PN-ISO 37120 Standard – Known or Unknown by Local Administration – Preliminary Study

doi:10.2478/mape-2021-0044
Date of submission to the Editor: 05/2021
Date of acceptance by the Editor: 06/2021

MAPE 2021, volume 4, issue 1, pp. 489-498

Katarzyna Midor
ORCID ID: 0000-0001-5680-7354
Silesian University of Technology, **Poland**

Grażyna Płaza
ORCID ID: 0000-0001-5862-0905
Silesian University of Technology, **Poland**

Aleksandra Kuzior
ORCID ID: 0000-0001-9764-5320
Silesian University of Technology, **Poland**

Michał Molenda
ORCID ID: 0000-0002-0276-742X
Silesian University of Technology, **Poland**

INCRODUCTION

Silesian cities are facing significant changes, both ecological, social and economic, in the context of the ongoing energy transition that must take place in the region by 2050 in accordance with the objectives set out in the European Climate Law of March 4, 2020. This involves adapting the way municipalities are managed to the new environment. Currently, despite a number of actions taken by cities, most of them cannot be qualified as systematic and structured ones. Giving a smart label to a city has become fashionable in the political arena and the concept is often mentioned in various development strategies, while local authorities seem to be unprepared for the implementation of that concept. It is necessary to take action to improve the quality of life in the cities, for example, by carrying out comprehensive revitalisation measures, putting urban spaces into order, eliminating urban and architectural chaos and undertaking real cooperation with city users. As a part of equitable transformation, measures should be taken to improve the quality of life in the region, e.g. access to healthcare, cultural participation, public transport, development of schools and colleges, rental housing, senior services, recreational areas. A very important element of the plan is the protection and regeneration of the natural environment, including the improvement of air quality and the revitalisation of post-industrial areas. The above-mentioned measures are particularly important in Silesian cities, which are at the threshold of economic change associated with the low-carbon transition. The PN-ISO 37120 standard, which requires the analysis of a number of indicators that determine the directions of city development in individual areas of its functioning, can become a tool supporting

Contact address: michal.molenda@polsl.pl

city authorities in these actions. The ISO 37120 standard and its Polish equivalent PN-ISO 37120 contain the first system of indicators for cities in the world and in Poland respectively. The standard determines and defines the manner of measurement of particular indicators and also specifies which source should be used to obtain the necessary data. The point of such a standard is that the urban body should learn to measure individual dimensions and the results obtained should be used to compare the "intelligence" of the city with other cities in the region, the country and even the world.
Taking this into consideration, the authors of the article attempted to find an answer to the question whether today the local administration personnel of selected Silesian cities have knowledge of the PN-ISO 37120:2015 standard. The conducted research has a pilot character and covers two cities located in the Silesian agglomeration.

LITERATURE ANALYSIS

In order to systematise and facilitate taking the most beneficial steps to introduce the idea of Smart City, normative methods are used more and more often. An example of such a method is the standard ISO 37120 Sustainable development of communities – Indicators for city services and quality of life (Malinowska, 2018; Sobol, 2017; Ryba, 2017). The information brochure published by the Polish Committee for Standardisation (PNK, 2015; Albino, 2015; Allam, 2018) presents the main objectives and tasks of this standard, as illustrated in Fig. 1.

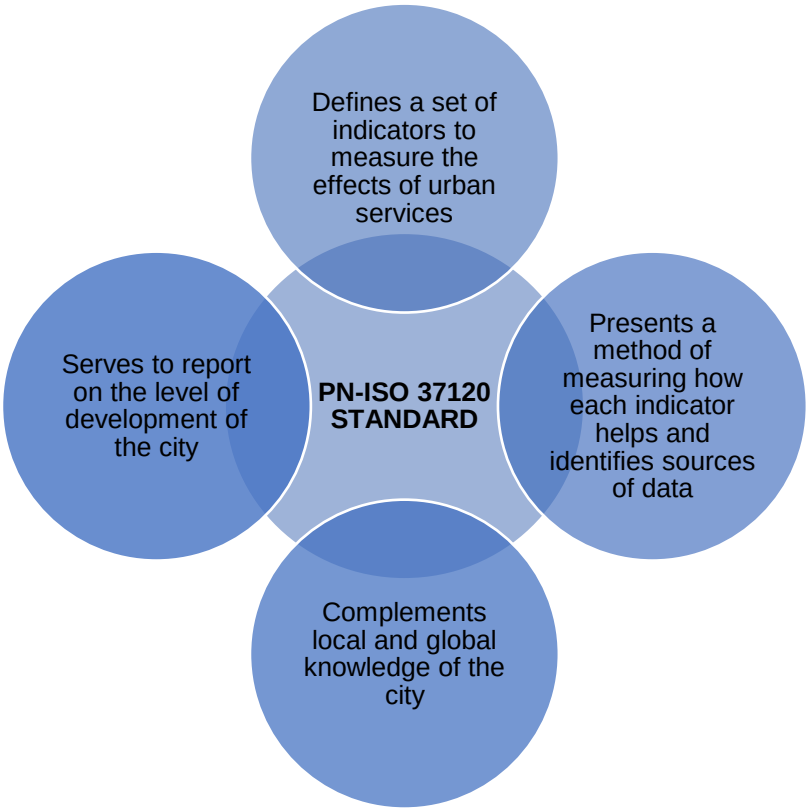


Fig. 1 Main aims and objectives of PN-ISO 37120:2015
Source: PKN, 2015

ISO 37120 standard was first published on May 15, 2014 by the International Organisation for Standardisation, the certification was created and is continuously under development thanks to the World Council on City Data. The WCCD exists to help cities of different sizes around the world introduce standardised solutions and make data-validated urban management decisions. The Polish Committee for Standardisation adopted the standard in 2015 with the name PN-ISO 37120:2015-03 Sustainable development of communities – Indicators for city services and quality of life (Midor, 2020; Malinowska, 2018).
The purpose of ISO 37120 standard is to help in city management, assessing the functioning of the city structure and the quality of life of the community on the basis of standardised indicators with a possible comparison of the effects with other cities. In 2018, the standard was amended by the International Organisation for Standardisation and its structure was changed. It currently has 104 indicators, including 46 core indicators and 59 supporting indicators, which relate to 19 thematic groups. These groups divide the indicators into subgroups and refer to basic urban aspects. An additional 24 profile indicators are also included in the Standard to help the city authorities select the most appropriate parameters for comparison. Each of the indicators is described in detail in the standard in terms of requirements, sources of input research to obtain correct calculations and the accuracy of reading the results obtained. Table 1 shows the subject groups, the number of primary, secondary and profiled indicators included in ISO 37120:2018 (Midor, 2020; Malinowska, 2018; Fijałkowska, 2017).

Table 1 Number of indicators included in ISO 37120:2018 divided into primary, secondary and profile indicators assigned to each topic group

Topic group	Primary indicator	Secondary indicator	Profile indicator
Economics	1	7	3
Education	4	2	0
Energy	5	2	2
Environment and climate change	3	6	0
Finance	2	2	2
Governance	1	3	0
Health	4	2	0
Housing	2	2	6
Population and social conditions	1	2	6
Recreation	0	2	0
Safety	5	5	0
Solid waste	5	5	0
Sport and culture	1	2	0
Telecommunications	0	2	0
Transportation	2	5	1
Urban/local agriculture and food security	1	3	0
Urban planning	1	3	3
Waste water	3	1	0
Water	4	3	0
Suma	45	59	24

Source: ISO, 2021

The ISO 37120 standard is useful in terms of comparing the data obtained with other world cities. The principles of the standard are consistent, which allows for a detailed and transparent comparison between cities. The standard can be successfully applied in cities, municipalities or local authorities (PKN, 2015; Fijałkowska, 2017). The benefits of consistent indicator reporting on the basis of ISO 37120 and the use of this standard are presented in Figure 2.

Fig. 2 Main aims and objectives of PN-ISO 37120:2015
Source: Benefits of using ISO 37120 and its consistent reporting of indicators
Source: (Malinowska, 2018; PKN, 2015; Fijałkowska, 2017)

Fulfilling the requirements of ISO 37120 standard allows to obtain the Smart City certificate. In Poland, cities have the opportunity to obtain such a certificate with the help of two organisations, the WCCD and the Polish Committee for Standardisation.
Cities certified by the World Council on City Data are listed in the Global Cities Registry™ database for one year, after the expiry of this period recertification is required. The WCCD certification process follows the scheme shown in Figure 3.

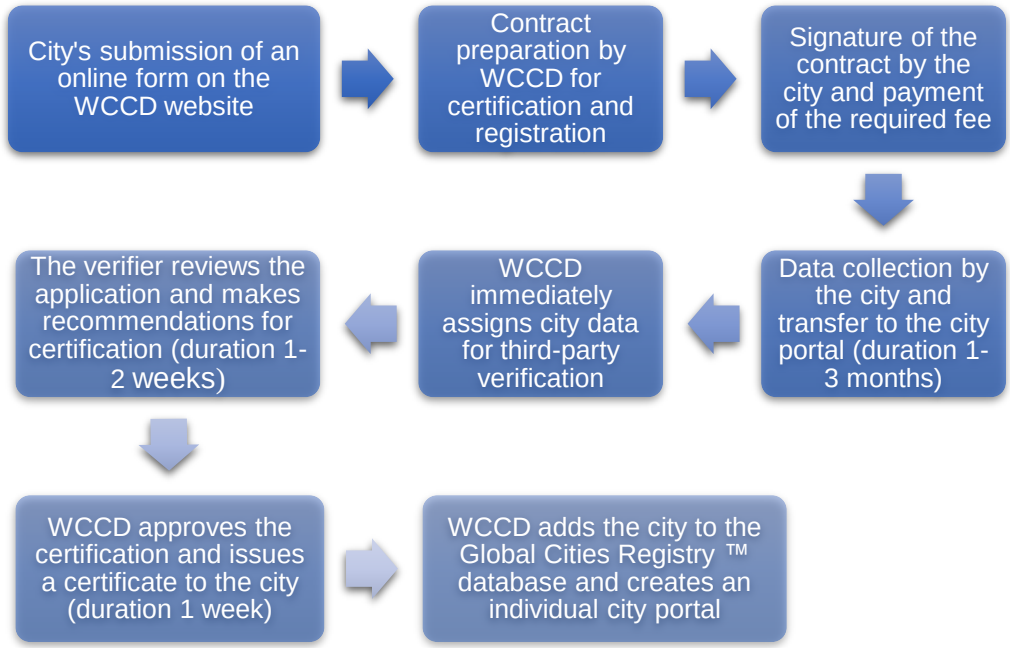


Fig. 3 ISO 37120 certification process by the WCDD organization

Source: (World Council, 2016)

The certification levels depend on the number of indicators identified by the city that are reported and verified. The certification levels with the required numbers of indicators are presented in the Table 2 and the official level graphics are shown in the Figure 4 (Midor, 2021; Fijałkowska 2017).

Table 2 WCCD certification levels with required numbers of indicators

Certification level	Number of main indicators	Number of specific indicators
Aspirational	30-44	-
Bronze	45-59	-
	45	0-14
Silver	60-74	-
	45	15-29
Gold	75-89	-
	45	30-44
Platinum	90-104	-
	45	45-59

Source: WCCD, 2021

Fig. 4 WCCD certification levels

Source: WCCD, 20

The World Council on City Data has created an online platform (dataforcities.org) where a person from the city management can apply for ISO 37120 certification. The cost is approx. 7.5 thousand dollars. On the website, there is also an overview of certified cities (currently 149). It is also possible to compare different aspects between cities (WCCD, 2021; Fijałkowska, 2017; ISO, 2021; Berman, 2020).

The Polish Committee for Standardisation has developed a special "Voluntary certification programme for the compliance of the urban services and quality of life indicators measurement with the requirements of the PN-ISO 37120 standard". The minimum scope of certification according to the PN-ISO 37120:2015-03 standard consists of not less than 24 primary indicators described in the standard that have been reported, met and calculated, as well as a report on them with data sources (PKN, 2015; Program certyfikacji, 2018)

The Polish Committee for Standardisation in its documents specifies the following steps to prepare for PN-ISO 37120 certification (Program certyfikacji, 2018)

- Understanding the need to use the PN-ISO 37120 standard and its benefits.
- Getting acquainted with the content of the standard,
- Distribution of tasks – it is recommended to appoint a coordinator of the workflow. The work consists in identifying the data sources, verifying them, calculating the normative indicators according to the method given in the standard and creating a report.
- Downloading and filling in of a certification application together with the Certification Scheme,
- After approval of the report, PKN issues a certificate and sends it to the Applicant,
- Obtaining the PN certificate.

Table 3 presents the detailed process of certification by PKN, divided into individual stages.

Table 3 General certification process with compliance to PN-ISO 37120:2015-03

Stage number	Activities
Stage 1	Verification of activities in accordance with the requirements of PN-ISO 37120:2015-03P. If not - bringing the activities into compliance.
Stage 2	Submission of an application to PKN and conclusion of a contract for certification. Preparing activities that comply with the requirements of the standard and proving their conformity.
Stage 3	Stage I of the audit - assessment of documentation by PKN. Receiving a report defining potential non-conformities.
Stage 4	II stage of the audit - in place assessment - optional, if necessary in agreement with the Applicant. In case of a positive result of stage I, it is possible to resign from stage II.
Stage 5	Certification audit report
Stage 6	Awarding of PKN certificate
Stage 7	Supervision of the awarded certificate. Its frequency shall be determined by the PN in agreement with the Applicant.

Source: Jakość życia, 2016

Methods for measuring indicators of urban services and quality of life to the PN-ISO 37120:2015-03 standard" to PKN. The price offer is issued free of charge (Program certyfikacji, 2018).
Each issued certificate may be extended to include new indicators as well as limited at the request of the Applicant. The Certificate may be also suspended in its entirety as a result of e.g. failure to meet the key criteria for issuing the Certificate or failure to pay the fee. A partial suspension of the certificate takes place at the request of the Applicant and as a result of lack of documentation updating the indicators (Program certyfikacji, 2018).

RESEARCH METHODS

In order to answer the question contained in the title of the article, survey research based on a questionnaire consisting of 2 closed questions concerning the PN-ISO 37120:2015 standard was applied. The questionnaire was addressed to administrative personnel of the City Halls located in the Silesian Voivodeship. The purpose of the survey, was to obtain information on whether the clerks of the local administration are familiar with the standard, if so, from which sources the information was obtained, and whether the clerks are interested in participating in a training on expanding their knowledge on the scope of the discussed standard. Taking up this topic is so important, as it seems to be a necessity for particular self-government units to analyse various methods enabling them to adapt to the requirements of the contemporary environment. Since the PN-ISO 37120:2015 standard is an interesting tool for the implementation of the requirements for modern cities, the knowledge of the content of the standard by the local government personnel seems to be essential in order to decide whether this standard is an appropriate tool for the development of an individual city/municipality or not. The conducted research had a pilot character.
The article also uses an extended literature analysis on the ISO 37120 standard.

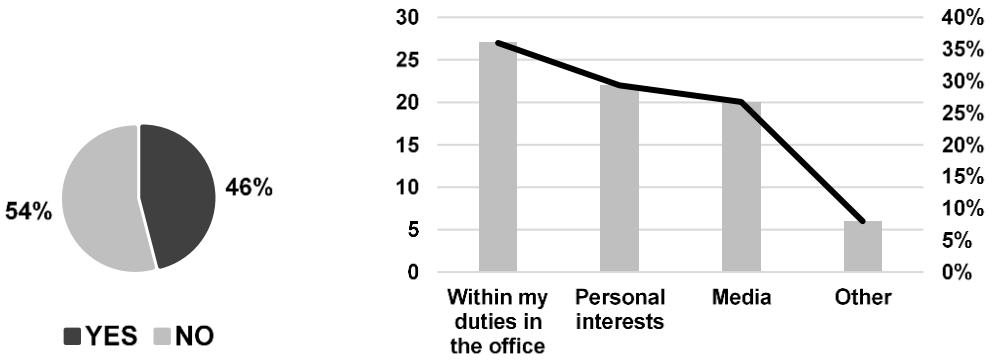
RESEARCH RESULTS PRESENTATION

In the first half of 2021, a survey was conducted among two Silesian cities. The survey was addressed to all City Hall employees. The questionnaire was anonymous. The purpose of the survey was to collect information on the knowledge of the PN-ISO 37120:2015-03 standard by the local administration staff. The questions that were asked in the conducted survey can be found in the Table 4.

Table 4 Questions asked in the survey addressed to local administration staff

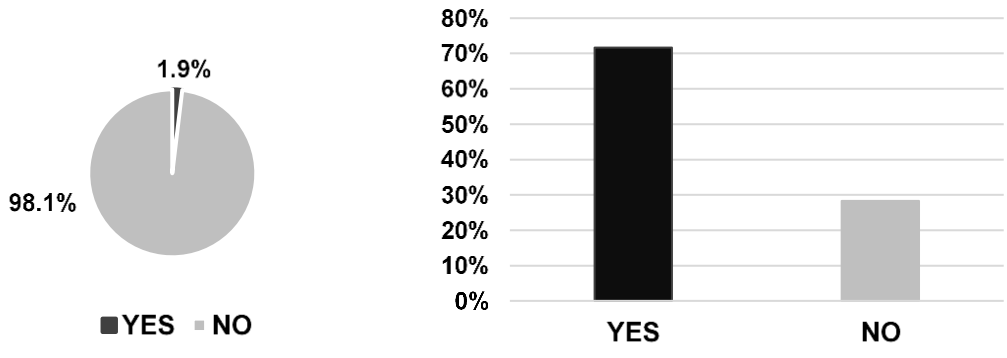
Are you familiar with the standard PN ISO 37120? □ **YES** □ **NO** If you answered YES, please specify from which source you learned about it: □ personal interests □ within my duties in the office □ media □ supervisor □ other: .....
Have you attended training on the PN ISO 37120 standard? □ **YES** □ **NO** If you selected NO, would you be interested in attending this training? □ YES □ NO

Figures 5 and 6 show the answers marked by the respondents to the questions included in the survey.



a) **b)**

Fig. 5 Answers to questions:
a) Are you familiar with the standard PN ISO 37120?
b) If you answered YES, please specify from which source you learned about it?



a) **b)**

Fig. 6 Answers to questions:
a) Have you attended training on the PN ISO 37120 standard?
b) If you selected NO, would you be interested in attending this training?

The analysis of the answers shows that 54% of the examined City Hall employees do not know the standard (Fig. 5a), while looking at the answers to

the question about participation in training on this standard, only less than 2% declare that they participated in training on the PN ISO 37120 standard (Fig. 6a). This means that the activity of informing employees about the scope and benefits of this standard for the city is carried out to a marginal extent. In this context, it is also interesting to note the responses regarding whether the employees would be interested in participating in such training. More than 70% of the respondents showed interest in participating in such training.
As regards the question concerning the knowledge of the standard by the local government staff (Figure 5a), the answers related to the source of information on the PN ISO 37120 standard – Figure 5b – are also interesting. Only 46% of the respondents gave an answer to this part of the question, indicating that the reason for gaining knowledge about the standard was mainly due to the duties performed in the office (36%) and personal interests (over 29%). A large number of respondents learned about this standard from the media in general.

CONCLUSION

Monitoring the development of a city using ISO 37120 enables more effective city management and more efficient delivery of city services by supporting more informed decision-making based on data and verified information; provides a framework for sustainable city development and strategic planning; enables monitoring of the city's development strategy; enables comparison of the city with others at national and international level (benchmarking); enables urban learning through comparison and exchange of best practices and solutions; helps to strengthen the credibility of the city in the eyes of financial institutions and investors; supports the city's brand as a "Smart City" and recognition at global and national level.
Taking this into account, the authors of the article attempted to find an answer to the question as to whether the local administration employees of selected Silesian cities have knowledge of the PN-ISO 37120:2015 standard today, as it is an interesting tool for the implementation of the requirements for modern cities. The knowledge of the content of the standard by local government staff seems to be necessary to decide whether this standard is an appropriate tool for the development of a particular city/municipality or not. The conducted research has shown that administrative employees of the surveyed cities in most cases are not familiar with the discussed standard and are interested in taking part in trainings to improve their knowledge on how to implement the requirements of the PN-ISO 37120:2015 standard.

ACKNOWLEDGEMENTS

The article was written in support of BK-273/ROZ3/2021 (13/030/BK_21/0065) research under the title "Department of Production Engineering' resources development for carrying out activities in the areas related to the Silesian University of Technology Priority Research Areas".

REFERENCES

Albino, V., Berardi, U. and Dangelico, R.M. (2015). Smart cities: Definitions, dimensions, performance, and initiatives. Journal of Urban Technology, 22(1), pp. 3-21.

Allam, Z. and Newman, P. (2018) Redefining the Smart City: Culture, Metabolism and Governance. Smart Cities, 1(4-25). Doi:10.3390/smartcities1010002.

Berman, M. and Orttung, R.W. (2020). Measuring Progress toward Urban Sustainability: Do Global Measures Work for Arctic Cities?, Sustainability.

Fijałkowska, J. and Aldea, T. (2017). Raportowanie zrównoważonego rozwoju miast a norma ISO 37120, Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu no 478.

ISO 37120:2014 Sustainable development of communities. Indicators for city services and quality of life.

ISO. [online] Available at: https://www.iso.org/obp/ui/#iso:std:iso:37120:ed-2:v1:en [Accessed 16 Feb 2021]

Jakość życia w mieście według normy PN-ISO 37120:2015-03. (2016). Polski Komitet Normalizacyjny.

Malinowska, E. and Kurkowska, A. (2018). Norma ISO 37120 Narzędziem Pomiaru Idei Zrównoważonego Rozwoju Miast, Zeszyty Naukowe Politechniki Śląskiej Seria: Organizacja I Zarządzanie, no 118.

Midor, K. and Płaza G. (2020). Norma ISO 37120 Nowe Narzędzie do Oceny i Porównania Inteligentnych Miast. In Izabela Jonek-Kowalska, Jan Kaźmierczak, ed., Inteligentny rozwój inteligentnych miast, Warszawa: CeDeWu.

PKN Broszura informacyjna. (2015). Certyfikacja inteligentnych miast Norma PN-ISO 37120, Polski Komitet Normalizacyjny.

Program Certyfikacji Metod Pomiaru Wskaźników Usług Miejskich i Jakości Życia na zgodność z Polską Normą. (2018). Certyfikacja metod pomiaru wskaźników usług i jakości życia, Polski Komitet Normalizacyjny, v. 1.0.

Ryba, M. (2017). Czym Jest Koncepcja Smart City, A Zatem Dlaczego Powinniśmy Je Nazywać Miastem Sprytnym, Prace Naukowe Uniwersytetu Ekonomicznego We Wrocławiu, 467.

Sobol, A. (2017). Inteligentne Miasta Versus Zrównoważone Miasta, Zeszyty Naukowe Uniwersytetu Ekonomicznego w Katowicach, 320.

WCCD. [online] Available at: https://www.dataforcities.org/ [Accessed 16 Feb 2021]

WORLD COUNCIL ON CITY DATA. (2016). CITYNET-WCCD ISO 37120 PILOT PROGRAM Information for Cities. Available at:https://citynet-ap.org/wp-content/uploads/old/2016/03/CityNet-WCCD-Information-Packet.pdf.

Abstract: Silesian cities are facing economic changes related, among others, to low-carbon transformation. The PN-ISO 37120 standard, which requires the analysis of a number of indicators that determine the directions of city development in particular areas of its functioning, may become a tool supporting city authorities in those activities. Having the above in mind, the authors of the article attempted to find an answer to the question whether the local administration employees of selected Silesian cities have knowledge of the PN-ISO 37120:2015 standard today, as it is an interesting tool for the implementation of the requirements for modern cities. Therefore, the knowledge of the content of the standard by the local government personnel seems to be necessary in order to decide whether this standard is an appropriate tool for the development of a particular city/municipality or not. The study was a pilot project and it involved two cities located in the Silesian agglomeration.

Keywords: ISO 37120 standard, Smart City, local administration, management