and Mineur, 2003; Reed et al., 2006; Niemeijer and de Groot, 2008; Solace Scotland and Improvement Service, 2010) also does not facilitate the development of a relevant monitoring system for Polish local communities who are beginners in this area.

Sustainable development management at the local level

Think globally, act locally – a popular phrase used in many contexts and coined by David Brower, founder of ecological organization *Friends of the Earth*, shows that actions at the local level have a key role in global goals achievement. Moreover, Jeffrey Sachs in his speech during the *Central and Eastern Europe Environmental Economics and Policy Project* conference in February 1995, while citing the important factors of transition in the Eastern European countries owing to which the market and democratic reforms went hand in hand with a significant improvement of the environment, mentioned *the democracy in itself, particularly the creation of local government and transfer of power from the central to the local level* (Sachs, 1995). The authors of the *Agenda 21* were also aware of the magnitude that local action has on sustainable development. Among the basis for action in this program we find that *participation and cooperation of local authorities will be a determining factor in fulfilling its objectives* (Chapter 28.1.; UN, 1993). This document literally proposes to the local au-

thorities *a consultative process with their populations and development of a local Agenda 21 for the community*' (Chapter 28.2.a.; UN, 1993). In the pages of *Problems of Sustainable Development* many authors emphasized the role of local authorities in achieving sustainable development as well (Tuziak, 2010; Udo and Pawłowski, 2011).

Managing sustainable development is a major challenge because it is rather formation of open processes and continuous learning than achieving settled results (Rammel et al., 2004). Because of that, systematic sustainable development monitoring is necessary for its proper management. The base cannot be a rigid definition of sustainable development because management is a social process of adaptation to changes of the surroundings according to pointed economic, environmental, social and institutional objectives. Thus, a sustainable development strategy should assume the possibility of making corrections of settled objectives and actions, even before the time assumed for such strategy realization expires, enabling the fastest possible adaptation to upcoming knowledge and methods (Rammel et al., 2004). A *set of indicators* is a tool which allows us to detect deviations from direction of development settled in the strategy by the objectives.

Indicators do more than describe current conditions or trends. According to McCool and Stankey (2004) they *create understanding and insights about how systems operate, they suggest the nature and intensity of linkages among different components of systems, they provide decision-makers with opportunities to think at larger scales, and they offer more informed conceptions of how human actions affect different dimensions of the environment. (...) Well-designed indicators suggest implications of alternative policies, providing decision-makers with salient information when making choices. Moreover, indicators permit us to modify policies to address specific issues and, if necessary, enact new ones to fashion a more desirable future* (Chiras and Corson, 1997). Thus, communities using them (or even trying to) would be more sensitive to inevitably upcoming changes in social, economic and environmental systems (e.g. decreasing size of the ozone layer).

Sustainable indicators are able to aid the evaluation of policy but also, and arguably more importantly, they are able to facilitate relationships between actors and act as a catalyst around which various contested meanings of sustainability can be evaluated (Holman, 2009). In previous years proposed ways of selecting indicators were often accused of vagueness. Moreover, a *top-down* methodological paradigm for developing and applying sustainability indicators at local scales by experts and then imposing them to local communities can antagonize stakeholders and make it impossible to use them, especially when they do not take into account im-

portant stakeholders' hierarchy of values (Eckerberg and Mineur, 2003). The process of designing indicators using a participatory approach, including local stakeholders participation, can improve communication and helps to create consensus even between potential opponents (Reed et al., 2006). Whereas indicators have made no progress with respect to specific policy actions, the benefits of the softer impacts of capacity building, the production of social capital and communication can be gained through indicator programmes (Holman, 2009). It seems crucial in the process of selecting indicators at the local level to take into account a localization specificity, as well as the needs and aspirations of the concrete community (Śleszyński, 2000). Therefore, indicators should be individually selected for each municipality, and opinions from the public should be collected and considered before their implementation, e.g. through organizing public consultation (Valentin and Spangenberg, 2000). A participatory approach to selecting indicators carries educational values – stakeholders gain an understanding of what sustainable development is (Grodzińska-Jurczak et al., 2010). This is the first step on the way towards sustainable development and in the future it should produce effects, whose portrayal is made possible with the use of carefully selected indicators (Holman, 2009). Once designated, indicators have to be systematically monitored, which would enable, if needed, modifying a strategy or a policy or passing a new one to address appearing problems in a possibly short time (Rammel et al., 2004).

Case Study of Milanówek

In ascertaining that it is quite hard to find an example of effective management towards sustainable development among Polish municipalities, Milanówek Municipality – which has passed a sustainable development strategy – was chosen for the study. Milanówek's sustainable development strategy is much better in comparison to other development strategies in the Grodziski District (Mazowieckie Voivodship, Poland). The garden-town Milanówek has a current population of over 16 000 inhabitants, who have emphasized the need of environmental protection for many years. Milanówek's sustainable development strategy, passed in 2005, contains environmental, social and economic goals. The last chapter of this document is on a set of indicators for monitoring of the strategy's realization, however this monitoring is currently not being used.

The objective of this paper, the results of which are presented here, was to assess if Milanówek Municipality undertook effective action for sustainable development in 2004-2010. This article presents devising a proposition of the method of selecting indicators that employs a mixed approach, combin-

ing reductionist (top-down) and participatory methodologies. Enabling community participation was possible through conducting the survey addressing local sustainable development and its indicators. We show below examples of indicators' values analysis serving an assessment of the Municipal actions and a verification of the sustainable development strategy, as well as the most important conclusions from the synthetic analysis, summing up conclusions from interpretation of all the indicators' values in our set. In some way, this counteracts prevailing – according to Borys (2011) – disintegration in previous researches on sustainable development.

Monitoring of Milanówek's sustainable development strategy

Maintaining and improving the current garden-town character of Milanówek has been set as the main goal in Milanówek's sustainable development strategy. Operational programmes and set of indicators were settled for six strategic goals, subordinated to the main one (Table 1). Nevertheless, description of these goals, programmes and indicators do not form a consistent system.

To date, systematic monitoring of the town development using set of indicators proposed in Milanówek's strategy was not carried out, even though the strategy was passed 6 years before and was already actualized (without indicator analysis). Moreover, it was not possible for the Municipal Office to collect data needed to calculate indicators' values between December 2010 – April 2011, and many indicators were imprecisely defined (e.g. rate of built sewage system – is it a rate of built sewage system length to projected sewage system length or a percentage of inhabitants using sewage system?). There are no hints for interpretation of the indicators' values: no desired values or directions of changes were defined.

Poorly defined goals do not make dispelling doubts easier. E.g. description of the 4th goal *Constant care of inhabitants high level of life* suggests that authors of the strategy have taken into account the problem of authorities not caring in this respect enough, not the problem of inhabitants' level of life itself.

Strategy realization analysis

To make the management of sustainable development in Milanówek Municipality effective, the proposed indicator set needs to be improved. The scheme of the adaptive learning process for sustainability indicator development and application (Reed et al., 2006) is very helpful for work on indicators, so the analysis presented here was conducted on its basis.

Table 1. Monitoring of the sustainable development strategy's realisation indicators from the strategy passed by the Milanówek Municipal Council in 2005 (author's own work, based on RMM, 2009)

No	Strategic goal	Indicators
1	Modernization of the town – Making Milanówek's modernization actions faster	<ul style="list-style-type: none"> - number of interruptions in electric energy supply, - rate of built sewage system in the town, - number of households with gas supply, - number of households with fast Internet connection, - number of unpaved streets.
2	Ecology – Improving the level of local authorities', business' and inhabitants' actions for sustainable development of the town	<ul style="list-style-type: none"> - number of issued permits for cutting healthy or dead trees, - number of trees that underwent conditioning cuttings in a given year, - percentage of green areas, - length of water flows renovated, - percentage of wastes segregated, - number of wild waste dumps, - percentage of the Municipal budget used for environmental protection, - class of water purity in reservoirs and water flows.
3	Culture, tourism, recreation – Development of cultural, touristic and recreational functions of the town based on local tradition and history	<ul style="list-style-type: none"> - resources from the Municipal budget spent on tourism, - number of cultural and sport events in a given year, including co-organized with the district, - number of extra-school computer courses for Milanówek's inhabitants organized in a given year, - total length of tourist routs in the town, including cycle paths, - total circulation of touristic promotion brochures, - number of sport complexes offering free entrance for youth, - number of places to stay, - number of overnight stays.
4	Inhabitants – Constant care of inhabitants' high level of life	<ul style="list-style-type: none"> - drinking water quality parameters, - percentage of Municipal budget reserved for educational investments, - number of people enjoying the town's cultural offer in a given year, - mean living area per inhabitant, - unemployment rate, - number of crimes, such as: beatings, robberies, burglaries to houses and apartments, car thefts.
5	Citizen society – Formation of citizen society	<ul style="list-style-type: none"> - number of nongovernmental organizations, - number of people being a member of nongovernmental organisations, - survey assessment of the Municipal Office's and other municipal organizational units' work, - number of inhabitants participating in the meetings with local authorities in a given year - percentage of inhabitants participating in the cultural and sport events, - number of Citizens' Initiatives.
6	Enterprise – Development of New business ventures in Milanówek and strengthening existing firms	<ul style="list-style-type: none"> - percentage of Municipal budget reserved for economic promotion, - resources spent on equipping investment areas with necessary utilities, - average time for obtaining a building permit, - number of firms in the town.

Analysis of the indicator set was carried out using criteria listed by Holman (2009): (1) measurability (including here available data for 2004-2010), (2) validity in given case and (3) transparency for the local community. The first stage of the analysis was to reject indicators for which data are not available or which had been so imprecisely defined, that it was not clear what data should be collected to calculate them. Then, looking for indicators that could replace rejected ones or complete gaps in other themes in the set, and for which data were available (mainly asking for data in Municipal Office and looking into Main Statistical Office's Local Data Bank database). Indicators related to the rate of achieving strategic goals and to the most important circumstances of the town development that might signalize the need for urgent new town

policy were acknowledged as valid in Milanówek case.

Presenting indicators' values and their eventual changes in comparison with average values for the voivodeship and their trends makes interpretation of ongoing changes in the Municipality easier (Telega, 2009). This is why data availability for all the other municipalities in the voivodeship became an additional criterion. For some indicators it was not possible to meet this criterion, for others it was pointless because of the specificity of garden-town Milanówek. We included into a questionnaire 41 potential indicators chosen in this way, including, when appropriate, some indicators from the original set retained without any changes. The questionnaire contained 20 open- and close-ended questions related to understanding of the sustainable development

term, priorities in the town's development, proposed sustainable indicators, respondents' opinion about the town and about the Municipal Office. In the most important part of the questionnaire respondents were asked to assess on a scale from 1 to 5, how important is it for them to include a given indicator into the set for monitoring. Owing to assessments and comments given by the respondents, selection of the most transparent and valid indicators according to the local community succeeded. The survey was conducted on inhabitants of Milanówek through auditorium and individual interviews and a questionnaire published in the Internet. Inhabitants well oriented in the Municipality situation and potentially having an impact on the town policy (local authorities, councilors, local nongovernmental organizations' representatives, businessmen, officials) were targeted as respondents. At the same time, the questionnaire was published at the Milanówek Municipal Office's webpage. In practice, every person interested in the town management policy could freely express his/her viewpoint. 100 filled in questionnaires in total were obtained.

The process of selecting indicators is open-ended. In case of changes in the strategy or new opportunities arising, e.g. obtaining access to additional data, the set might need to be modified again. Due to the high diversity of themes indicators were supposed to be related to, we did not use a unified scheme for indicator selection, but separately analyzed the inclusion of each indicator into the set. The set proposed in the strategy contained over 30 indicators. To keep the set accessible this number should not be much exceeded. Accessibility is a very desired feature of sustainable development indicators sets – monitoring, as we mentioned, can have the educational value as well, whereas lengthy and complicated reports would rather not be gladly read, neither easily assimilated. To improve readability, key indicators were pointed out and four thematic groups of indicators were appointed: environmental, social, institutional and economic. Examples of indicators' values analysis for each of four groups will be demonstrated below.

Results

Example 1 – tree stand

The conclusion from the analysis is that Milanówek's community regards *percentage of wastes segregated, percentage of inhabitants using sewage system and number of trees planted during given year in the town* as the most important indicators among environmental ones (their average assessment is above 4-4,25; 4,25 and 4,04, adequately – on the scale of importance from 1 to 5). These indicators cover fields the Municipality has actively supported for many years. The segregated wastes' collection system is very well organized here. Sub-

sequent sewage system's segments are systematically, however slowly, finalised. The Municipality plants trees and propagates planting trees among its inhabitants throughout many actions of sapling distribution for a competitive price, as well as planting trees according to custom, for the memory of important people or significant events in the local history. In the strategic goals' description one can find such directions like *building a sewage sanitary and rainwater systems* and *designation of an effective model for cutting trees control* (RMM, 2009).

Milanówek is exceptional in terms of tree stand, so values of indicator covering it will not be compared with other municipalities of the Mazowieckie voivodeship. In Milanówek's strategy two indicators connected to this topic were proposed: *number of issued permits for cutting healthy or dead trees* and *number of trees that underwent conditioning cuttings in a given year*. Number of issued permits for cutting, was more or less at the same level during the 2004-2010 period (the data obtained from Milanówek Municipal Office, on request). However, it does not mean that the number of trees in Milanówek is not decreasing and *there will be new sufficient growth* (Kośmicki, 2009). The optimal value, constituting a reference point, would need to be found. As long as this is unknown, the value of the indicator cannot be interpreted. Yet, making use of the precautionary principle, it can be assumed that an increase of the number of issued permits would be perceived as negative. Additionally, the number of issued permits is only an approximation of the number of trees actually cut in the town, because it does not capture trees cut without any permits – illegally in the Polish law, trees younger than 10 years old and trees at the forest plots, but we can presume they are rare cases, omission of which would not considerably change the results of the analysis.

Because the local community cares about the forest character of the town, it would be valid to construct an indicator entailing number of planted trees and number of cut trees. *Difference of numbers of trees in the open-access and housing estate areas (loss minus planted trees)* can be found in the Local Data Bank (BDL GUS, 1995-2010), however it is not a valid indicator for Milanówek because there are very few open-access and housing estate areas in the town. Furthermore, simply counting a difference of the two numbers might be misleading. If someone cut a 30-year-old tree and in exchange for it planted a 2-year-old sapling, the difference (loss minus planted trees) would equal zero, whereas in fact greenery of the town would decrease because there would be a much smaller tree. Moreover, we are not sure if the sapling would take root and live up to 30-years of age (furthermore, trees younger than 10-years old can be cut without any permit). If the park-forest character of Milanówek is to be

maintained, the proportion of cut trees and planted trees should, in the long-term, remain at a certain sufficient level, but without long-term research or data from many years in the past, this level cannot be determined. So, we suggest collecting data on a number of planted trees and the issued permits, whereas *number of trees planted in a given year* is the key indicator for the time being, because it was assessed higher by the respondents. Unfortunately, the Municipal Office keeps data on trees planted only by the town and cannot require reporting number of trees planted on private land, however inhabitants might do this on a voluntary basis. For now, we recommend to make use of what is available, even if it is only an approximation.

The binding Polish Nature Protection Law allows making the issue of a permit for tree or bushes cut conditional on replanting trees or bushes to the place given by the administration body issuing this permit or exchanging them by other trees or bushes, at least as many as cut ones. If the optimal value of the indicator was defined, Milanówek could use it to manage the town's greenery in such a way that tree stand would be maintained in the long-term. According to the opportunity given by the law, making the issue of a permit for tree cutting conditional on planting proportionally as many trees as is the optimal value of the indicator would be enough to maintain current tree stand character.

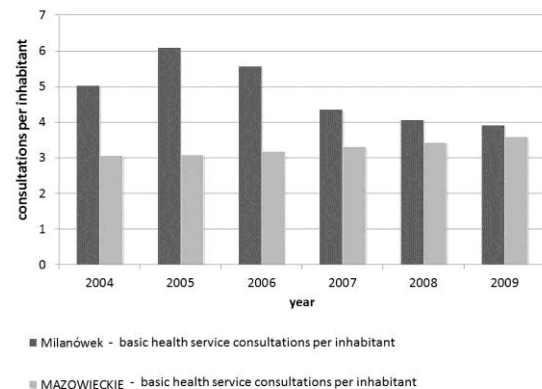
Example 2 – health service

In the case of social indicators, respondents regarded indicators on health service important. Among them *number of basic health service consultations per inhabitant* gained the highest average assessment of the respondents, which was sixth in the entire ranking. Respondents' comments on it claimed that more important could be *number of medical specialists working in Milanówek per inhabitant*. We can add that *time that medical specialists work in Milanówek* would be more adequate. It is hard to say if the community as a whole would support this change. It can be considered in the future (this would require further research), but in the current study we included in the final set of indicators *number of basic health service consultations per inhabitant* as a key indicator. Two others, *number of pharmacists per inhabitant* and *number of people per pharmacy*, were averagely assessed as much less important (student t test for independent groups gives statistical basics to reject the hypothesis that a mean mark of the two indicators is equal to a mean mark of *number of basic health service consultations per inhabitant*), and therefore they are not included in the set.

The number of basic health service consultations per inhabitant in Milanówek in 2005-2009 was decreasing (Fig. 1). We assess this fact as a negative one because most probably it means that less and less inhabitants go to a doctor close to their

place of living. It might also indicate better health in this community, and in this case we should assess this change as a positive one, but there is a lack of arguments explaining such considerable improvement in comparison with the voivodeship. Less inhabitants go to the local doctors perhaps because the local clinic was a few years ago overcrowded (more consultations per inhabitant in voivodeship; one respondent's proposition to monitor *number of people per clinic* suggests it too), so some inhabitants chose another clinic. Perhaps an increase of the indicator value after 2003 is connected to the abolishment of inhabitants assignment to local clinics, which occurred in this year. It could be that the clinic in Milanówek had a good opinion among patients then, so the number of patients increased, but during the following few years patients started to resign from this clinic because of overcrowding and chose other clinics, which in the meantime had improved the quality of their services (subjective feeling of the author of this text, who was a patient of the clinic in Milanówek too, patients' opinions changed in this way). This might mean that the quality of the basic health service in Milanówek, or maybe rather an access to it, decreased in comparison to surrounding clinics.

Figure 1. Number of basic health service consultations per inhabitant in Milanówek and Mazowieckie Voivodeship in 2004-2009 (Gutowska, 2011)



Example 3 – European Union Funds

The indicator *funds gained by the Municipality from the European Union per inhabitant* was assessed as not only the most important among institutional ones, but also as the most important among all indicators assessed in the survey (average assessment 4,48; standard error of mean 0,081). Respondents stated that Milanówek gained much less from the EU funds in comparison to other municipalities (BDL GUS data confirm it) and this is a weakness of the town. However, there were also comments reflecting acceptance to the situation, saying that Milanówek's applications are rejected because *it is not a rural area*, as well as because *a lot of people work outside the town*. One of the

respondents explained that the EU funds can be gained particularly *for sustainable purposes* and every activity funded by the EU *requires meeting standards, besides the environmental standards and has to be followed by compensation to nature if it was harmful in some way*, so this indicator is unavoidably valid for measuring sustainable development. *Intensive usage of the EU funds*, is mentioned in the strategy as well, among other action directions under strategic goals (RMM, 2009). We point this indicator as a key one for the development of the town.

In the period between 2006-2009 the EU funds gained by the municipalities in Mazowieckie Voivodeship per inhabitant were much higher than gained by Milanówek (even without including cities with district rights, which were clearly leading in this respect; BDL GUS, 2009). Also neighboring municipalities gained more funds per inhabitant (BDL GUS, 2009). The value of this indicator is assessed as negative, but the trend, which was increasing faster than in other municipalities in the voivodeship can be assessed as a positive.

Example 4 – development plans

Development plans apply to a large extent to all four aspects of sustainable development, which we adopted to highlight: environment, economy, social and institutional dimensions. Therefore, their monitoring might be more beneficial for sustainable development than indicators applying to only one or two aspects. *Percentage of area, for which valid local development plan exists* was included to the group of economic indicators, because the local development plan's provisions determine the profile and existence of local economic activities and in the author's opinion are most important in this aspect.

Percentage of area, for which valid local development plan exists is the one and only indicator from the economic group assessed averagely higher than 4. Comments on it contained opinions that current plans are not the best in terms of merits, that *percentage of area covered by plans does not bear witness to sustainable development, yet its provisions do, too much area is automatically reserved for economic activities, whereas reckless area allocation for services causes interruptions in the town architecture (supermarkets, garages) and this plans are not subordinated to the garden character of the town (blocks of apartments)*. Therefore, sustainable development rules should be followed in local development plans, in which Milanówek's strategy can help: the plans should be consistent with the strategy. One respondent simply suggested to use indicators considering the plans' provisions, e.g. part of area reserved as biologically active in the plans. This proposal and similar ones are worth considering, yet currently, when less than half of the town area is covered by plans (16,3%), it seems

to be more appropriate to generally design more plans, although it would be better if they were immediately robust, preceded by a nature inventory and met valid standards. This indicator's significance could weaken in future and perhaps then the respondent's proposal might be appropriate.

Since 2005 valid local development plans exist only for 16,3% of Milanówek Municipality area. Unfortunately, we could find the value of this indicator only for the year 2009 for the Mazowieckie Voivodeship (28,5%), but even knowing only this we can state that it is much higher than for Milanówek. We assess this indicator value for Milanówek as a negative one, and its retention at a stable level does not testify the town's activities to be developmental.

Synthetic analysis

Table 2 presents the synthetic analysis, enabling to assess if Milanówek was developing according to sustainable development rules in 2004-2010. 15 out of 30 indicators' values give evidence to assess changes in aspects captured by strategic goals as positive (progress), including 8 out of 10 key indicators, whereas only 7 give evidence to assess these changes as negative (exacerbation). 3 indicators' values, including 2 key indicators, remain stable, yet for 5 indicators the direction of the changing trend cannot be defined.

While assessing Milanówek's development in four aspects of sustainability, the development in the social aspect looks the best and institutional aspects looks the worst. Few environmental indicators' values give evidence of exacerbation, however all the key environmental indicators give evidence of progress. In terms of economic development the situation looks a bit worse. However, it has to be mentioned that almost all indicators included in the set refer to more than one of the four aspects, thus analysis for the whole groups should be treated very carefully. Therefore, we recommend presenting each particular indicator's values rather than synthetic analysis to the inhabitants in the yearly reports.

Based on the analysis, we can recommend undertaking actions considering strategic goals in which Milanówek's results were the worst. To generally specify, these are: trees, electric energy consumption, wild waste dumps, administration costs and local entrepreneurs' condition. Work on local development plans is also recommended.

Comparison of Milanówek's development with an average municipality's development in Mazowieckie Voivodeship in the aspects of the Municipality's strategic goals was possible for 16 out of 30 indicators. 9 among them indicated a higher progress rate for Milanówek than the average voivodeship progress rate, 3 showed exacerbation compared with the voivodeship, whereas for 2 indicators the trend of changes reflected the voivode-

Table 2. Summary of the development of Milanówek assessment in 2004-2010 using sustainable development indicators (Gutowska, 2011)

Lp.	Milanówek's sustainable development indicators (SDIs) (key indicators in bold)	Indicator's value trend assessment				Trend assessment in comparison with average municipality in Mazowieckie Voivodeship			
		progress	exacerbation	indicator value remaining stable	no well-defined trend ¹	progress	exacerbation	the same as the voivodeship trend	cannot be defined
ENVIRONMENTAL									
1	percentage of inhabitants using sewage system	1				1			
2	number of trees planted in a given year within town's area	1 ²							1
3	percentage of waste segregated	1				1			
4	percentage of area being biologically active within town's area			1					1
5	percentage of municipal budget spent on environmental protection	1						1	
6	number of issued permits for cutting trees in a given year		1						1
7	difference between the number of trees in the open-access and housing estate areas (loss minus planted trees)				1				1
8	percentage of the open-access and housing estate greenery areas within town area	1				1			
9	percentage of drainage ditches renovated in a given year				1				1
10	water consumption in a household per inhabitant	1 ⁵					1		
11	electric energy consumption per inhabitant		1						1
12	number of wild waste dumps within town area		1						1
	ENVIRONMENTAL SDIs IN TOTAL	6	3	1	2	3	1	1	7
SOCIAL									
13	number of students per one computer with the Internet access reserved for students' use in primary schools and gymnasiums	1				1			
14	number of crimes against life and health per inhabitant	1				1			
15	number of basic health service consultations per inhabitant		1				1		
16	number of cultural and sport events in a given year	1							1
17	living floor space per inhabitant	1						1	
18	number of crimes per inhabitant	1				1			
19	number of crimes against property per inhabitant	1				1			
20	number of foundations, associations and social organizations per inhabitant				1				1
21	population in no-working age per 100 inhabitants in working age				1				1
22	population in post-working age per 100 inhabitants in pre-working age		1			1			
	SOCIAL SDIs IN TOTAL	6	2	0	2	5	1	1	3
STITUTIONAL									
23	funds gained by the Municipality from the European Union per inhabitant	1				1 ³			
24	turnout (in local authorities, presidential, Polish and EU parliamentary elections)				1 ⁴				1
25	public administration costs per inhabitant		1				1		
	STITUTIONAL SDIs IN TOTAL	1	1	0	1	1	1	0	1

¹ Coefficient of determination $R^2 \leq 0,1$.² Without the indicator's value for the year 2004.³ The municipalities in Mazowieckie Voivodeship without cities with district rights.⁴ Trend cannot be defined for this indicator because of the too short time period the research relates to.

Lp.	Milanówek's sustainable development indicators (SDIs) (key indicators in bold)	Indicator's value trend assessment				Trend assessment in comparison with average municipality in Mazowieckie Voivodeship			
		progress	exacerbation	indicator value remaining stable	no well-defined trend ¹	progress	exacerbation	the same as the voivodeship trend	cannot be defined
ECONOMIC									
26	percentage of area covered by valid local development plans			1					1
27	percentage of roads paved	1							1
28	proportion of Municipal income from CIT taxes in total Municipal income		1						1
29	percentage of service entrepreneurs			1				1	
30	proportion of registered unemployed in working-age population	1						1	
	ECONOMIC SDIs IN TOTAL	2	1	2	0	0	0	2	3
	ALL SDIs IN TOTAL	15	7	3	5	9	3	4	14

ship changes. Among 10 key indicators, 5 give evidence for higher progress rate of Milanówek than the voivodeship, 1 had the same rate as the voivodeship, whereas for 4 of them such comparison was not possible.

Based on the analysis, we can assess Milanówek's development in the spheres described by the strategic goals of its sustainable development as faster than average in the voivodeship. However, it should be kept in mind that exacerbation in comparison with the voivodeship happened in terms of some aspects important for Milanówek's development, as well as the fact that for as many as 14 indicators such comparison was not possible or appropriate. Exacerbation in comparison with the average municipality in Mazowieckie Voivodeship was indicated for: water consumption per inhabitant, public administration costs and number of basic health service consultations per inhabitant. This signals that actions in aspects captured by these indicators should be urgently undertaken.

Conclusions

Inhabitants who spoke on the indicators in the survey valuably contributed to the analysis of this study. To a large extent their comments helped in identifying the directions of further work on the sustainable indicator set (details in Gutowska, 2011). Moreover, if the local community considered selected indicators as of little importance or they were not transparent for local users, there is a high probability that they were not used for systematic monitoring and managing municipal development (Reed et al., 2006). *Need for acceptance and public participation assumption is a manifestation of practical use of sustainable development* (Gro-

dzińska-Jurczak et al., 2010). For these reasons enabling local community participation in sustainable indicators' selection process should be obligatory. Selecting sustainable development indicators for a municipality requires many compromises. Lack of available data limits us to the highest extent in this process (Tuziak, 2010), which hampers designing and functioning of sustainable development monitoring (Solace Scotland and Improvement Service, 2010). In the case of Milanówek we fulfilled the work that enabling us to make a general assessment if the municipality undertook effective actions for sustainable development in 2004-2010, however it is known that this set of indicators requires permanent improvement. Referring to the adaptive learning process for sustainability indicator development and application scheme (Reed et al., 2006), we almost realised the first cycle of the process. As new potential indicators were identified during the work, they require evaluation with user groups and preceding further steps of the process. Yet, thanks to the work done to this date, the strategy can be corrected by the municipal authorities, making use of the conclusions from up-to-date work on the indicators. Thus, it is possible to finish the first cycle of the process and realize management of the town's sustainable development now.

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⁵ For data from BDL GUS we do not give a year of publication (no information on it in the database), but a year the data used relate to. In case of using separate values in the text, we give a year that the value used relates to. In the chart's description we give the last year that the data used relate to. In our text we use only annual data.