Monitoring Sustainable Development Goals at The Local Level: A Model Proposal

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A B S T R A C T

The SDGs, set by the UN and its member countries, aim to address 'extreme poverty, inequality, injustice, and climate change' by 2030. Monitoring targets and indicators at the micro level is of great importance. Tracking the changing micro characteristics of countries, and hence local dynamics is crucial for the actions to be taken by policymakers. For this reason, the relationship between the indicators of the model developed at the local level with the SDGs has been demonstrated, and matches have been made with the local goals, targets, and indicators in the SDGs. The model aims to identify the current situation of local governments, reveal changes over time, and provide policy recommendations to strengthen relevant areas for local actors. The components and indicators of the model to be developed at the local level, as targeted in this study, are closely related to the SDGs.

1. Introduction

The concept of global sustainable development involves the adoption of shared goals and actions. Following the Millennium Development Goals, Agenda 2030 has created a new stage in the formation of global cooperation in addressing sustainability-related issues (Traub & Kroll, 2017).

NGOs, the private sector, local communities, institutions, and organizations have inclusive power to promote sustainable development in the regions where they are located. Therefore, local governments play a significant role in facilitating and managing the process with their awareness of the same stakeholders who share the region. Additionally, they are in an ideal position to create

and implement sectoral strategies that include the public sector for the post-development agenda (UNDP, 2014c; UNDP, 2014d).

In implementing SDGs, various responsibilities, tasks, and roles fall on local governments in localization. According to Slack (2014), the critical point to consider is the focus areas:

Local stakeholders need to be identified. Thus, local governments and other stakeholders' roles and functions in implementing the objectives should be analyzed and defined. 1) Identifying mechanisms and processes that will facilitate implementation and determining the capacity gaps of local stakeholders. 2) Analyzing participation and inclusiveness for implementation processes. 3) Identifying simple monitoring and reporting systems, including data sources and gaps. 4) Establishing the principles of local-level development cooperation and linking process-related discussions with thematic areas. 5) Demonstrating the impact of regional solidarity and urban-rural solidarity on sustainability. 6) Analyzing the consequences of increased urbanization on sustainability.

Local governments' targeting sustainable development and developing decision-making mechanisms within this framework is crucial for SDGs. Monitoring the changes and transformation processes that have emerged over the years and developing policies related to human development are among the responsibilities of local actors. Therefore, emphasizing the need for local governments to prepare their policies within these dynamics, INGEV has been examining the "Human Development Index - Districts" model since 2017, "Human Development Index - Metropolitan Cities," and at the provincial level in 2021 (Şeker et al, 2021).

2. Literature Review

In his study evaluating sustainable agriculture in 13 regions of South Africa, Nhemachena (2018) calculated a composite SDG index based on the eight indicators used in agriculture, normalized according to the min-max method, and based on the arithmetic mean (Nhemachena, 2018). Schmidt-Traub et al. (2017) also used the same method to calculate the SDG index in the sustainability assessment of 149 countries (Schmidt-Traub et al., 2017). In Guijarro's (2018) study, a new weighting model was used to calculate the SDG index. Although the model is similar to previous studies,

it is based on the min-max normalization method. A Goal Programming Model was proposed to calculate a composite SDG index using arithmetic and geometric mean approaches. The model showed that, in terms of sustainable development, Austria and Luxembourg performed best among the 28 countries in the European Union, while Greece and Romania performed worst (Guijarro, 2018).

In their study, Schmidt-Traub et al. (2017) evaluated the current situation of 149 countries in achieving all 17 SDGs by including researchers from different disciplines. The dimensions of the shortcomings in reaching the SDGs were estimated by synthesizing the data for each country. The imbalances among economic, social, and environmental priorities were observed in countries with challenges in achieving the goals. The study attempted to explain how inter-country differences arise by examining the analytical values of the index concerning the development indices in the literature. Despite the limitations of the data in the study, it provided a starting point for a comprehensive evaluation of national SDG frameworks. It could assist policymakers in identifying priorities for early action and monitoring progress (Schmidt-Traub et al., 2017).

Nagy et al. (2018) addressed sustainability at the local level by measuring to what extent the metropolitan area in Romania has achieved the SDGs. Of the 17 SDGs, the "Life Below Water" goal was not applicable, and the analysis focused on 16 goals. Using primarily quantitative data, arithmetic mean-based normalization and summation methods were used, and quantitative data analysis was combined with computer mapping techniques using Geographic Information Systems. The study showed that the best results were achieved in the metropolitan area (Cluj Metropolitan Area), and a vertical development process was dominant from west to east. It was proven that measuring progress through a well-defined set of indicators and an optimization technique is crucial in identifying the level of gains in metropolitan areas (Nagy et al., 2018).

Alamio and Maggino (2019) focused on poverty (Goal 1) and hunger (Goal 2), and healthy living (Goal 3) due to the significant disparities in development between regions (north-south) in Italy. For each sustainable goal, a composite index was created, and the corrected Mazziotta-Pareto index was used. After separate analyses for each of the three goals, a composite value analysis was

conducted. The results of the poverty eradication goal indicated that the data from the northern and central regions were above the national average, and the north-south disparity was clearly evident. the data from the northern regions were trending better than the national average, while the southern regions performed worse. The results for the healthy living goal showed that although the north-south disparity existed, it was less pronounced than for the other goals (Alamio & Maggino, 2019).

Salvia et al. (2019) worked with 266 experts from different geographical regions and research fields to identify the SDGs and examine the relationship between these goals and the main local problems and challenges in each region. The study began with snowball sampling and collected information from experts in the geographical regions. The experts were asked to conduct an analysis of the relationship between the SDGs and the geographical regions. The results showed that the 4th, 11th, and 13th goals were the most frequently studied. More important SDGs were identified for each region, such as hunger eradication, poverty reduction, inequality reduction, and improving access to water and sanitation for Africa, and a greater focus on SDGs related to education, industry, innovation, infrastructure, and sustainable consumption and production for Europe. The study also revealed that climate change (Goal 13) was highly studied in all geographical regions. The experts' experiences and research fields varied in terms of following the SDGs globally, and the study pointed out the problems and challenges that emerged among the SDGs and each region's main local issues (Salvia et al., 2019).

UCLG MEWA (2019) evaluated the current status of the Sustainable Development Goals (SDGs) in the Middle East and West Asia (MEWA) region. The study used various indicators to assess the progress of the region towards achieving the SDGs. The indicators were classified under 17 SDGs and their 169 targets. The study revealed that the MEWA region is facing significant challenges in achieving the SDGs, particularly in the areas of poverty eradication, gender equality, climate action, and sustainable consumption and production. The study recommended that the region should focus on these areas and develop policies and strategies to address the challenges (UCLG MEWA, 2019).

Schmidt-Traub et al. (2017) evaluated the progress of 149 countries toward achieving all 17 SDGs by considering various disciplines. The study used a synthesis of data for each country to estimate the

The results for the hunger eradication goal did not show a significant difference between the north and south in Italy, but

dimensions of the gaps in achieving the SDGs. The study revealed that there are imbalances among economic, social, and environmental priorities in the development strategies of countries where challenges in achieving the goals are prevalent. The study also examined the relationships between the analytical values of the index and the advanced development indices in the literature to explain how the differences between countries arise. The study concluded that the index created provides a starting point for a comprehensive evaluation of national SDG foundations, which can assist policymakers in identifying priorities for early action and monitoring progress (Schmidt-Traub et al., 2017).

Nagy et al. (2018) focused on the sustainability of the metropolitan area in Romania by measuring the extent to which the SDGs were achieved. The study analyzed 16 SDGs because the "Life Below Water" goal was not applicable. The study used a combination of quantitative data analysis, arithmetic averaging normalization, and computer mapping techniques with Geographic Information Systems. The study concluded that a well-defined set of indicators and an optimization technique for measuring progress are essential in identifying the level of gains in the metropolitan area (Nagy et al, 2018).

Alamio and Maggino (2019) examined the development differences between regions (north-south) in Italy in terms of poverty (goal 1), hunger (goal 2) and healthy living (goal 3). The study, a composite index was created for each sustainable goal and the Adjusted Mazziotta-Pareto index was used. The study, the values of the basic indicators and their values in previous years for each target were analyzed. The study revealed that the northern and central regions had a better performance than the southern regions, especially on poverty and healthy living targets (Alamio & Maggino, 2019).

Salvia et al. (2019), determined the SDGs and their relationships with local problems and challenges in different geographical regions and research fields. The study gathered information through a snowball sampling method from 266 experts from various geographical regions and research fields. The study found that the 4th, 11th, and 13th SDGs were extensively studied, and the most significant SDGs for each region were identified. The study concluded that the expert's experience and research

field contribute to the variability of SDGs' priorities and challenges in each region (Salvia et al, 2019).

UCLG MEWA (2019), used the weighted average method to assess the human development index of the 150 districts with the highest population in Türkiye. The study used 56 indicators for seven components, which were aligned with the 17 SDGs and their 240 indicators. The study aligned the two models to show the relationship between the SDGs and local government. The study also identified the SDGs and their sub-goals that were relevant to local government. The study suggested that local governments should focus on accessible and clean energy, innovation and infrastructure, and climate action as the most significant SDGs for local government in the MEWA region (UCLG MEWA, 2019).

3. Local Level SDGs: A Proposed Model For Türkiye

In line with the Agenda 2030 process, Türkiye aims to implement practices related to sustainable development goals within its development plans. In this context, evaluations are made at different levels, including policymakers, NGOs, local governments, the private sector, educational institutions, and many other areas, to carry out sustainable development practices. In creating the model, indicators obtained from municipality data, secondary data, and municipal activity reports were used. The model was designed to be in line with SDG goals and indicators. At the same time, matches were made with local indicators included in the SDG.

The measurement methodology was observed at the provincial level while creating the model. The UN methodology and Sustainable Development Goals were adopted in the calculation method of the index, which was adapted to the provincial-level data set. Using the Weighted Average method, multiple sub-indices were calculated, and the main index was obtained by merging them. With this method, calculations were made for sub-dimensions with different qualities. Then, the main index, which would represent the entire data set with a single value, was determined by the same method. When reviewing literature that includes comparisons at the country, province, region, and district levels, it was observed that Principal Component Analysis (PCA) was generally used in index calculations. PCA is one of the multivariate statistical methods used to reduce the dimensions in a data matrix consisting of different variables, aiming to represent it with fewer variables, and the index is calculated accordingly. The results of studies conducted using PCA, the variable and dimension set created, explain only a part of the total variance. This can cause information loss and sometimes discrepancies in the results of measurement and evaluation. Therefore, in this study, PCA was not preferred due to these situations. Instead, the Weighted Average method, which enables multi-dimensional and abstract concepts in the model to be transformed into a single dimension, measurable and concrete form, was adopted. In the Weighted Average method, the arithmetic mean is calculated by dividing the sum of all values in the data set by the number of units in that data set. In the Weighted Average calculation, relevant variables are weighted according to their importance degrees, and calculations are made. Since the data to be obtained at the local level will be in the form of raw data, it should first be subjected to data mining. The data should be converted into various categorical scoring according to the study's needs. On the other hand, the data must be normalized to eliminate the differences in measurement units and reduce them to a single dimension. The Minimum-Maximum Normalization method should be adopted in the normalization of the data set. Thus, other data can be normalized according to the largest and smallest values in a variable series. To make the model more readable, understandable, and traceable, it is recommended that the data set be distributed between 0 and 1 (where the smallest value is 0, and the largest value is 1).

$$X_{scaled} = \frac{x - x_{min}}{x_{max} - x_{min}} \ (1)$$

Using the formula provided above, the data should be transformed into a 0-1 range. This allows the data set, which consists of numerous and varying dimensions, to be reduced to a single dimension. After normalizing the data, weights should be determined for each variable to calculate the index. In determining the weights, the Expert Opinion Survey method, which is widely used in international literature and in many indices, should be utilized. Surveys and opinions should be gathered from relevant experts, academics, and specialists in the field. These opinions should then be used in determining the weightings for each dimension in the index. Once normalized values and weights are determined, the formula provided below should be applied to calculate the index.

$$\textbf{\textit{Index}} = \frac{\sum_i A_{ji} X_{ji}}{\sum_i A_{ji}} \ (2)$$

A_{ji}: *the weight of the i'thsubvariable of the main variable j*

X_{ji}: *normalized value of i'th subvariable of main variable j*

The formula mentioned above should be used to transform the data into a range of 0-1. This allows for the reduction of a dataset, which may consist of multiple and different dimensions, into a single dimension. After normalizing the data, weights should be determined for each variable before moving on to the index calculation. To determine these weights, the Expert Opinion Survey method should be used, which is widely used in international literature and many indices. Experts and academics in relevant fields should be consulted, and their opinions should be taken into account when determining the weights for the dimensions in the index. Once the normalized values and weights are used in the index calculation, the following formula should be applied.

To achieve the objectives and goals of local-level research, index results should be sorted and scored using Cluster Analysis to reveal similarities (district, province, and metropolitan municipality). Cluster Analysis is an analytical technique for separating units or objects into subgroups based on their characteristic features, considering the similarities or differences determined by the distance measure units from a sample of unknown natural groupings. Thus, the different groups exhibit a homogeneous structure within themselves.

For Cluster Analysis to be effective and for the groups to exhibit a homogeneous structure within themselves, the correct clustering algorithm must be selected. The basic algorithms in Cluster Analysis are hierarchical and non-hierarchical (Ketchen et al., 1996). While Hierarchical Cluster Analysis aims to combine the units or objects with various clustering techniques at certain stages based on the degree of similarity determined by distance measurement units, the K-means technique is used in Non-Hierarchical Cluster Analysis. The K-means technique is an iterative clustering algorithm that aims to divide the units into k groups, where the within-group variance is minimized, and the between-group variance is maximized (Ketchen et al., 1996). In the proposed model, the k value is set at 4. The reason for this is that the United Nations has categorized the Human Development Index into four groups.

In terms of the methodology of the proposed model, an important point to note is that the local level to be studied must be determined, and the results must be interpreted according to its category (district, province, and metropolitan municipality). The main reason for this is that the mean, standard deviation, maximum, and minimum values used in the index calculation process have different values at the local level, and different sets of values are available.

It is observed that not all of the objectives, targets, and indicators that make up the SDG are related to local governments. Some of these are closely related to central governments, while others are related to local governments. On the other hand, when evaluated in terms of scale (district, province, and metropolitan municipality), the existence of objectives and indicators related to local governments is apparent. In this context, the proposed model has been made compatible with the SDG, and its objectives and indicators related to the local level have been distinguished and monitored. The "What Local Governments Should Know" report by UCLG-MEWA (2019) revealed that 92 out of 169 targets and 142 out of 240 indicators related to Sustainable Development Goals were related at the local level. Table 1 shows the relationship between the variables used in the proposed model for SDG and Türkiye. Thus, it is aimed to make the proposed model compatible with Sustainable Development Goals.

In the proposed model for monitoring SDGs at the local level in Türkiye, mappings were made with the SDGs. A matching of indicators and targets was achieved that covers 14 out of 17 SDGs. The three SDGs that were excluded from the model are SDG 1 (No Poverty), SDG 14 (Life Below Water), and SDG 17 (Partnerships for the Goals). The reason for not including these three SDGs in the model is that SDG 1 was considered invalid for Türkiye in the Sustainable Development Goals Current Situation Analysis Report published by the Ministry of Development in 2017, while SDG 14 and SDG 17 were not evaluated in the index model due to insufficient data at the local level.

Table 2 presents the local-level alignment of SDGs in Türkiye. The model includes 14 goals and nine components, which represent the sub-indices calculated at the provincial level. As seen in Table 2, some of the subheadings are directly related to the SDG, while others cover multiple goals. The sources from which the indicators were compiled generally consist of four main sources: central-local official institutions, secondary data obtained from metropolitan and provincial municipalities, and scanning of municipal activity reports. The data set was grouped into nine main categories as a result of

matching it with the SDG: 'Reducing Inequalities', 'Safe City,' 'Decent Work and Economic Growth,' 'Quality Education,' 'Health and Quality of Life,' 'Industry, Innovation, and Infrastructure,' 'Sustainable Environment and Energy,' 'Sustainable Cities and Communities,' and 'Gender Equality.' The nine sub-indices included in the model constitute the main index.

Table 3 presents the distribution of indicators according to Sustainable Development Goals (SDGs) in the index model, where a total of 519 indicators were compiled. The 'Reduced Inequalities' index covers two SDGs and consists of 58 indicators, while the 'Sustainable Environment and Energy' index covers five SDGs and consists of 65 indicators. The 'Safe City' index includes 32 indicators, 'Decent Work and Economic Growth' includes 71, 'Quality Education' includes 58, 'Health and Well-being' includes 82, 'Industry, Innovation and Infrastructure' includes 24, 'Sustainable Cities and Communities' includes 105, and 'Gender Equality includes 24 indicators. The distribution of indicators according to SDGs in the index model, where a total of 519 indicators were compiled, is presented in Table 3. Table 3 also shows the compatibility of the index model's nine sub-indices with SDGs, local targets, and the sources of the collected data. The nine sub-indices that form the main index model are important for identifying the strengths and weaknesses of the target level (district, province, metropolitan city) in different areas. A district, province, or metropolitan city that ranks high in the main index may perform poorly in some sub-indices. Therefore, sub-indices allow for gap analyses to be conducted in relevant situations. Local governments have an ideal position to identify and provide assistance to those who cannot meet the minimum living conditions for sustainable livelihoods. They can also contribute to sustainable development strategies by creating job opportunities and increasing the income level of the local community. The 'Reduced Inequalities' index, which is a sub-index of the main index model. It combines the SDGs of ending poverty and reducing inequalities, and the data related to local targets for these SDGs were generally obtained from primary sources.

As a component of the Reducing Inequalities Index, the local goals of No Poverty are as follows (United Nations, 2015);

The ranking of local targets for SDG 1.1. sub-targets is as follows.,

- By 50% of median income - Poverty line (TL)

- By 50% of median income - Number of poor (Thousand people)

- By 50% of median income - Poverty rate (%)

The ranking of local targets for SDG 1.2. sub-targets is as follows,

- By Equivalent Household Disposable Income - Gini Coefficient

- By Equivalent Household Disposable Income - P80/P20 Ratio

The ranking of local targets for SDG 1.3. sub-targets is as follows,

- Number of Recipients of Invalidity Pension

- Number of Recipients of Old Age Pension

- Number of Recipients of Death Pension

- Number of Recipients of Incapacity Income

The ranking of local objectives related to SDG 1.5 sub-goals under the goal of 'No Poverty' is as follows.

- Deaths as a result of being submerged / Population

The data are available in TURKSTAT, Ministry of Justice, Ministry of Labor and Social Security.

The sub-components of Reducing Inequalities, which is another component, are listed as follows (United Nations, 2015);

The ranking of local objectives related to SDG 10.1 sub-goals under the goal of 'Reduced Inequalities' is as follows,

- By Equivalent Household Disposable Income - Gini Coefficient

- By Equivalent Household Disposable Income - P80/P20 Ratio

The ranking of local targets for SDG 10.2 sub-targets is as follows,

- By 50% of median income - Poverty line (TL)

- By 50% of median income - Number of poor (Thousand people)

- By 50% of median income - Poverty rate (%)

as follows.

- Offenses against sexual immunity / Population

- Sexual assault /Population

- Sexual abuse /Population

- Sexual Harassment /Population

The ranking of local objectives related to SDG 10.4 sub-goals under the goal of 'Reduced Inequalities' is as follows,

- Labor Force Participation Rate (15+ and Male)

- Labor Force Participation Rate (%) (15 + and Female)

- Labor Force Participation Rate (%) (15-64 and Male)

- Labor Force Participation Rate (%) (15-64 and Female)

Data are included in TurkStat, Ministry of Justice, Information Technologies and Communication Authority, Municipality Call Centers, and Municipality Activity Reports.

Urbanization is increasing all over the world. Ensuring peace, tranquility, and safety in cities is becoming increasingly important. Local governments have a pioneering role in participatory budgeting, planning, decision-making, and experimenting with new mechanisms. Therefore, local governments should work sensitively toward all communities without marginalization. The data of various indicators were obtained from primary sources to make cities safe and sustainable. The Safe City Index consists of Peace, Justice and Strong Institutions components. The objectives of this component at the Local Level are listed below (United Nations, 2015);

SDG 16.1 Significantly reduce all forms of violence and related death rates everywhere,

   -Forensic examinations /Population

- Offenses against body immunity / Population

- Gunshot injury /Population

- Sharp, piercing, crushing instrument injury

The ranking of local objectives related to SDG 10.3 sub-goals under the goal of 'Reduced Inequalities' is /Population

- Blunt traumatic injuries /Population

- Multiple cause injuries /Population

- Offenses against sexual immunity / Population

- Sexual assault /Population

- Sexual abuse /Population

- Sexual Harassment /Population

- Death examinations / Population

- Deaths by firearms /Population

- Deaths caused by cutting, piercing and crushing tools /Population

- Asphyxia deaths /Population

- Blunt traumatic (beat, falling from height, etc.) deaths /Population

- Deaths due to explosion of explosives / Population

SDG 16.6 Develop effective, accountable and transparent institutions at all levels

- Survey results

The ranking of local objectives related to SDG 16.7 sub-goals under the goal of 'Peace, Justice and Strong Institutions' is as follows.

- Total Number of Lawyers Registered with the Bar Association / Population

- Number of Female Lawyers Registered with the Bar Association / Total

Data are included in the Ministry of Justice, Call Centers of Municipalities, Union of Turkish Bar Associations, TURKSTAT, General Directorate of Public Accounts.

Local governments should evaluate the resources and opportunities of the regions they are in and develop economic development strategies accordingly to promote both growth and employment. At the same time, necessary improvements can be made by collaborating to minimize informal employment. The

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Human Dignity and Economic Growth Index, another sub-index that constitutes the main model. It covers variables related to production, growth, and income levels of city residents, in general, using macroeconomic index data relevant to the city. Decent Work and Economic Growth Index local targets are listed below (United Nations, 2015);

The ranking of local objectives related to SDG 8.10 sub-goals under the goal of 'Decent Work and Economic Growth' is as follows.

- Number of ATMs Per 100.000 People

- Number of Bank Branches Per 100.000 People

The ranking of local objectives related to SDG 8.3 sub-goals under the goal of 'Decent Work and Economic Growth' is as follows.

- Total Work Placed / Population aged 15-64

- Women-Work Placed /Total

- Total budget expenditure per capita (Total Budget Expenditures/Population)

- SSI budget expenditure per capita (Social Security Institution Payments Budget Expenditures/Population)

- Employment Rate (%) (15+)

- Employment Rate (%) (15 + and Female)

- Employment Rate (%) (15-64)

- Employment Rate (%) (15-64 and Women)

The ranking of local objectives related to SDG 8.5 sub-goals under the goal of 'Decent Work and Economic Growth' is as follows,

- Registered Unemployed /Population Registered with Total (Turkish Employment Agency-İŞKUR)

- Women- Turkish Employment Agency Registered Unemployed/Total

- Total-Disabled Job Placed /Population

- Female-Disabled Job Placed /Total

- Average daily earnings of Compulsory Insured Male (TL)

- Average daily earnings of Compulsory Insured

Women (TL)

- Number of Insured Under (4A-4B-4C Pension) / Population aged 15-64

- Number of Insured Under (4A-4B-4C Pension) / Population aged 15-64 (Women)

- Unemployment Rate (%) (15+)

- Unemployment Rate (%) (15 + and Women)

- Unemployment Rate (%) (15-64)

- Unemployment Rate (%) (15-64 and Women)

The ranking of local objectives related to SDG 8.8 sub-goals under the goal of 'Decent Work and Economic Growth' is as follows.

- Number of Unemployment Benefit Applications / Population aged 15-64

- Number of Deserving Unemployment Allowances / Population aged 15-64

- Number of Unemployment Benefit Applications / Number of Claimants

- Number of insured persons who had a work accident according to their incapacity for work (days) / Number of Insured

- Number of insured persons who had work accidents according to their incapacity for work (days) / Number of Insured (Male)

- Number of insured persons who had a work accident according to their incapacity for work (days) /Number of Insured (Women)

- Number of insured who died as a result of work accident /Number of Insured

- Number of insured who died as a result of work accident /Number of Insured (Male)

- Number of insured who died as a result of work accident /Number of Insured (Women)

- Ratio of the number of disease events to the total number of diseases (%)

- Ratio of the number of disease events to the number of compulsory insurance holders in the same province (%)

- Ratio of temporary incapacity to total temporary incapacity for work (%)

- Average days of temporary incapacity for work per illness event

The ranking of local objectives related to SDG 8.9 sub-goals under the goal of 'Decent Work and Economic Growth' is as follows,

- Number of Visits to the Facility-Foreigners (%)

- Number of Visits to the Facility-Domestic (%)

- Number of Visits to Facility-Total (%)

- Occupancy Rate (%) Foreign

- Occupancy Rate (%) Domestic

- Occupancy Rate (%) Total

- Average Length of Stay Foreign

- Average Length of Stay Domestic

- Average Length of Stay Total

- Sites/Population

- Number of Immovable Cultural Heritage to be Protected/Population

- Number of Facilities with Tourism Investment Certificate

- Number of Rooms with Tourism Investment Certificate

- Number of Beds with Tourism Investment Certificate

- Number of Facilities with Tourism Operation License

- Number of Rooms with Tourism Operation Certificate

- Number of Beds with Tourism Operation Certificate

- Number of Municipal Certified Facilities

- Number of Municipal Certified Rooms

- Number of Municipal Certified Beds

The data are included in the Activity Reports of Union of Turkish Bar Associations, ISKUR, Social Security Institution, TurkStat, General Directorate of Accounts, Turkish Patent and Trademark Office, Ministry of Labor and Social Security, Revenue Administration, Municipality.

Local governments need to work on education at various levels. They play a key role in providing education to disabled individuals. On the other hand, structuring vocational and technical education in accordance with SDG standards will also increase employment opportunities. The Quality Education Index is an index that includes data on education infrastructure, human capital, and lifelong education activities of local governments within city limits. The data is generally compiled from primary sources. The following are the sub-elements of the Quality Education Index (United Nations, 2015);

The ranking of local objectives related to SDG 4.1 sub-goals under the goal of 'Quality Education' is as follows.

- Ratio of University Graduates Ratio of Female Graduates

- Percentage of Population with Graduate Education

- Ratio of Female Population with Graduate Education

- PhD Educated Ratio

- Ratio of Female Population with Doctorate Education

- Ph.D. Graduate/15+ Population (1000 people)

- Master's and Doctorate Degrees/15+ Population (1000 people)

- Percentage of Women with No Education

- Literacy Rate

The ranking of local objectives related to SDG 4.2 sub-goals under the goal of 'Quality Education' is as follows.

- Pre-Primary Net Enrollment Rate (3-5 Ages) - Female %

- Pre-Primary Net Enrollment Rate (3-5 Ages) %

- Pre-Primary Net Enrollment Rate (Ages 5)- Female %

- Pre-Primary Net Enrollment Rate (5 Years) %

- Pre-Primary Net Enrollment Rate (6 Years)- Female %

- Pre-Primary Net Enrollment Rate (6 Years) %

- Net Schooling Rate Primary Education- Female (%)

- Net Schooling Rate Primary School (%)

- Net Schooling Rate Secondary Education (%)

- Net Schooling Rate Secondary School (%)

- Net Schooling Rate Primary Education- Female (%)

- Net Schooling Rate Primary School- Female (%)

- Net Schooling Rate Secondary Education (%)

- Net Schooling Rate Secondary School- Female (%)

The ranking of local objectives related to SDG 4.3 sub-goals under the goal of 'Quality Education' is as follows.

- Number of Students per Classroom (Primary Education)

- Number of Students per Classroom (General Secondary Education)

- Number of Students per Classroom (Secondary Education)

- Number of Students per Classroom (Vocational and Technical Secondary Education)

- Number of Students Per School (Primary School)

- Number of Students per School (General Secondary Education)

- Number of Students Per School (Secondary Education)

- Number of Students per School (Vocational and Technical Secondary Education)

- Number of Students Per School (Middle School)

- Number of Students per Teacher (Primary School)

- Number of Students per Teacher (General Secondary Education)

- Number of Students per Teacher (Secondary Education)

- Number of Students per Teacher (Vocational and Technical Secondary Education)

- Number of Students per Teacher (Middle School)

- Number of Students Per Branch (Primary School)

- Number of Students per Branch (General Secondary Education)

- Number of Students per Branch (Secondary Education)

- Number of Students per Branch (Vocational and Technical Secondary Education)

- Number of Students Per Branch (Middle School)

- Number of Academics/Total

- Number of Academics/Population

- Number of Students Per Academician

The ranking of local objectives related to SDG 4.4 sub-goals under the goal of 'Quality Education' is as follows.

- Turkish Employment Agency-İŞKUR Vocational Training Courses Number of Trainees / Population

- Number of Turkish Employment Agency-İŞKUR On-the-Job Training Program Participants / Population

The ranking of local objectives related to SDG 4.5 sub-goals under the goal of 'Quality Education' is as follows.

- Number of Special Education Branches (Primary School)

- Number of Branches in Special Education (Primary School Women)

- Number of Special Education Branches (Middle School)

- Number of Branches in Special Education (Middle School Women)

- Number of Paid Teachers (Special Education Teachers)

- Number of Paid Teachers (Special Education Teachers)

- Norm Staff Requirement

- Number of Special Education Students Transported-Total

- Number of Special Education Students Transported-Women

Data are included in TURKSTAT, Republic of Türkiye Ministry of National Education, Council of Higher Education, ISKUR, General Directorate of Public Accounts.

Local governments need to provide information on infectious diseases, as well as coordinate necessary education and prevention measures to minimize the risk of transmission. Access to basic healthcare needs should be provided in poor areas. In addition, urban planning should be carried out to ensure a healthy life by regulating various factors such as air pollution, environmental health, water, and air pollution. The Health and Quality of Life Index is designed to ensure a healthy and quality life for all age groups. The data used in the index covers indicators derived from the healthcare activities of cities. The following are the sub-elements of the Good Health and Well-being (United Nations, 2015);

The ranking of local objectives related to SDG 3.1 sub-goals under the goal of 'Good Health and Well-being' is as follows.

- Deaths at birth /Population

The ranking of local objectives related to SDG 3.2 sub-goals under the goal of 'Good Health and Well-Being' is as follows.

- Under-Five Mortality Rate (per Thousand)

- Infant Mortality Rate (per Thousand)

- Brute Death Rate (per Thousand)

- Crude Death Rate (Hospital)

The ranking of local objectives related to SDG 3.3 sub-goals under the goal of 'Good Health and Well-being' is as follows,

- Number of deaths due to tuberculosis – Total

The ranking of local objectives related to SDG 3.4 sub-goals under the goal of 'Good Health and Well-being' is as follows.

- Crude Suicide Rate (Per Hundred Thousand)

- Male-Cause of death: Circulatory system diseases / Population

- Female-Cause of death: Circulatory system diseases / Population

- Male-Cause of death: Endocrine (diseases related to endocrine gland, nutrition and metabolism) / Population

- Female-Cause of death: Endocrine (diseases related to endocrine gland, nutrition and metabolism) / Population

- Male-Cause of death: Benign and malignant tumors (malignant and benign neoplasms /Population

- Female-Cause of death: Benign and malignant tumors (malignant and benign neoplasms /Population

- Male-Cause of death: Nervous system and sensory organs diseases / Population

- Female-Cause of death: Nervous system and sensory organs diseases /Population

- Male-Cause of death: Respiratory system diseases / Population

- Female-Respiratory system diseases /Population

- Infection-related deaths /Population

SDG 3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents,

- Dead Per Million Vehicles

- Injured Per Million Vehicles

- Number of Deaths in Traffic Accidents in a Million Population

- Number of Injured in Traffic Accidents in a Million Population

- Number of Traffic Accidents in a Million Population

- Dead Per Million Cars

- Injured Per Million Cars

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- Number of Cars per Thousand People

The ranking of local objectives related to SDG 3.7 sub-goals under the goal of 'Good Health and Well-Being' is as follows.

- Number of Gynecologists Per Woman (%)

- Ratio of adolescent births in total births (%)

- Adolescent fertility rate (‰)

- Number of Physicians in Obstetrics and Gynecology in Public Hospitals

- Psychological Support Center Presence

- Family Support Center Presence

- Survey Results

SDG 3.9 sub-goals under the goal of 'Good Health and Well-being' is as follows.

- Number of deaths due to unsafe water, unreliable sanitation and lack of hygiene

- Number of deaths due to accidental poisoning - Total

- Deaths due to drug poisoning /Population

- Deaths due to chemical poisoning /Population

- Deaths due to gas poisoning /Population

The ranking of local objectives related to SDG 3.C sub-goals under the goal of 'Good Health and Well-being' is as follows.

- Population Per Emergency Station

- Number of Ambulances Per 10,000 People

- Population Per Emergency Ambulance

- Number of Applications to a Physician per Person

- Number of Applications to the Dentist Per Person

- Number of Operations/Population

- Bed Occupancy Rate

- Average Days of Stay

- Bed Speed

- Bearing Speed Range

- Number of Hospitals Per 10,000 People

- Number of Ministry of Health Hospitals Per 10,000 Persons

- Number of University Hospitals Per 10,000 People

- Number of Private Hospitals Per 10,000 People

- Number of Hospital Beds Per 10,000 People

- Number of Hospital Beds Per 10,000 People (Ministry of Health)

- Number of Hospital Beds Per 10,000 People (University)

- Number of Private Hospital Beds per 10,000 People

- Number of Qualified Beds Per 10,000 People

- Qualified Bed Ratio (Intensive Care Beds Not Included.)

- Number of Intensive Care Beds per 10,000 People

- Population Per Family Medicine Unit

- Total Number of Physicians Per 10,000 Persons

- Number of Specialist Physicians Per 10,000 Persons

- Number of General Practitioners Per 10,000 Persons

- Number of Assistant Physicians per 10,000 Persons

- Number of Dentists Per 10,000 People

- Number of Nurses Per 10,000 People

- Number of Midwives Per 10,000 People

- Number of Pharmacists Per 10,000 People

- Number of Auxiliary Health Personnel per 10,000 Persons

The data are included in the Ministry of Justice, TURKSTAT, General Directorate of Public Health, General Directorate of Health Services, Ministry of Justice, Ministry of Health, Web Scanning, Municipal Call Centers, General Directorate of Emergency Health Services, General Directorate of Public Health, General Directorate of Accounting.

Local governments should provide infrastructure and services that connect cities and surrounding regions and are sustainable. They can create markets in this area and contribute to the industry with local economic strategies by taking into account the needs of their region. The Industry, Innovation, and Infrastructure Index covers data on the infrastructure and industrialization of cities obtained from relevant municipalities, secondary institutions, and organizations. The Industry, Innovation and Infrastructure Index targets at the local level are listed below (United Nations, 2015);

The ranking of local objectives related to SDG 9.1 sub-goals under the goal of 'Industry, Innovation and Infrastructure' is as follows,

- Port Presence

- Highway Presence

- Railway Line Existence

- Presence of Metro, Light Metro, Tram Line

- Airport Presence

- Variety of Transportation

- Do you have a seaside?

- Asphalt Road/Total Road

- Existence of International Flights

- Passenger Traffic / Total (Airports)

- Freight Traffic /Total (Airports)

- Aircraft Traffic / Total

- Logistics Center Presence

- Number of Passengers/Population

The ranking of local objectives related to SDG 9.2 sub-goals under the goal of 'Industry, Innovation and Infrastructure' is as follows.

- GDP per capita (TL)

- The share of the added value of the manufacturing industry in the provincial gross domestic product (at current prices)

The ranking of local objectives related to SDG 9.3 sub-goals under the goal of 'Industry, Innovation and Infrastructure' is as follows.

- Existence of Entrepreneurial Supports in Municipalities

- Existence of Entrepreneurship and Innovation Centers

- Number of R&D Centers

- Number of Technopolis (Technology Development Zone)

- Number of OSB

- Ratio of NPLs to Cash Loans (%)

- Ratio of Firms Established

- Rate of Closed Firms

Data are available in Google Maps and Web Scanning, General Directorate of Highways, The General Directorate of State Airports Authority, Turkish Railways, Municipality Activity Reports, TurkStat, General Directorate of R&D Incentives, Ministry of Industry and Technology, OSBUK, Banking Regulation and Supervision Agency, Union of Chambers and Commodity Exchanges of Türkiye.

Local governments need to carefully maintain waste management and environmental protection measures to contribute to the improvement of water quality. They should play a significant role in water and sanitation management without discrimination. In terms of energy, they are in an ideal position to promote and use green energy and implement sustainable energy. They are also crucial in reducing environmental hazards and preserving biodiversity during urban planning by providing necessary information about sustainable production and consumption. At the same time, they need to strengthen their capacity to cope with natural disasters and hazardous conditions that may endanger living beings due to climate change. They should take a leading role in creating resilient cities capable of withstanding any adverse conditions, including vulnerable settlements. The Sustainable Environment and Energy Index was created by compiling data from municipal and other secondary sources.

The Sustainable Environment and Energy Index consists of Clean Water and Sanitation, Responsible Production and Consumption, Life and Land, Climate

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Action and Affordable and Clean Energy. Clean Water and Sanitation components (United Nations, 2015);

The ranking of local objectives related to SDG 6.1 sub-goals under the goal of 'Clean Water and Sanitation' is as follows,

- Amount of water dispensed/number of households

- Ratio of Municipality Population Served by Drinking and Potable Water Treatment Plant to Total Municipality Population (%)

- Number of Municipalities Served with Drinking and Potable Water Treatment Plants

- Number of Drinking and Potable Water Treatment Plants

- Capacity of Potable and Potable Water Treatment Plant (Thousand M3/Year) / Population

- Existence of Drinking and Potable Water Treatment Plant

- Amount of Water Treated in Drinking and Potable Water Treatment Plants (Thousand M3/Year) / Population

- Total Amount of Water Drawn for Drinking and Potable Water Networks (Thousand M3/Year) / Population

- Ratio of Municipality Population Served by Drinking and Potable Water Network to Total Municipality Population (%)

- Number of Municipalities Served with Drinking and Potable Water Network

- Daily Amount of Water Drawn per Person (Liter/Person-Day)

- Proportion of population using reliably managed drinking water services

The ranking of local objectives related to SDG 6.2 sub-goals under the goal of 'Clean Water and Sanitation' is as follows. Relevant information is available through TURKSTAT.

- Number of Municipalities Served with Sewerage Network

- Ratio of Municipality Population Served by Sewerage Network to Total Municipality Population

(%)

Responsible Production, Consumption and Production components (United Nations, 2015);

The ranking of local objectives related to SDG 12.4 sub-goals under the goal of 'Responsible Production, Consumption and Production' is as follows,

- Number of Municipalities by Waste Disposal Method - Storage in Municipal Garbage

- Waste Amount (Ton/Year) by Waste Disposal Method - Storage in Municipal Garbage

- Average Municipal Waste Per Capita (Kg/Person-Day)

- Ratio of Municipality Population to Total Municipality Population (%)

- Number of Municipalities Provided Waste Service

- Amount of Collected Municipal Waste/Population

- Number of Municipalities Served with Sewerage Network

- Ratio of Municipality Population Served by Sewerage Network to Total Municipality Population (%)

- Daily Amount of Wastewater Discharged in Municipalities Per Capita (Liters/Person-Day)

- Amount of Wastewater Treated in Wastewater Treatment Plants / Population

- Number of Wastewater Treatment Plants

- Number of wastewater treatment plants per 100,000 people

- Ratio of Municipality Population Served by Wastewater Treatment Plant to Total Municipality Population(%)

- Number of Municipalities Served with Wastewater Treatment Plant

SDG 12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.

- Climate Action Plan Existence

- Existence of Trainings on Climate Change

- Mentioning the Climate Crisis in Strategic Plans

The data are included in TURKSTAT, Web Scan and Municipality Activity Reports.

Life and Land components (United Nations, 2015);

The ranking of local objectives related to SDG 15.1 sub-goals under the goal of 'Life an Land' is as follows.

- Forest Area Per Capita

- Woodland %

- Continuously Irrigated Areas (%)

The ranking of local objectives related to SDG 15.2 sub-goals under the goal of 'Life on Land' is as follows. The data are available in the General Directorate of Forestry.

- Seed Production (Tons)

- Sapling Production (Thousand)

Climate Action components (United Nations, 2015);

The ranking of local objectives related to SDG 13.3 sub-goals under the goal of 'Climate Action' is as follows,

- Climate Action Plan Existence

- Existence of Trainings on Climate Change

- Has a Greenhouse Gas Inventory Made?

- Mentioning the Climate Crisis in Strategic Plans

The ranking of local objectives related to SDG 13.B sub-goals under the goal of 'Climate Action' is as follows,

- Number of Forest Fires

- Seed Production (Tons)

- Sapling Production (Thousand)

- Forest Area Per Capita

- Woodland %

- Green City Areas %

- Amount of Green City Areas Per Capita (M² / Population)

- Continuously Irrigated Areas (%)

- Irrigated Arable Land %

Data are available in Web Scanning, Municipality Activity Reports, Municipality Strategic Plans, General Directorate of Forestry, Ministry of Agriculture and Forestry.

Affordable and Clean Energy components (United Nations, 2015);

SDG 7.1 By 2030, ensure universal access to affordable, reliable and modern energy services

- Total Electricity Consumption per Person (Kwh)

- Number of Natural Gas Residential Subscribers Per Household

- Natural Gas Consumption per Household (m3)

- Natural Gas Consumption (Million Sm3)

- Residential Natural Gas Sales (Million Sm3)

- Electricity Consumption Per Household-Residential

- Electricity Consumption Per Capita-Residential

- Electricity Consumption Per Household - Lighting

- Electricity Consumption Per Capita-Lighting

SDG 7.3 By 2030, double the global rate of improvement in energy efficiency.

- Renewable Energy Facility Presence

- Wind Power Plant Presence

- Hydroelectric Power Plant Presence

- Solar Power Plant Asset (Licensed)

- Solar Power Plant Presence (Licensed+ Unlicensed)

- Geothermal Power Plant Presence

- Biomass Plant Presence

Data are available in TURKSTAT, Turkish Natural Gas Distributors Association and Energy Market

Regulatory Authority.

Local governments have responsibilities in creating various plans, including monitoring the housing market, eliminating obstacles to access housing for people with low incomes, and ensuring transportation safety. In meeting the needs of cities, they must work in harmony with rural areas for the procurement of food and natural resources. They should collaborate on many issues, such as promoting public transportation to reduce carbon emissions, preserving cultural heritage, and combating and adapting to climate change. Data used in the index that takes into account cities and human settlements have been compiled from municipal and other relevant sources. The following are the sub-elements of the Sustainable Cities and Communities (United Nations, 2015);

The ranking of local objectives related to SDG 11.1 sub-goals under the goal of 'Sustainable Cities and Communities' is as follows,

- Number of Housing Sales-First Sales /Population

- Number of Housing Sales-Second Hand Sales /Population

- Number of flats/number of households according to occupancy permit

- According to the Per Capita Building occupancy permit, Area

- Number of flats/number of households according to the building permit

- Per Capita Area according to the building permit

The ranking of local objectives related to SDG 11.2 sub-goals under the goal of 'Sustainable Cities and Communities' is as follows,

- Presence of Metro, Light Metro, Tram Line

- Variety of Transportation

The ranking of local targets for SDG 11.3 sub-targets is as follows,

- Access to the Activity Report on the Municipality Website

- Access to the Strategic Plan on the Municipality Website

- Sharing of Budget Indicators in the Municipality Activity Report

- Sharing Performance Tables in the Municipality Activity Report

- Possibility to Message the Mayor on the Municipality Website

- Existence of a Call Center System in the Municipality

- Access to the Municipality Website in Different Languages

- E-municipality Application Existence

- Mobile Application Presence in the Municipality

- Presence of Municipality's Facebook Account

- Presence of the Municipality's Instagram Account

- Presence of Municipality's Youtube Account

- Presence of Municipality Twitter Account

- Continuous City Structure (%)

- Presence of Women's Council in the City Council

- Presence of Disabled Assembly in the City Council

- Youth Assembly Presence in the City Council

- Child Council Presence in the City Council

- Presidential Election Participation Rate

- Participation Rate in Local Elections

- Number of projects carried out in cooperation with NGOs

The ranking of local objectives related to SDG 11.4 sub-goals under the goal of 'Sustainable Cities and Communities' is as follows,

- Number of Special Museums

- Number of Museums Affiliated with the Ministry of Culture and Tourism

- Diversity and Quality Score of Social and Cultural Services

The ranking of local targets for SDG 11.5 sub-targets is as follows.,

- Number of Intervened Incidents

- Proportion of Vehicles Participating in the Intervention (%)

- Ratio of Personnel Engaged in the Intervention (%)

- Emergency Aid Allowances (million TL)

- Allowance Sent for Infrastructure Damages (million TL)

- Number of Landslide/Rockfall Events

- Number of Flood Events

- Diversity and Quality Score of Disaster Services

- Deaths as a result of being submerged / Population

The ranking of local targets for SDG 11.6 sub-targets is as follows,

- Average Municipal Waste Per Capita (Kg/Person-Day)

- Ratio of Municipality Population to Total Municipality Population (%)

- Number of Municipalities Provided Waste Service

- Amount of Collected Municipal Waste/Population

- Number of Municipalities Served with Sewerage Network

- Ratio of Municipality Population Served by Sewerage Network to Total Municipality Population (%)

- Daily Amount of Wastewater Discharged in Municipalities Per Capita (Liters/Person-Day)

- Amount of Wastewater Treated in Wastewater Treatment Plants / Population

- Number of Wastewater Treatment Plants

- Number of wastewater treatment plants per 100,000 people

- Ratio of Municipality Population Served by Wastewater Treatment Plant to Total Municipality Population (%)

- Number of Municipalities Served with Wastewater Treatment Plant

- Ratio of regularly collected municipal waste to total

municipal waste

- Carbon Emission Savings per Household (kg)

- PM10 Average (ug/m3)

- PM2.5 Average (ug/m3)

- SO2 Average (ug/m3)

- NO2 Average (ug/m3)

- O3 Average (ug/m3)

- CO Average (ug/m3)

The ranking of local targets for SDG 11.7 sub-targets is as follows.,

- Average share of built-up areas in cities, fully open to public use

- Availability of Disabled Life Center

- Disabled Parking Availability

- Number of Playgrounds

- Offenses against body immunity / Population

- Offenses against sexual immunity / Population

- Sexual assault /Population

- Sexual abuse /Population

- Sexual Harassment /Population

When local targets are listed within the scope of SDG 11.B,

- Presence of Transportation Coordination Center

- Disaster Coordination Center Existence

The ranking of local objectives related to SDG 11.C sub-goals under the goal of 'Sustainable Cities and Communities' is as follows,

- The Housing Development Administration (TOKİ) - Number of Projects

- The Housing Development Administration (TOKİ) - Number of Urban Transformation and Development Projects

- The Housing Development Administration (TOKİ)-

Number of Lower Income Group Housing

- The Housing Development Administration (TOKİ)- Urban Transformation and Development Project Number of Housing

Data are available TurkStat, Google Maps and Web Scanning, Municipality Website, Municipality Activity Report, Ministry of Agriculture and Forestry, Republic of Türkiye Supreme Election Board, Disaster and Emergency Management Presidency, Ministry of Justice, Turkish Natural Gas Distributors Association, Ministry of Environment, Urbanization and Climate Change, Housing Development Administration of the Republic of Türkiye, General Directorate of Foundations, General Directorate of Civil Society Relations, General Accounting Directorate, Municipality Strategic Plans, Municipality Call Centers.

Local governments play an important role in combating all forms of gender-based discrimination. They can take important steps towards increasing the number of women at the local level, ensuring fair employment and wages, and promoting gender equality. Additionally, they must provide all necessary assistance and services to women who have experienced violence. The Gender Equality Index takes into account the ratio of women to men in local government employees, as well as other relevant secondary data. The following are the sub-elements of the Gender Equality Index (United Nations, 2015);

SDG 5.1 End all forms of discrimination against all women and girls everywhere,

- Number of Women-Workers /Total

- Women-Union Workers /Total

- Female Unionization Rate / Male Unionization Rate (%)

- Local Equality Action Plan Existence

The ranking of local objectives related to SDG 5.2 sub-goals under the goal of 'Gender Equality' is as follows.

- Police Record - Murdered Woman

- Gendarmerie Record - Murdered Woman

- Murdered Woman

- Offenses against sexual immunity / Population

- Sexual assault /Population

- Sexual abuse /Population

- Sexual Harassment /Population

The ranking of local targets for SDG 5.3 sub-targets is as follows.,

- Average Age at First Marriage-Female

- Consanguineous Marriage Rate (%)

- Ratio of girl child marriages in total marriages (%)

The ranking of local targets for SDG 5.5 sub-targets is as follows.

- Number of Women Members of the Municipal Council/Total

- Number of Deputy Mayor Women /Total

- Number of Female Managers in the Municipality / Total

- Municipality Total Number of Female Employees/Total

- Number of Female Headmen /Total

- Ratio of Women Chairs in the Parliament

Data are available in Ministry of Labor and Social Security, Web Scanning, Police Academy, The Monument Counter, Ministry of Justice, TURKSTAT and Social Security Institution.

Table 1. Sustainable Development Goals Targets and Indicators

Goal	Target Number	Local Target Number	Total Indicator Number	Local Government Indicator Number
No Poverty	7	4	12	7
Zero Hunger	8	5	14	9
Good Health and Well-being	13	6	26	15
Quality Education	10	7	11	8
Gender Equality	9	7	14	11
Clean Water and Sanitation	8	7	10	9
Affordable and Clean Energy	5	3	6	4
Decent Work and Economic Growth	12	6	17	9
Industry, Innovation, and Infrastructure	8	2	12	4
Reduced Inequalities	10	5	11	5
Sustainable Cities and Communities	10	10	15	15
Responsible Consumption and Production	11	7	13	9
Climate Action	5	3	7	5
Life Below Water	10	4	10	4
Life on Land	12	5	14	6
Peace, Justice, and Strong Institutions	12	5	23	12
Partnerships for the Goals	19	6	25	10
Total	169	92	240	142

Source: UCLG MEWA (2019), INGEV (2022).

Table 2. A Model for Monitoring Local Level SDGs in Türkiye

and the Alignment with Sustainable Development Goals

SDG Monitoring at Local Level: A Model for Türkiye	Sustainable Development Goals
Reducing Inequalities	No Poverty (Goal 1) Reduced Inequalities (Goal 10)
Safe City	Peace, Justice, and Strong Institutions (Goal 16)
Decent Work and Economic Growth	Decent Work and Economic Growth (Goal 8)
Quality Education	Quality Education (Goal 4)
Health and Well-being	Good Health and Well-being (Goal 3)
Industry, Innovation, and Infrastructure	Industry, Innovation, and Infrastructure (Goal 9)
Sustainable Environment and Energy	Clean Water and Sanitation (Goal 6) Affordable and Clean Energy (Goal 7) Responsible Consumption and Production (Goal 12) Climate Action (Goal 13) Life on Land (Goal 15)
Sustainable Cities and Communities	Sustainable Cities and Communities (Goal 11)
Gender Equality	Gender Equality (Goal 5)

Source: UN (2015).

Table 3. Number of Indicators Used in the Model

Index	SDGs	Number of Indicators	Total Indicators
Reducing Inequalities	No Poverty (Goal 1) Reduced Inequalities (Goal 10)	38 20	58
Safe City	Peace, Justice, and Strong Institutions (Goal 16)	32	32
Decent Work and Economic Growth	Decent Work and Economic Growth (Goal 8)	71	71
Quality Education	Quality Education (Goal 4)	58	58
Health and Well-being	Good Health and Well-being (Goal 3)	82	82
Industry, Innovation, and Infrastructure	Industry, Innovation, and Infrastructure (Goal 9)	24	24
Sustainable Environment and Energy	Clean Water and Sanitation (Goal 6) Affordable and Clean Energy (Goal 7) Responsible Consumption and Production (Goal 12) Climate Action (Goal 13) Life on Land (Goal 15)	16 13 17 14 5	65
Sustainable Cities and Communities	Sustainable Cities and Communities (Goal 11)	105	105
Gender Equality	Gender Equality (Goal 5)	24	24

Source: UN (2015).

4. Conclusion

The concept of sustainable development, defined by the United Nations in 1987 as "the ability to meet the needs of the present generation without compromising the ability of future generations to meet their own needs", was determined as the primary goal for humanity in the 21st century in 1992. By the year 2000, the matters established as the United Nations Millennium Development Goals were announced as the Agenda 2030: United Nations Sustainable Development Goals for all countries in 2015. The Sustainable Development Goals, consisting of 17 goals, 169 targets, and 240 indicators, have become a set of benchmarks followed by countries. There is a significant importance in the monitoring of these indicators created at the national scale for data to be compiled at the local level. When the Sustainable Development Goals are monitored at a local scale and applied to policies and activities, they contribute to national-scale development. While not all of the indicators set, a significant portion consists of indicators that can be monitored at the local level and provide a basis for policy proposals. In this study, a model has been put forward on how the 17 goals, 169 targets, and 240 indicators determined within the framework of the Sustainable Development Goals can be monitored at the local level. The model, developed for Türkiye is structured to allow monitoring at the provincial and district levels. At the same time, an analytical framework has been drawn up with an index for monitoring sustainable development goals at the local scale. The application of the model at the local level is expected to contribute to the monitoring of the Sustainable Development Goals not only at the national level but also at the local level.

Article Information

Conflicts of Interest/Common Interest: No conflict of interest or common interest has been declared by the authors.

Ethics Committee Approval: This study does not require ethics committee permission or any special permission.

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