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Environmental Sustainability in Local Governments in TR33 Region

Abstract

With the industrial revolution and globalization, a rapid migration from rural to urban areas and an unbalanced and intense population growth in cities have aroused. Thus, problems such as housing, water, food, infrastructure, traffic, environment have emerged in cities. Environmental problems have started to emerge because of the unplanned and unpredictable use of limited natural resources such as soil, water, energy, and food. For this reason, projects and services have started to be implemented by international, national, and local administrations on a global scale. The United Nations, the European Union and environmental organizations act together to make the environment sustainable in cooperation with national and local governments worldwide. In Türkiye, environment-centered activities are conducted by local governments to ensure environmental sustainability. The data of the study, in which literature review and document analysis method, one of the qualitative research methods, were accessed from the activity reports of the relevant municipalities between 2021-2023. In the study, environmental sustainability-centered activities of local governments in the TR33 Region are examined. In the study, it was concluded that there are topics that need to be developed in the environmentally sustainability-centered activities of local governments in the TR33 region.

Keywords*: *Environmental sustainability, TR33 Region, Local governments, Türkiye

TR33 Bölgesi Yerel Yönetimlerinde Çevresel Sürdürülebilirlik

Öz

Sanayi devrimi ve küreselleşme ile birlikte kırdan kente hızlı bir göç yaşanmış, kentlerde dengesiz ve yoğun bir nüfus artışı ortaya çıkmıştır. Böylece kentlerde barınma, su, gıda, altyapı, trafik, çevre gibi sorunlar ortaya çıkmıştır. Toprak, su, enerji, gıda gibi sınırlı doğal kaynakların plansız ve öngörülemeyen kullanımı nedeniyle çevre sorunları ortaya çıkmaya başlamıştır. Bu nedenle küresel ölçekte uluslararası, ulusal ve yerel yönetimler tarafından projeler ve hizmetler uygulanmaya başlanmıştır. Birleşmiş Milletler, Avrupa Birliği ve çevre örgütleri, dünya genelinde ulusal ve yerel yönetimlerle işbirliği içinde çevreyi sürdürülebilir kılmak için birlikte hareket etmektedir. Türkiye'de de çevresel sürdürülebilirliğin sağlanması için yerel yönetimler tarafından çevre merkezli faaliyetler yürütülmektedir. Nitel araştırma yöntemlerinden literatür taraması ve doküman analizi yönteminin kullanıldığı çalışmanın verilerine ilgili belediyelerin 2021-2023 yılları arasındaki faaliyet raporlarından ulaşılmıştır. Çalışmada TR33 Bölgesi'ndeki yerel yönetimlerin çevresel sürdürülebilirlik merkezli faaliyetleri incelenmiştir. Çalışmada TR33 bölgesindeki yerel yönetimlerin çevresel sürdürülebilirlik merkezli faaliyetlerinde geliştirilmesi gereken konu başlıkları olduğu sonucuna ulaşılmıştır.

Anahtar Kelimeler: *Çevresel sürdürülebilirlik, TR33 Bölgesi, Yerel yönetimler, Türkiye*

Introduction

In the process that started with the industrial revolution, the rapid migration from rural to urban areas around the world has led to overcrowding in cities. Over time, cities have had to host far more people than their existing potential and the risk/problem that the existing limited resources are not sufficient for the people living in these places has started to emerge. Increasing population has led to unplanned urbanisation, an increase in the number of buildings, and an increase in the volume and amount of services provided by administrations. Different solutions have been tried to be found by the administrations in order to provide adequate services in the fields such as environment, energy, water, food, education, health, housing in cities that host people and places far above their capacity. In order to produce solutions at global, national and local levels for this situation experienced almost all over the world, it has been deemed necessary to develop a management perspective that will enable the existing resources to be sustainable (Pitelis, 2013, p. 658). Because of reasons such as global warming and climate change, it is aimed to use the capacity of natural resources at the maximum level and to benefit from these resources for as long as possible. In order to make this situation sustainable, it is aimed to realise the supply of people's needs within the framework of continuity as much as

possible by developing cooperation at global, national and local level under the leadership of the United Nations, implementing projects and introducing new management models such as governance.

The projects, activities and services developed by the administrations centred on environmental sustainability contribute positively to the protection and development of the environment. However, when evaluated, it is seen that the economic dimension of sustainable development is more important than the environmental dimension, and therefore the environmental dimension is put into the second plan in societies where the economy-oriented perspective is given importance. Perhaps the reason for this may be that the economic power of developed countries is seen as attractive by developing countries and the environment can easily be put on the back burner, consciously or unconsciously, in order to access economic power - by any means necessary. This is precisely the point where environmental sustainability should be emphasised as an important issue. The sustainability of natural environmental resources such as water, food, soil is seen as a vital issue for human beings because of reasons such as the fact that existing natural resources are at risk because of different reasons such as drought, desertification, and the speed of nature's self-renewal is negative compared to consumption processes. The administrations' cooperation has enabled environmental sustainability, achieved by transitioning to clean renewable energy sources, nearly eliminating carbon emissions, and phasing out fossil fuels.

In the study, the conceptual framework related to the concept of sustainable development is presented by starting with the methodology section and the concept of environmental sustainability and environmental sustainability practices of local governments are evaluated throughout the world and Türkiye, and then, under the title of environmental sustainability practices in TR33 region local governments, the services provided, activities conducted and projects conducted by local governments are included. The study ends with a conclusion and discussion section in which a general evaluation is made and information that can contribute to the regional administrations is presented.

1. Method

The aim of the study is to provide information on environmental sustainability practices in local governments in TR33 region. It is to provide information about the services, activities, projects and practices conducted by Afyonkarahisar Municipality, Kütahya Municipality, Manisa Metropolitan Municipality and Uşak Municipality in the TR33 region within the

framework of environmental sustainability. In the study where qualitative research method was used, literature review and document analysis method were used and the data of the study were obtained from the websites of local governments in TR33 region (Afyonkarahisar, Kütahya, Manisa and Uşak), activity reports including the activities conducted between 2021-2023, reports published by Zafer Development Agency, to which local governments in TR33 region are affiliated, and online and printed publications in the literature on the subject.

The study is limited to the activities, services, projects and practices of local governments in the TR33 region between 2021-2023, which are centred on environmental sustainability in sustainable development. It is considered that the study is important to conduct a study in this context for the first time in the TR33 region of local governments under the title of environmental sustainability practices of local governments in relation to sustainable development. In the conclusion and discussion section of the study, because of the comparison made with the environmental sustainability-centred activities of the local governments in the TR33 region, which are implemented by other local governments in the country and local governments in different countries of the world, the necessity of implementing practices that are suitable for the potential of the region and that can carry this potential further is emphasised.

2. Conceptual Framework

Under this heading, information about the concepts of sustainable development and environmental sustainability is given.

2.1. Overview of The Concept of Sustainable Development

There are various definitions of sustainable development in the literature. It is seen that there is no clear and framed definition of this concept (Gedik, 2020). Researches reveal that there are more than 80 definitions in the literature on sustainable development (Ciegis et al., 2009, p. 32; Orlitzky & Waldman, 2011, p. 22; Salas-Zapata et al., 2017, p. 1132). However, when the common points in the definitions of the studies in the literature on this concept are evaluated, it is thought that sustainable development can be defined as follows. Sustainable development is defined as a development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Pitelis, 2013, p. 661). The concept of sustainable development is based on three moral imperatives: meeting human needs, ensuring social equality and respecting environmental limits (Holden et al., 2017, p. 216). The definition of the concept of sustainable development by Brundtland was made as "taking into account the needs of future generations while meeting the needs of the present

generation" (Ozmehmet, 2008, p. 1856). In the historical process, it is seen that the concept of sustainable development was first mentioned in a book titled "Sylvicultura Oeconomica (Guide to Growing Wild Trees)" by Hans Carl von Carlowitz in 1732. In the book, it is emphasized that the activities conducted in the mines in the Saxony Region damage the forested area in the region and that forests should be protected (Şen et al., 2018, p. 81). While sustainability was used only for the protection of forests in this region at the beginning of the 18th century, it started to be used for all forests in Germany by the end of the 18th century (Kaya, 2012, p. 44). By the 19th century, the concept of sustainability started to take place concretely in the literature (Bozlağan, 2005, p. 1013). The increase in environmental problems with the industrial revolution has been effective in exhibiting a holistic approach in environmental movements that developed only in industrialised regions initially. In 1972, it is seen that sustainable development processes were taken into consideration with the "Stockholm Conference" held in Stockholm, Sweden and the "Declaration on the Human Environment" announced at the United Nations Conference on the Human Environment. In this conference and declaration, the carrying capacity of the environment, the importance of international cooperation in solving environmental problems, and the relationship between environment and development were emphasised (Belli & Çelik, 2022, p. 68). While emphasising the relations between the environment and human beings at the conference, it is seen that the right to the environment was accepted as a human right and afterwards, environmental regulations started to be made in the constitutions of numerous countries around the world (Görmez, 2020, p. 61). In the same period, the study titled "Limits to Growth" prepared by the Club of Rome for academics at the Massachusetts Institute of Technology drew attention to the limited natural resources in the face of Western-type growth and development and stated that growth and development should be conducted under these limited resources (Şen et al., 2018, p. 87). Following the publication of the "Limits to Growth" report, the World Commission on Environment and Development was established by the United Nations in 1983 with participants from 20 different countries. In 1987, the commission, chaired by Gro Harlem Brundtland, submitted the "Report on Our Common Future", or the "Brundtland Report" as it is known in the literature, to the United Nations General Assembly. In order to realise the recommendations in the Brundtland Report and to evaluate the results, the "Climate Change Framework Convention" was signed by the heads of government and state from 179 countries at the "Earth Summit" at the Rio Conference held in 1992 (Çeçen, 2018, p. 46). In this conference, the "Agenda 21 Action Plan" was adopted, which

emphasised the cooperation of international, national and local governments in order to achieve sustainable development. In this action plan, it was emphasised that all people and administrations should be in a healthy and productive relationship in harmony with nature and the environment; the necessity of using the natural resources without harming others and the protection of the environmental rights of future generations, especially while conducting economic development processes (Şahinöz, 2019, p. 83). In 1993, with the establishment of the United Nations Commission on Sustainable Development, the European Union 5th Action Programme on sustainable development entered into force in the same year. In this programme, the principle of shared responsibility and the importance of protecting the environment before pollution were emphasised (Görmez, 2020, p. 63). In 1995, at the "United Nations Conference on Population and Development" held in Cairo; at the "Habitat I and Habitat II" conferences, the first of which was held in Vancouver in 1976 and the second of which was held in Istanbul in 1996; at the "Rio+5 Forum" held in 1997; and at the "United Nations Development Summit" held in 2000, road maps of sustainable development were determined on topics such as population, urbanisation, environment and nature protection, global warming and climate change, and the necessity of conducting sustainable development and environmental sustainability together was emphasised. In the summit titled "2030 Agenda for Sustainable Development" organised by the United Nations in 2015, development goals under 17 sub-headings and 169 sub-goals related to these goals were determined by considering the economic, social and environmental dimensions of sustainable development together (Erbay & Özden, 2018, p. 260). The concept of sustainable development is included in the literature as a concept addressed with economic, social and environmental dimensions. Considering the interrelationships between these areas, it is thought that sustainable development processes cannot be independent of each other (Munasinghe, 2009, p. 134). Economic sustainability is taking the necessary measures to ensure that economic resources can be used in the future and reducing the costs of using these resources (Şen et al., 2018, p. 81). Any economic sustainability system should be able to produce goods and/or services that meet the government's policies, do not disturb sectoral balances (do not create pressure in agriculture or manufacturing sector) (Haris, 2000, p. 25). Economic sustainability explains the scarcity of resources and how to manage them (Tıraş, 2012, p. 61). Social sustainability is a concept that adopts equality (such as income distribution, gender equality), access to social services such as health and education, ensuring accountability in politics and political participation as a principle (Şen et al., 2018, p.

87). Social sustainability system cares about meeting all these social needs (Haris, 2000, p. 25). The concept of social sustainability is also human-oriented (Tıraş, 2012, p. 61). In this study, information on the concept of environmental sustainability, which is the subject of the study, is included rather than information on economic and social development under the title of sustainable development (detailed information on economic and social sustainable development can be accessed from United Nations reports and sources published in the literature).

2.2. Concept of Environmental Sustainability

Environmental sustainability is meeting human needs without compromising the health of ecosystems (Morelli, 2011, p. 5). Environmental sustainability is the level of self-renewal of natural resources. Accordingly, the amount of utilisation of these resources should be lower than the rate of renewal of resources. In addition, the protection of human health, living life and environmental values is also considered within this scope (Kaypak, 2011, p. 26). Environmental sustainability aims to increase the resilience of the ecosystem against external influences and the balanced use and protection of natural resources (Şen et al., 2018, p. 79). Acoording to the data of the U.S Department of Energy, (2024) environmental sustainability can be defined as creating and maintaining conditions that allow people and nature to exist in productive harmony and meet the social, economic, and environmental needs of future generations.

The concept of environmental sustainability is defined as the protection of the natural order and providing opportunities for these resources to renew themselves without harming natural resources. Protection of ecological diversity and natural resources in nature, sustainable use of renewable products, reduction of the use of non-renewable products, elimination of damage to living things in nature and the environment, protection of historical and cultural heritage are among the elements of environmental sustainability (Güner, 2020, p. 6). Environmental sustainability means ensuring the continuity of natural resources and also means that the rate of use of resources does not exceed the rate of self-renewal (Şahin, 2020, p. 62). Environmental sustainability refers to the responsible management of natural resources to meet current needs without jeopardising the ability of future generations to meet their needs (Ersöz & Ersöz, 2022, p. 44). According to the United Nations (2024), environmental sustainability aims to balance ecological, economic and social goals such as reducing carbon emissions, promoting renewable energy and ensuring equal resource access.

3. Environmental Sustainability Practices of Local Governments

One of the priority agenda items of administrations is environmental problems. Therefore, policies to be developed for the environment, services to be implemented and projects to be realised constitute an important area of responsibility of the administrations. Local governments play a major role in protecting the environment, preventing pollution of the environment, taking measures in this direction, and controlling and efficient use of resources, since they are the governments closest to natural resources, so local governments should take the necessary measures to ensure that their citizens and the city are not adversely affected by environmental problems. Services related to the protection of the environment and the elimination of environmental problems are of public nature and the realisation, supervision and responsibility of these services belong to local governments (Bell-McGillivray, 2000, p. 104). Local governments, as the closest administrative institutions to citizens, are seen as structures that make functional contributions to the solution of social, administrative and environmental problems of citizens (Abdulhakimoğulları et al., 2011, p. 74). Especially in recent years, there has been a significant increase in the duties and responsibilities of local governments around the world and numerous services previously provided by central governments are now transferred to local governments because of the importance of localisation. It is seen that local governments are assigned, authorised and responsible for developing environmental problems related to environment and environmental protection, preventing environmental problems and eliminating existing environmental problems, improving the quality of life of urban residents. Although the creation of a healthy and balanced environment, reduction of environmental problems and improvement of environmental quality of life depend on the joint efforts of citizens, local governments have important duties in organising such efforts. Within the framework of legal regulations, local governments in Türkiye have been given authority and responsibilities to protect the environment and developing environmental awareness. For example, municipalities are authorised and responsible for many environmental issues with the Law No. 5302 on Special Provincial Administration and the Law No. 5393 on Municipalities, and metropolitan municipalities are authorised and responsible for many environmental issues with the Law No. 5216 on Metropolitan Municipalities.

3.1. Practices Around The World

Local governments globally undertake diverse environmental sustainability projects, activities, and services under different classifications. The United Nations, the European Union,

international environmental organisations, environmentalist organisations, etc. are involved in the activities in the centre of environmental sustainability as partners and supporting institutions in the projects of local governments. In many countries around the world, local governments develop cooperation with these organisations and implement projects within the scope of environmental sustainability at local level. Some of the environmental sustainability projects of local governments from different parts of the world are as follows.

Within the scope of the greening and recreation strategy, with the project conducted in cooperation with the central government and local governments throughout the country in Singapore, activities and projects centred on environmental sustainability such as increasing social and recreational activities in cities, protecting the biodiversity of the region and expanding habitat areas, expanding green infrastructure, protecting and improving existing natural resources, collecting rainwater have been conducted (Tanuwidjaja, 2011, p. 3). In order to achieve the target of "zero carbon city", a "green city planning" project is being implemented in Vaxjo, Sweden. Within the scope of the project, innovative transport solutions, energy efficient buildings and increasing green areas throughout the city are being implemented in order to solve environmental problems throughout the city (Andersson, 2016, p. 1206). In Freiburg (Germany), projects on renewable energy have been developed by the local government in order to ensure environmental sustainability in renewable energy areas throughout the city (Şallı, 2016, p. 89). Within the scope of the "green city action plan project" launched in Vancouver, Canada in 2020, environmental sustainability-centred activities under the titles of building, climate and renewable energy, zero waste, green transportation, clean water, access to nature, clean air, less carbon footprint, and green economy are conducted in cooperation with the central government and local government (Affolderbach & Schulz, 2017, p. 678). Within the scope of the environmental sustainability-centred project conducted in the state of Maryland in the United States of America, it is aimed to develop green infrastructure in ecologically important areas of the region. For this purpose, central and local governments, in cooperation with international organisations and environmental organisations, have developed projects for the development of green energy and the protection of natural areas in order to minimise footprint, greenhouse gases and other factors that cause environmental pollution (Weber & Wolf, 2000, p. 270).

In Curitiba, Brazil, the importance of sustainable urban planning is emphasised, and it is aimed to increase the weight of public transport systems and bicycle paths in transport and

increasing green areas in order to ensure environmental sustainability. With the "smart environmental management" project in Seoul, South Korea, digital technology has been integrated into environmental management. Within the smart city concept, carbon emissions are monitored throughout the city and thus energy efficiency is increased. In the city, the local government also encourages the development of citizen awareness on environmental issues and the participation of citizens in decision-making mechanisms in services, projects and activities for this purpose.

3.2. Practices in Türkiye

As in the rest of the world, activities, services and projects centred on environmental sustainability are being implemented in Türkiye. According to the Municipality Law No. 5393, Articles 14 and 15, which explain the duties and responsibilities of the municipality, state that municipalities/local governments are authorised and responsible for environmental services. Green cities, renewable energy projects, use of natural resources, water efficiency, recycling, smart and environmentally friendly transport, protection of natural resources and soil, organic agriculture etc. services are conducted by local governments in cities. Since it is not possible to give detailed examples of these studies conducted in cities, this study presents summary information on environmental sustainability projects conducted by local governments randomly selected from across the country.

With the urban "GreenUp" project within the scope of the Horizon 2022 programme supported by the European Union and conducted within Izmir Metropolitan Municipality, it is aimed to reduce the effects of global climate change, improve water management, improve air quality and specify sustainable, innovative nature-centred solutions for Izmir. it is seen that local governments in Izmir have an understanding that develops environmentally friendly transport solutions with environmentally friendly transport, development of bicycle paths, activation of public transport projects, sustainable transport projects for electric vehicles and charging stations (Parlak & Atik, 2020, p. 91).

Local governments in Antalya prioritise recycling and waste management projects with many titles, such as renewable energy, smart transportation, park and green area service in order to ensure environmental sustainability. Acorrding to the data given in the Antalya Metropolitan Municipality annual report (2023), they have established waste sorting and recycling centres throughout the city. To make the recycling of wastes more effective throughout Antalya, waste separation systems have been established in both domestic and commercial enterprises and

awareness-raising services have been/are provided to the public on this issue. Acorrding to the data given in the Ankara Metropolitan Municipality annual report (2023), Ankara Metropolitan Municipality prioritises environmental sustainability in various areas such as afforestation under climatic conditions, increasing the existing potential and quantity of parks and green areas, protecting, increasing and supporting biodiversity, water management, efficient use of urban lands, zero waste, recycling, reducing the use of plastics, providing incentives for the construction of energy efficient buildings and supporting environmentally friendly housing projects with incentive practices such as green building certificates.

Acorrding to the data given in the Bursa Metropolitan Municipality annual report (2023), local governments provide support and incentives to farmers for the marketing and sale of products and ensuring the continuity of production in order to promote organic agriculture throughout Bursa. In particular, women's co-operatives and producers in disadvantaged groups are supported and enabled to continue agricultural production. Acorrding to the data given in the Samsun Metropolitan Municipality annual report (2023), Samsun Metropolitan Municipality aims to strengthen public transport systems and expand environmentally friendly transport solutions with the electric buses and bicycle lanes offered to citizens. It recycles a wide range of wastes and raises public awareness on this issue, iincreases green areas in the city and to protect existing natural resources within the scope of environmental sustainability-centred activities.

Various municipalities such as Trabzon Metropolitan Municipality, Kırşehir Municipality, Malatya Metropolitan Municipality, Samsun Metropolitan Municipality, Gaziantep Metropolitan Municipality, Adana Metropolitan Municipality, Hatay Metropolitan Municipality, Aksaray Municipality, Kastamonu Municipality provide support to local producers engaged in agricultural activities, especially in rural areas, to reduce the use of chemical fertilisers, to reduce the use of pesticides and chemicals harmful to the environment and human health, to teach efficient agricultural techniques and methods, to teach the necessary infrastructure and superstructure tools, vehicles, products.

4. Environmental Sustainability Practices in Local Governments in TR33 Region

With the Law No. 5449, development agencies were established in 26 (level 2 regions) according to the classification of statistical regional units throughout the country with the aim of developing national development starting from the local level and developing regional potential through intra-regional and interregional cooperation. According to the information on

official website of Zafer Development Agency "*zafer.gov.tr*", it was officially established in 2009 to serve in the region classified as TR33, which covers the provinces of Afyonkarahisar, Kütahya, Manisa, and Uşak. Zafer Development Agency plays a role in ensuring co-operation and co-ordination between the provinces of the region in order to ensure the comprehensive and holistic development of the region with all its economic, cultural, social, etc. dimensions and to accelerate its development.

A closer look at the projects, services and activities of the local governments in the provinces of the region centred on environmental sustainability shows that activities are conducted under the headings of environmental cleaning services, waste management, water management, recycling, zero waste, use of natural resources, renewable energy, reduction of carbon emission, green area and afforestation services, environmentally friendly transport services, etc.

4.1. Afyonkarahisar Municipality

Afyonkarahisar Municipality (AKB) conducts activities in the centre of environmental sustainability in the fields of environmental protection and cleanliness, air quality, waste management (zero waste, collection and management of vegetable waste oils, collection and management of textile wastes, collection and management of textile wastes, collection and management of packaging wastes, collection and disposal of excavation wastes), recycling, noise pollution, protection of natural resources, water management (water and sewerage services, municipal water and drinking water services, storm water network name services). In this context, projects are developed, activities are conducted and services are provided by the administration by using municipal resources, by making protocols with central government, environmental organisations and international organisations. A closer look at these activities conducted by AKB reveals the following data.

Under the heading of environmental protection and cleaning, it is seen that garbage collection is conducted on a daily routine basis in the streets and streets of all neighbourhoods throughout the provincial centre, garbage bins are cleaned, streets are cleaned with hygiene materials, visually polluting substances are disposed of and necessary improvement works are conducted. In this context, 79181 tonnes of domestic waste was collected in 2021, 75172 tonnes in 2022 and 79252 tonnes in 2023. According to 2023 data, the amount of domestic waste collected daily is around 217 tonnes. 7,500 tonnes of slag was collected in 2021, 6108 tonnes in 2022 and 7075 tonnes in 2023 (Afyonkarahisar Municipality annual report [ABFR], 2021,

pp. 293-294; 2022, pp. 292-293; 2023, pp. 357-358). In order to control air pollution caused by heating, it is aimed at encouraging the use of cleaner energy and thus increase air quality. For this purpose, private workplaces, public buildings and residences in neighbourhoods where natural gas or geothermal energy infrastructure works have been completed have been provided to transform their heating and central hot water systems, and thus efforts have been made to ensure the widespread use of alternative energy sources. In order to minimise environmental noise pollution, 54 inspections were conducted by the municipal staff in 2021, 72 in 2022 and 26 in the first 6 months of 2023 (ABFR, 2021, pp. 295-298; 2022, pp. 294-297; 2023, pp. 36-364). Within the scope of the zero waste project, waste bins were placed in municipal service buildings, public institutions and organisations, and places with heavy pedestrian traffic at different points of the city for separate collection of each waste code. Training seminars and conferences on a separate collection of mobile waste, vegetable waste oil, textile waste and packaging waste, recycling and climate change were organised. In this context, 570 kilograms of waste oil were collected from households, and 377,055 kilograms were collected from enterprises in 2021. 141,725 kg, 123,010 kg and 88,000 kg of textile waste were collected in 2021-2022 and 2023, respectively. 1,582,740, 3,030,231 and 1,357,734 kg of packaging waste were collected in 2021-2022 and 2023, respectively, and thus in 2021: 3,144,365 paper-cardboard was collected, saving 53,454,205 trees from being cut down; 677,773 plastic waste was collected, saving 10,844,368 barrels of oil; 14,300 metal waste was collected, saving 3,403,400 million kcal of energy; 178,290 glass waste was collected, preventing 40,115,250 kg of greenhouse gas emissions; and 2,354 kg of waste batteries were disposed of and rendered harmless to nature. In 2022: 37,934,007 trees were saved from being cut down by collecting 2,231,416 paper-cardboard; 9,139,057 barrels of oil were saved by collecting 560,710 plastic waste; 7,247,040 kg of greenhouse gas emissions were prevented by collecting 241,580 glass waste; and 6,425.63 kg of waste batteries were disposed of. In 2023: 745,575 kg of paper-cardboard collected, saving 12,098 trees from being cut down; 309,640 kg of plastic waste collected, saving 5,160 barrels of oil; 3,500 kg of metal waste collected, saving 2,558 million kcal of energy; 115.500 glass waste was collected, 3,468 kg of greenhouse gas emissions were prevented, and 5,080 kg of waste batteries were disposed of and rendered harmless to nature (ABFR, 2021, pp. 303-309; 2022, pp. 304-307; 2023, pp. 357-374). Improvement works were conducted by the municipality in order to minimise water cuts and water losses because of insufficient infrastructure in different neighbourhoods in the city centre. In this framework,

mains water and drinking water pipelines have been renewed and problematic water pipelines have been replaced with new model production pipes. New water wells have been drilled, and the water obtained from these wells has been allocated to the new lines in a hygienic way and without any loss or damage, against the risk that the existing water resources are insufficient to meet the needs. In order to store rainwater in the city centre, approximately 18,000 metres of rainwater lines were laid in 2021-2022 and 46,767 metres in 2023, thus improving the drainage system network in the city for the storage of rainwater. In the municipality's area of responsibility, especially in the summer months, disinfestation services are provided by the relevant units at specified hours within the scope of pest control. Considering the environmental sensitivity, green areas are protected and green areas and afforestation services are conducted at many accessible points of the city besides the existing green areas (ABFR, 2021, p. 324; 2022, p. 321; 2023, p. 638).

4.2. Kütahya Municipality

A close look at the information contained in the annual report of Kütahya Municipality [KBFR], reveals that Kütahya Municipality conducts projects, activities and services under the headings of environmental-cleaning services, waste management, recycling, green area services, afforestation services, air pollution control services, water management in the areas under the responsibility of the municipal administration in environmental sustainability. A closer look at these projects, activities and services reveals the following data in terms of environmental sustainability. Within the scope of environmental cleaning services, 1465 washing and disinfection operations were conducted by the municipal teams in the city centre and neighbourhoods in the main arteries and streets in 2021, 1375 in 2022 and 1453 in 2023. Washing and disinfection operations are conducted twice a day on the main arteries and once a day on the streets. An average of 250 tonnes of domestic waste is collected daily within the boundaries of municipal responsibility, and more than 450 garbage containers, underground garbage container systems, bagged garbage system and tank system are used throughout the city within the scope of environmental cleaning services. Within the scope of waste management services, Kütahya Municipality conducted 5375 tonnes of excavation and waste material cleaning in 2021, 119,808 tonnes in 2022 and 44,038 tonnes in 2023 (KBFR, 2021, pp. 254-256; 2022, pp. 142-143; 2023, pp. 150-151).

Within the scope of water management services, in order to ensure water efficiency, old network line pipes and equipment that have completed their service life in the city centre and

neighbourhoods, which cause loss, leakage and waste of water, have been replaced with new equipment that is more modern and prevents water waste, and 40,400 metres of new water network lines have been laid in these areas. Within the scope of water management services, rehabilitation works were conducted in canals, streams, creeks and ponds in various parts of the city, and the renovation and cleaning of rainwater discharge channels were carried out. By increasing the capacity of rainwater channels in the city centre, it has been possible to collect and reuse wasted rainwater. In this context, 7662 mt. of new rainwater lines were laid in 2021, 15,299 mt. in 2022 and 15,870 mt. in 2023. 20,795,386 m3 of water was treated in 2021, 25,049,910 m3 in 2022 and 23,299,894 m3 in 2023, and it is seen that environmental sustainability is prioritised in the effective use of natural resources (KBFR, 2021, p. 246; 2022, pp. 230-231; 2023, pp. 226-227). In 2022, Kütahya Municipality provided 5565 hours of agricultural irrigation services in 3,476,630 m² of agricultural area in order to ensure environmental sustainability in agriculture in different parts of the city. In 2023, this number was 5631 hours in 3,179,010 m² agricultural area. Within the scope of reducing carbon emissions in nature and expanding renewable energy production, projects for the installation of solar power plants have been conducted, and it is seen that the potential natural resources of the city are evaluated with the understanding of environmental sustainability at the point of energy supply required by the public. In this context, approximately 690,000 kwh of electricity was generated at different points of the city -Şehzadeler and Evliya Çelebi solar power plants - by utilising natural resources (304,465 kwh in Evliya Çelebi solar power plant and 385,295 kwh in Şehzadeler solar power plant) by 2023 (KBFR, 2021, pp. 68-70; 2022, p. 177; 2023, p. 179).

4.3. Manisa Metropolitan Municipality

Manisa Metropolitan Municipality has a climate change and zero waste department in order to ensure environmental sustainability. Manisa Metropolitan Municipality conducts activities under various headings within the scope of environmental sustainability in the areas where the municipality is responsible throughout the province. When the activity reports of Manisa Metropolitan Municipality for 2021, 2022 and 2023 are examined, it is seen that the municipality management has conducted activities under the headings such as waste management, water management, environmental cleaning services, recycling, green areas and afforestation works, services for the elimination of noise and excavation pollution, services to combat air pollution, energy efficiency, reduction of carbon emissions. According to the data

of the Manisa Metropolitan Municipality annual report [MBFR], information on the activities conducted within the scope of environmental sustainability is as follows.

For the first time in Türkiye, a municipality utilises railway transport besides road transport for the collection of solid wastes throughout the province. Domestic wastes and solid wastes from the districts are transported to waste disposal facilities and recycled by rail, as well as road transport. The activities conducted under the heading of waste management show that the amount of waste subjected to regular storage is 1,032,045 tonnes in 2021, 1,430,959 tonnes in 2022 and 1,869,307 tonnes in 2023. The amount of uncontrolled dumping of excavation, construction and demolition waste is 1,300,000.00 m³ in 2021, 1,646,090 m³ in 2022 and 1,302,140 m³ in 2023. The amount of material reused through recycling was 37,000 tonnes in 2021, 31,847 tonnes in 2022 and 20,400 tonnes in 2023 (MBFR, 2021, pp. 63-68; 2022, pp. 59-60; 2023, p. 144). Manisa Metropolitan Municipality encourages agriculture-based industry and technological investments to increase income and value-added production in rural areas. In addition, projects are developed, activities are conducted and services are provided within the scope of environmental sustainability in order to improve the quality of spatial life and thus reduce migration from rural to urban areas. Because natural resources are limited and under the threat of depletion, Manisa Metropolitan Municipality develops a sustainable water management and conducts different practices and projects in order to eliminate these problems and threats. It is seen that the water network lines, which have completed their lifespan and cause large amounts of loss and leakage throughout the province, have been renewed with modern water network lines, thus providing significant water savings (MBFR, 2021, p. 75; 2022, p. 68; 2023, p. 143).

Under the title of water saving and supporting the transition to irrigated agriculture, activities such as increasing the number of ponds in the province, increasing the number of agricultural irrigation facilities, activating agricultural filling facilities, increasing the number of agricultural irrigation pools and water tanks are conducted. Manisa Metropolitan Municipality has established irrigation facilities in 27 neighbourhoods, 23 of which are active, by using groundwater and surface water resources in 17 districts, and has enabled the abandonment of wild irrigation methods and the transition to irrigated agriculture using modern methods. Thus, irrigation services were provided on approximately 8633 decares of land belonging to 1,314 farmer families. It is aimed at reducing input costs and increase sustainable agricultural practices by subsidising the water fees to be used in agricultural irrigation by the

municipality. Within the scope of the projects developed with Zafer Development Agency, drilling of water wells to be used for agricultural purposes, provision of irrigation equipment and increasing water efficiency are provided (MBFR, 2021, p. 150; 2022, p. 136; 2023, pp. 64-65). To improve air quality and ensure its sustainability, it is aimed at reducing the use of fossil fuels and increase the share of renewable energy sources. For this purpose, it is seen that energy production is prioritised by using more natural resources such as sun and wind instead of fossil fuels. With the district heating system established in Soma district, energy was provided by improving the air quality of the district and using the energy resources required by the residences efficiently. With this application, carbon emissions of 146,360 tonnes/m³ in 2021, 152,852 tonnes/m³ in 2022 and 155,243.16 tonnes/m³ in 2023 were prevented. It is seen that the use of public transport is encouraged throughout the city and the use of bicycles, which is one of the alternative transport methods, is also encouraged. For this purpose, safe bicycle routes are constructed by the Manisa Metropolitan Municipality throughout the city. As of 2023, 27 kilometres of urban bicycle paths are planned to be built with the bicycle path project, a part of which has been completed. This project is carried out in cooperation with the Manisa Metropolitan Municipality and the private sector. (MBFR, 2021, p. 71; 2022, pp. 67-68; 2023, pp. 63-64).

Preferring electric buses in transportation and increasing the number of electric buses day by day are among the sustainable environmental practices of the Manisa Metropolitan Municipality. Increasing the rate of environmentally friendly electric buses in public transport vehicles within the municipality contributes to both improving air quality and reducing costs by reducing the use of fossil fuels. Preference in public transport vehicles is seen as an important factor in terms of environmental sustainability. It is important that these practices are not limited to the provincial centre and preferred throughout the city (in all districts) in order to ensure environmental protection and sustainability. Implementation of projects that prioritise and protect the environment and thus ensure environmental sustainability in Manisa, where industrial activities are intensively conducted and activities that cause environmental pollution are more - compared to other provinces in the region - are seen as studies that contribute to the livable Manisa city of today and tomorrow. Manisa Metropolitan Municipality conducts services throughout the city in order to protect, improve, and develop the existing potential of green areas and recreation areas in its area of responsibility. While protecting the existing green areas in environmental sustainability, park garden construction and afforestation works are

conducted at different points in order to bring more green areas to the city. Only in 2023, within the scope of the cooperation developed with Turgutlu Municipality, 1500 trees were planted in the region besides the existing trees in the second stage of the Irlamaz Valley. Sustainable water management is prioritised by using economical watering equipment in the regular irrigation of existing green areas, parks and trees (MBFR, 2021, pp. 102-106; 2022, pp. 77-78; 2023, pp. 103-104).

4.4. Uşak Municipality

Information on the projects, activities and services carried out by Uşak Municipality within the scope of environmental sustainability in 2021, 2022 and 2023 is as follows. In order to ensure environmental sustainability in the jurisdiction and responsibility area of Uşak Municipality, environmental cleaning services, disinfestation services, recycling and waste management (solid waste, domestic waste, medical waste, herbal waste, vegetable waste, mineral waste, electronic and industrial waste, etc.), excavation and rubble disposal services, parks, green areas, parks, green spaces, and rubble disposal services.) services, excavation and rubble disposal services, parks, green areas and afforestation services, services to combat environmental pollution, services to prevent noise pollution, services related to environmental health and environmental awareness, etc. (Uşak Municipality annual report [UBFR], 2021, pp. 102-106; 2022, pp. 77-78; 2023, pp. 103-104). In environmental sustainability, routine maintenance of parks, green areas and recreation areas are carried out throughout the city and in this context, general maintenance, hoeing, spraying, etc. of trees in various parts of the city are carried out. Tree planting, grass planting and greening services are given importance in order to improve the existing green area potential. Works are carried out to rehabilitate neglected green areas that cause environmental and visual pollution. In irrigation services for the maintenance of green areas throughout the city centre - although automatic irrigation systems are used to a limited extent in some areas - it is seen that efficient water management techniques are not used sufficiently, and instead of using modern irrigation techniques, water is transported by tankers to irrigate green areas (UBFR, 2021, p189-193; 2022, pp. 208-211; 2023, pp. 218-222). 431 trees were planted in 2021, 1236 in 2022 and 4150 in 2023 within the scope of "Green Uşak Project" and "Neighbourhood Park" throughout the city. In the city centre and neighbourhoods connected to the centre, 1490 shrub groups were planted in 2021, 8152 in 2022 and 3660 in 2023. In 2021 and 2022, 2400 m² of grass was planted and in 2023, 2400 m² of grass was planted, more than 5000 m² of grass was planted over the existing green

area potential, and it is seen that importance is given to greening works throughout the city by adding new green areas (UBFR, 2021, p. 194; 2022, p. 212; 2023, p. 225). Within the scope of waste management, 80,658,408 kg of municipal solid waste was collected in 2021, 74,564,520 kg in 2022 and 80,085,824 kg in 2023. 2920 kg. 2330 kg. in 2022 and 1000 kg. in 2023 waste batteries were collected. 16,124,250 kg. of packaging waste was collected in 2001, 8,152,620 kg. in 2022 and 7,321,900 kg. in 2023. Approximately 1 million tonnes of medical waste was collected, 313,751 tonnes in 2021, 322,733 tonnes in 2022 and 322,733 tonnes in 2013. 22,082 kg of vegetable waste oil was collected in 2021, 26,590 kg in 2022 and 12,570 kg in 2023. Within the scope of the zero waste project, 4 mobile waste collection centres, 210 recycling bins, 200 domestic waste containers, wastematik, pilmatik, oil bins, recycling baskets and indoor sorting boxes were provided. In order to raise recycling awareness, the municipality opened the "Recycling Park" in Kemalöz Neighbourhood (UBFR, 2021, pp. 235-238; 2022, pp. 374-378; 2023, pp. 423-426). Routine cleaning of 7348 garbage containers throughout the city is carried out and 80,000 tonnes of garbage was collected from these containers in 2021, 74,500 tonnes in 2022 and 80,085 tonnes in 2023. With electric garbage collection vehicles called "Garbage Jet", garbage cleaning services are carried out in narrow streets where it is not possible to enter garbage vehicles. With the joint participation of non-governmental organisations and citizens, environmental cleaning projects are carried out in the recreation areas in the city centre under cleaning mobilisation. In addition, neighbourhood markets are routinely cleaned at the end of the day. With the climate change adaptation projects prepared within the scope of the European Union, projects under the headings of smart transport, construction of electric bicycle roads, increasing the potential of recycling projects, drinking water supply and Geothermal Agriculture are being implemented (UBFR, 2021, p. 225; 2022, p. 238; 2023, p. 264).

Conclusion

The 2024 United Nations Sustainable Development Report ranks Türkiye 72nd out of 196 countries in environmental sustainability, evaluating areas like environmental protection, renewable energy, carbon emissions reduction, green spaces, and smart transportation. The report highlights Türkiye's underutilization of environmental potential and insufficient efforts in this field. Specific findings for the TR33 region are summarized below: In the regional assessments, it is seen that Afyonkarahisar Municipality lacks sufficient use of eco-friendly fuels in transportation, renewable energy initiatives, and green city elements like green

buildings and efficient water management. Despite its geothermal resources, the municipality underutilizes this potential due to insufficient investments. Kütahya Municipality needs improvement in eco-friendly transportation and energy-efficient infrastructure. Updating old lighting systems and increasing regional cooperation for sustainable projects could enhance environmental outcomes. Manisa Metropolitan Municipality progresses better than neighboring provinces, particularly in sustainable agriculture and renewable energy projects. To amplify its role, Manisa should prioritize environmentally sensitive initiatives and foster regional cooperation to catalyze sustainable development.

Uşak Municipality has significant potential in green areas, renewable energy, and agriculture but needs to emulate successful recycling and waste management practices. Collaboration with regional and international organizations could optimize resource use and enhance sustainability. For regional cooperation to advance environmental sustainability across the TR33 region, collaboration among local governments (Afyonkarahisar, Kütahya, Manisa, Uşak), the Zafer Development Agency, and international partners is essential. Key focus areas include expanding renewable energy projects using local natural resources, promoting eco-friendly public transport integrated with smart systems, enhancing green space capacity and reducing industrial air pollution through stricter regulations, strengthening public environmental awareness through education and zero-waste initiatives and learning from successful practices in Türkiye and abroad.

Strong regional cooperation, supported by partnerships with central government and international organizations, can provide financial and technical resources without overburdening local budgets. Such initiatives will unlock the TR33 region's environmental potential and foster sustainable development, creating more livable and resilient cities.

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