# SUSTAINABILITY MEASUREMENT IN URBAN PLANNING PRACTICE: EVALUATING THE ENVIRONMENT PLANS OF THE CITIES IN AEGEAN REGION

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# ABSTRACT


## SUSTAINABILITY MEASUREMENT IN URBAN PLANNING PRACTICE: EVALUATING THE ENVIRONMENT PLANS OF THE CITIES IN AEGEAN REGION

Sustainable urban development is an important current issue in urban planning agenda. Sustainability issues are integrated into planning practices and regulations in many countries. The goal of sustainability in urban planning is obvious, but the degree of the success on this goal is not certain and varies due to local conditions and choices of the countries and the cities, and their approaches to planning problems.

This thesis aims to measure the consideration of sustainable urban development in urban planning practice through analysis of urban plans. Four Environment Plans including all eight cities of the Aegean Region of Turkey are evaluated to see how much these plans consider sustainability issues. First, a list of sustainable urban development policies and urban planning actions for sustainability is proposed and then, the urban plans are evaluated in terms of these policies and actions. Written documents including plan reports and planning decisions are used to evaluate the plans in terms of their consideration of sustainable urban development with the plan content analysis method. At the end of this thesis, the level of integration of sustainability in plan making is analyzed and how well urban plans in the case areas actually promote sustainability principles is presented. It is found out that the evaluated plans in this thesis consider most of the sustainability policies, but they do not fully support them with planning actions.



**Key Words:** Sustainable Urban Development, Sustainability Measurement, Plan Evaluation, Environment Plans, Aegean Region

# ÖZET

## KENTSEL PLANLAMA PRATİĞİNDE SÜRDÜRÜLEBİLİRLİK ÖLÇÜMÜ: EGE BÖLGESİNDEKİ KENTLERİN ÇEVRE DÜZENİ PLANLARININ DEĞERLENDİRİLMESİ

Sürdürülebilir kentsel gelişme kentsel planlama gündeminde önemli bir güncel konudur. Sürdürülebilirlik konuları birçok ülkede planlama pratiğine ve yönetmeliklerine katılmıştır. Kentsel planlamada sürdürülebilirlik amacı çok açık olmasına rağmen, bunu gerçekleştirebilme derecesi kesin değildir ve ülkelerin ve kentlerin yerel durumlarına, tercihlerine ve planlama problemlerine yaklaşımlarına göre değişmektedir.

Bu tez, kentsel planlama pratiğinde sürdürülebilir kentsel gelişmenin ne kadar dikkate alındığını kentsel planların analizleri ile ölçmeyi amaçlamaktadır. Türkiye'nin Ege Bölgesi'nin sekiz kentini kapsayan dört Çevre Düzeni Planı, bu planların sürdürülebilirlik konularını dikkate alışları açısından değerlendirilmiştir. Öncelikle, sürdürülebilir kentsel gelişme politikalarını ve sürdürülebilirliğe yönelik kentsel planlama eylemlerini kapsayan bir liste oluşturulmuştur ve sonra planlar bu politika ve eylemler açısından değerlendirilmiştir. Planların plan içerik analizi metoduyla değerlendirilmesinde plan açıklama raporları ve plan hükümlerini kapsayan yazılı belgeler kullanılmıştır. Bu tezin sonunda sürdürülebilirliğin planlamaya entegre olma derecesi ve kentsel planların sürdürülebilirlik ilkelerini gerçekte ne kadar dikkate aldığı gösterilmiştir. Bu tezde değerlendirilen planların sürdürülebilirlik politikalarının çoğunu dikkate aldığı ancak bunları planlama eylemleriyle tam olarak desteklemediği sonucu bulunmuştur.

**Anahtar Kelimeler:** Sürdürülebilir Kentsel Gelişme, Sürdürülebilirlik Ölçümü, Plan Değerlendirme, Çevre Düzeni Planları, Ege Bölgesi

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# CHAPTER 1

# INTRODUCTION

## 1.1. Aim

This thesis mainly concerns with sustainable development and urban planning and aims to find out how much urban plans take the sustainability issues into account. In other words, it is aimed to analyze the level of integration of sustainability in urban planning practice and to measure how well plans actually consider sustainability principles.

In this context, this study defines the concepts of sustainability, sustainable development and sustainable urban development, reviews the methods of measuring sustainability, presents a checklist to measure sustainability issues in plans and evaluates four environment plans covering eight cities in the Aegean Region by using this checklist.

## 1.2. Problem Definition

The emphasis on sustainability in planning literature is a starting point of this thesis. The literature emphasizes that while consideration of sustainability principles is important for urban development and planning, planning is important for sustainability as well. It is emphasized that urban plans are useful tools to create sustainable cities and there is a need to evaluate these plans in terms of sustainability.

It is widely accepted that **sustainability is important for urban planning and should be considered in urban planning practices**. Sustainable urbanization is based on the realization that a common ground must be found between the efforts to protect and preserve the environment and efforts to promote human development (Tibaijuka, 2008). This realization brings awareness which is very important in achieving sustainability. The communities must be aware of the effects of human on resources and understand the importance of the sustainable urban development and then they must create integrated visions with long-term objectives in their local projects.

There are some signs about the increase in the awareness about sustainability at international conferences. For example in "The Fifth European Conference on Sustainable Cities and Towns (21–24 March 2007, Sevilla, Spain)", awareness was seen as a key area of progress in Europe. "In thousands of cities and towns across Europe, sustainability issues are increasingly moving up local agendas and lists of priorities" (Zimmermann, 2007). Taylor (2003) mentions that ensuring sustainability in human development has become important and urgent and may become "a matter of life and death" for both individuals and human species. This awareness is the starting point of success in achieving sustainable urban development.

**To create sustainable cities urban plans are important tools.** If the plans are prepared with this aim, this means that they are taking the issues of sustainable urban development into account. There is a need to study this subject, because urban plans' degree of taking these issues into account shows the success of them in supporting the aim of creating sustainable cities. Morrisson-Saunders (2006) states that "there is general agreement that policies, plans, programmes, projects should be planned so as to take full account of environmental, social and economic considerations". The planning system and the preparation of development plans are important in presenting objectives ensuring sustainable development (Hales, 2000). The need of urban plans in creating sustainable cities is realized in planning practices. The aim of creating sustainable cities is included in urban planning studies and practices in several countries. "In recent years, the concept of sustainable development has become central in the formulation of spatial plans throughout Europe" (McEldowney, Ryley, Scott, & Smyth, 2005).

However, while exploring the sustainability issues in urban plans, it does not mean that the plans taking care of all sustainability issues will create sustainable cities. It is assumed that urban plans are important tools in providing sustainability, but they are not the only factors needed to create sustainable urban environment. The planning

processes and the changing dynamics in urban structures are also important. Bagheri and Hjorth (2007) state that "planning for sustainable development should be 'process-based', rather than 'fixed-goal'-oriented". This thesis agrees with Choguill (2008) who says:

> …, it has to be remembered that urban planning by itself provides only a partial solution to the achievement of urban sustainability. Human behavioral patterns, traditions, attitudes, beliefs and biases may be beyond the control of urban planning despite the best efforts of the planners. Yet in the language of the mathematician, planning by itself is a necessary but not sufficient condition for the achievement of urban sustainability. At the same time, however, one has to start somewhere (Choguill, 2008).

Although plans aim sustainability in general, their degree of managing sustainability is under debate. Therefore, **evaluation of urban planning in terms of sustainability is important.** This evaluation may help to guide the succeeding planning studies and to improve the planning practice.

"For any urban system, application of sustainability considerations to the evaluation of policies, programs, and plans is critical, as the planning system has developed to ensure that cities are able to adjust to any new factors in their future" (Newman, 2005). These evaluations may help the achievement of sustainability.

> The role of planning in sustainable development cannot be fully accomplished if there are no benchmarks to guide and determine the progress and conformity of planning to the principles of sustainable development. In essence, the planning process and plan document need to be monitored and evaluated to achieve the task of sustainability. The assessment will reveal the inherence of sustainability in the plans and measure the progress towards sustainable development (Alshuwaikhat and Aina, 2005).

As mentioned by these scholars, plans should be evaluated in terms of sustainability issues.

McGranahan and Satterthwaite (2003) pointed at the lack of detailed consideration on the role of urban policies in implementing sustainable development goals; while Spilanis, Kizos, Koulouri, Kondly, Vakoufaris, and Gatsis (2009) stated that "the notion of sustainability is used widely at the policy level, but only few approaches deal with its measurement, especially at the local level". This views show the need of a research on the measurement of sustainability issues in urban plans.

The importance of sustainability assessment is mentioned by several scholars. According to Bertrand and Larrue (2004), assessment of sustainable development is valuable as a learning tool and it increases the awareness and responsibility for

sustainable development. “Assessment of sustainability has now become a widely accepted tool for comparing between alternative development proposals and for determining the viability of the on going ones” (Kashem and Hafiz, 2006). Assessment or evaluation of sustainability often motivates improvements as seen in the study of Jensen and Elle (2007) about Practical Evaluation Tools for Urban Sustainability (PETUS). Collins and Flynn (2005) stated that “… planners have also been keen to embrace new initiatives on decision making, such as sustainability appraisal, to ensure explicit consideration of environmental or sustainability factors in plan making”.

The importance of sustainability consideration in planning practice is realized in several countries as they included sustainability issues in their planning regulations as an obligatory part of the process. The statements in governmental regulations about the English land-use planning system and the “Planning Policy Guidance Notes(1992)” of “the Department of the Environment” show the need for evaluation of development plans and encouragement of the use of indicators and targets in appraisals of these plans (Hales, 2000). According to Morisson-Saunders and Therivel (2006), the sustainability appraisal system of English and Welsh land use planning is subsumed SEA (Strategic Environmental Assessment) system which considers all sustainability issues (not only environmental, but also social and economic). These sustainability issues are also covered in appraisals of development plans expected to be conducted by local authorities. The land-use planning system, and the development plans in particular, has been identified by the UK government as “potentially powerful instruments for integrating national sustainability objectives into decision making at local levels” and this is achieved through the use of sustainability appraisals (Benson and Jordan, 2004). Sustainability appraisal, which is a legal requirement in the English Regional Planning, requires preparation of “regional planning guidance (RPG) and regional economic strategies (RESs)” for each English region (Smith and Sheate, 2001).

As well as United Kingdom, the experiences in Holland and Canada also include sustainability appraisal processes. They are doing a lot in the area of the application of sustainability to the evaluation of policies, programs, and plans. In this area, the other elements of the triple bottom line (social and economic) are included as well as environment. The Dutch and Canadian Planning Systems developed this application “to ensure that cities are able to adjust to any factors in their future” (Newman, 2005).

In France, according to Bertrand and Larrue (2004), “regional evaluation and planning procedures for sustainable development are still at an exploratory and

experimental stage", whereas in South Africa, according to Sowman and Brown (2006), sustainability consideration in planning, development and decision-making activities across all sectors and at all levels of government is required by law. Environmental sustainability has been included in the government's policy agenda in South Africa after the law reform since 1994 (Sowman and Brown, 2006).

According to Chifos (2007), literature in the United States is interested in the way of applying the concept of sustainability rather than the need for it or the ability of applying it, so the approach to find out how to apply it is the "documentation and analysis of existing sustainable development policies, plans, and other applications" (Chifos, 2007).

As mentioned by the scholars above and as realized by related authorities in many countries, the importance of sustainability measurement in urban planning practice and urban plan evaluation in terms of sustainability issues should be considered in Turkey as well. The evaluation of urban plans in terms of sustainability issues would help the planning authorities in the case area to develop their plans in this framework while guiding the authorities in other cities of Turkey and increasing awareness on this subject. Although it is not possible to generalize the results of Aegean Region for the whole country, this research is important to give an idea about the general situation of sustainability consideration in urban planning practice in Turkey, because the planning processes and the regulations do not change from region to region.

## 1.3. Method

The research question of this thesis is "How well urban plans consider sustainability principles/issues?". To answer this research question, the sub-questions that should be answered are:

- What are the principles/issues of sustainability in urban planning? (What are the concepts of sustainability, sustainable development and sustainable urban development and their relation with urban planning?)
- How can we measure sustainability consideration in planning practice? (What are the methods, the criteria and the results of sustainability evaluation of urban plans?)

To answer the above questions, the thesis is formulated in two steps as:

I. literature survey and review in theoretical studies and previous case studies to determine sustainability principles/issues in urban planning and the evaluation method, and

II. case study which includes evaluation of a case from Turkey by using these principles/issues and the evaluation method.

I. Literature Survey and Review: Initially a literature survey is carried out to study previous researches and to prepare the checklist for evaluation of plans. The data about concepts, issues and evaluation processes is derived from databases, previous thesis from Turkey, journals, books, web and other sources.

- The **databases** such as Environment Complete and Expanded Academic ASAP are searched with keywords such as "sustainable urban development". More than 3000 results are scanned and 45 of them are selected as useful reference. In addition to this, e-books are searched from databases such as Ebrary and Free e-books to collect data related to the thesis.

- **Previous theses from Turkey** are found in the archive of National Thesis Center of Council of Higher Education. The theses are searched due to their departments and major disciplines as "City and Regional Planning", "City Planning" and "Urbanization" and due to their subjects as "City and Regional Planning". The theses in these categories are accepted between the years 1983 and 2008. All of them are scanned and 14 of them were collected. The 12 of them includes 'sustainability' in their titles, one of them has related parts with the concept 'sustainability' although it does not include it in its title and one of them is related with 'social environmental analysis'. Four of the theses are studied in detail because of including related cases. These are the theses of Doğru (2006), Ünver (2006), Yalçıner (2007) and Yazar (2006).

- All articles in all issues of all volumes between publication dates in **journals** of "Environment, Development and Sustainability" (1999-2009), "Planning Practice and Research" (1990-2008), "Urban Studies" (1993-2007), "Environment and Urbanization" (2002-2008) and "Planlama" (1986-2007) are skimmed to find related articles. Also, the journals of "Planning" and "Sustainable Development" are searched with keywords. More than 4000 articles from all journals are scanned and 28 of them are used as references in the thesis.

- **Libraries** of Izmir Institute of Technology, University of Lusofona and Chamber of City Planners in Izmir are also visited to search the thesis subject. More than 50 books are scanned and the useful literature is collected.
- In addition, **web-based search** has also been a useful source for the thesis.

The collected data in theoretical studies including definitions and sustainability issues and in previous researches are sieved and the researches which can be listed as previous studies are chosen. The 38 studies chosen from literature are noted down in a systematic approach including what the study evaluates (urban structure, plan documents, processes, etc.) in which settlements (the names of the countries, cities, plans, etc.), how the study measures sustainability (method of the study, its steps, its list if exists, its scoring if exists, etc.), and what is the results of the study (interpretation of the researcher, ranking if exists, etc.). Their lists are also arranged again without changing their content to ensure the same style in each study. These 38 studies are also analyzed due to their contents and methods. First, they are grouped into 3 categories due to their contents as:

- studies evaluating urban structure
- studies evaluating planning studies
- studies evaluating both urban structure and planning studies

The first group is categorized into two sub-groups as:

- studies evaluating existing situations of urban structures
- studies evaluating both existing and future situations of urban structures.

The contents in the studies in second group include planning processes and plan documents, so this group is categorized into three sub-groups as:

- studies evaluating plan documents
- studies evaluating planning process
- studies evaluating both plan documents and planning process.

The previous studies are also analyzed due to their evaluation methods and techniques. The methods and techniques used in these studies are grouped into four categories as:

- general evaluation,
- list,
- questionnaire/interview
- other methods.

The categorization due to contents and the categorization due to methods are overlapped in a list to find out the methods used in different contents. This analysis showed that the method of "evaluation with a list" is most used method in studies evaluating plan documents. Then, it is decided to propose a list to evaluate plan documents in the case study to find out the results of sustainability evaluation of plans.

II. Case Study: The upper scale environment plans in the cities of Aegean Region are selected as the case of the study. The plan documents, planning reports, analysis maps, information about their processes and historical backgrounds and information about the environment plans and their existing situation in Turkey are collected from the **Chamber of City Planners** in İzmir, the archive of the **City and Regional Planning Department of İzmir Institute of Technology**, the **Ministry of Environment and Forestry** and the **private planning offices** in which the plans are prepared. At the end of this research, 4 environment plans including 8 cities in Aegean Region are found. These plans are Manisa-Kütahya-İzmir Environment Plan (Manisa-Kütahya-İzmir 1/100000 Ölçekli Çevre Düzeni Planı), Aydın-Muğla-Denizli Environment Plan (Aydın-Muğla-Denizli 1/100000 Ölçekli Çevre Düzeni Planı), Uşak Environment Plan (Uşak İl Çevre Düzeni Planı) and Afyonkarahisar Environment Plan (Afyonkarahisar İl Çevre Düzeni Planı). Several plans are preferred to study as to make comparisons. They are selected also because of previous case studies as the studies evaluating several plans/cities are more than the studies evaluating one city/plan in their cases.

The environment plans are selected as the case study because one of the main characteristics of these plans is the aim of supporting sustainable development. Their sustainability aim is obvious, but their degree of considering all aspects of sustainability is under debate. Therefore, it is worthwhile to evaluate these plans in terms of sustainability issues. In addition, 1/100000 environment plans are selected, because they are the plans with uppermost scales in all cities and this scale facilitates the observation of all issues in all cities included in the case. Finally, the environment plans are selected as cases in this thesis as there is a variety in the sort of plans evaluated in previous studies. The phrase "environment plan" used in this thesis is connoted as "Çevre Düzeni Planı" in Turkish. There are several English translations of these plans in different sources. The Ministry of Environment and Forestry uses both "Environment Plan" and "Physical Territorial Plan", while Yalçıner (2005) uses "Environmental Development

Plan" and Olcan (2007) uses "Urban Development Plan". "Environment plan" frame is selected in this thesis, because it is the frame accepted by the responsible ministry.

The Aegean Region is selected as the case study because of the easy access of information and plans. Another reason of selecting the case as cities in Aegean Region is that there are no provinces without environment plans in this region and all 1/100000 scale environment plans of the cities in this region are recent. All of these plans are approved in 2008. The applications of two of them (Manisa-Kütahya-İzmir Environment Plan and Aydın-Muğla-Denizli Environment Plan) are stopped by the Council of State, but it is not a restriction to study these plans, because the reason of this interference is procedural and it is not contrary to the fact that they are recent. Finally, the cities in Aegean Region are selected to be evaluated for the case study as the physical conditions, climates and social relationships are similar and also there are no big gaps between their economic developments.

The plans are introduced at the beginning of the case chapter with a systematic description including information about their preparation and approval processes and responsible authorities, information about the planning area, the major concerns and visual documents of the plans. And then evaluation of all plans with the checklist including the goals and objectives of the plans regarding sustainability policies is taken place in the following part of the case chapter. Lastly, comparison of them is included.

This thesis evaluates planning studies with plan content analysis method like most of the previous researches. Although it concerns sustainability measurement in urban planning practice which includes both urban structures, planning processes and plan documents, only plan documents are evaluated in the case studies of this thesis. The urban structures and planning processes are not included. This is a frequent approach in previous researches evaluating planning studies. The plan documents evaluated in the case study include plan reports and plan notes, but not plan drawings as it requires other methods and more time. The previous researches evaluating plan drawings with Geographic Information Systems are only a small amount of the previous researches (2 of 38). Goals, objectives and all content of the written documents are assumed to be truly considered in the plan irrespective of their consideration in maps.

A checklist is proposed to evaluate the plans with the help of examination of the issues in the lists of all previous studies evaluating with a list, the chapter about sustainable development and urban planning, reviews of plan reports in different scales and researches on sustainable urban planning. The review of literature in this part of the

thesis is not just descriptive; there is also a critical appraisal of previous studies. Any of the lists is not chosen for this thesis and not taken entirely, but a new one is prepared. This proposed checklist is one of the main contributions of this thesis. The items used in the proposed checklist are categorized in 3 groups from comprehensive to specific: policy areas, policies, urban planning actions for sustainability. This categorization is preferred because the need of defining measurable items is realized. The checklist is prepared to be used to evaluate plan documents, so the items which can not be measured from plan documents (such as NOx emission resulted from the territorial vehicles and the amount of children vaccinated against epidemic diseases) are excluded, although they are related with sustainable development. The items are also reviewed to ensure their relevance with the scale of the plans (1/100000) in the case studies. The policy areas in the checklist are formed in the frame of the 2nd chapter including definitions, content and aims of sustainable urban development and its relation with urban planning and the 3rd chapter including previous researches. The policies and urban planning actions are also derived from lists of previous studies. The previous lists needed review in the frame of proposed three categories. Also, reviewing several plan reports helped to form the issues which are peculiar to and important for the case. It is assumed that the checklist proposed in this study is enough for this case, but there might be additional items which should be taken into consideration in other study areas and plans.

The policies listed have both individual importance and mutual dependence of each other. It is assumed that sustainability can be managed in only their balanced consideration. They are assumed to have equal weights. Actions supporting each policy are listed in the most specific category of the checklist. They are required to manage the policies, but they are scored separately to show the policies without actions. Actions are also assumed to have equal weights.

The plans are evaluated with the proposed checklist and the results are interpreted. All items in the proposed checklist are handled separately and what the plans say on each item is also noted in the evaluation lists. The policies and urban planning actions are scored according to these notes. All plans got two types of scores: one from policy column and one from urban planning action column in the checklist. The scores in columns are compared with each other to analyze if the levels of considering sustainability issues are similar in all plans and if the plans proposes supporting actions for policies. This analysis is important in plan evaluation, because if the plans propose only policies but not actions supporting them, their policies can

hardly be actualized. Policies are only meaningful when they are supported with actions.

The scoring of the items include three types: “0” means “not included in the plan”, “1” means “included in the plan” and “nr” means “not relevant for the plan”. The contrary statements opposing to policies and actions are included in the part titled with “BUT”. In this part of the thesis, numeric results are gained from the scoring of the qualitative items. It is also quantitative because of answering “how much” question while measuring how much the plans consider sustainability policies and actions. Calculations for totals, averages and percentages are included, tables and charts are prepared, and classifications are done for interpreting the findings. The “not relevant” items, “BUT” statements and repetitions need attention in concluding results. The “not relevant” items are not included in the total of the including plans while calculating percentages, so the comparison of percentages are more valid than the comparison of the total scores of the plans. “BUT” statements are not included in the calculation, but they are considered in the comparison and evaluation. If they were not considered in this evaluation, the research could not be objective. Some actions are repeated in the checklist because of supporting more than one policy. These repetitions are studied carefully. They are counted once while calculating totals. If they were scored two or three times, the results would be wrong that some plans would have extra points.

In evaluation of the plans the written documents are assumed to be in compliance with the plan drawings and analysis maps, so they are not controlled with the drawn documents and analysis maps. If the written documents include the policies and actions in the checklist, the plan gets “1” point. At the same time, if the policies and actions are not considered in the written documents, the plan gets “0” point. The lack of expressions is resulted as ‘not considered’.

In addition to the evaluation of the plans separately, scores of the plans are also compared with each other to be able to see the general trend for consideration of the sustainability issues in Turkey for environment plans. The findings are illustrated with tables and charts which ease interpretations.

# CHAPTER 2

# SUSTAINABLE DEVELOPMENT AND URBAN PLANNING

In this chapter, the concepts of sustainability, sustainable development and sustainable urban development are defined, the scope of sustainable urban development in terms of its issues is determined, the methods of achieving sustainable urban development are explained, and the role of urban planning in achieving sustainability in cities is mentioned.

## 2.1. Sustainability

Sustainability is a general term derived from the word "sustainable" which means "capable of being maintained at a certain rate or level" (Oxford English Dictionary, 2009). It derives from biological sciences and particularly from environmental sciences (Jepson, 2001) and used in a wide range of disciplines and research fields such as urban planning, environmental sciences, economics, etc. Another definition by Manderson (2006) is that it is "a universal principle common to all systems, and can therefore be applied to any context or situation that exhibits a dimension of continuity". It is neither a state of the system to be increased or decreased, nor a static goal or target to be achieved. "It is an ideal of development efforts in a system and a moving target, which continuously evolving as we understand more about our socio-environmental system"(Bagheri and Hjorth, 2007). It changes depending on people and society, because needs, tastes and desires vary in different people, cultures

and classes. There are also different interpretations such as "sustainability has become a clichéd term that is in danger of meaning everything and thus nothing" (Kelly, Selman, & Gilg, 2004).

The international usage of the term 'sustainability' was first seen in the **World Charter for Nature**, an organization of International Union for the Conservation of Nature and Natural Resources – IUCN which is adopted by United Nations member nation-states on October 28, **1982** (Yazar, 2006). One of the general principles of this charter refers to sustainability as "ecosystems and organisms, as well as the land, marine and atmospheric resources that are utilized by man, shall be managed to achieve and maintain optimum sustainable productivity, but not in such a way as to endanger the integrity of those other ecosystems or species with which they coexist" (United Nations, 1982).

## 2.2. Sustainable Urban Development

There are several different opinions about the first usage of the concept 'sustainable development'. The content of the concept was mentioned since 1970s, although the term 'sustainability' was not used. The **Stockholm Declaration** (**1972**) was accepted to be the conference where the basic themes of sustainable development were handled (Carvalho, 2001; Gardiner, 2002; Whitehead, 2003). In this conference in which sustainability issues were first handled by United Nations, the relation between environment and economic and social development was underlined. United Nations also carried the environmental problems on human settlements into international agenda in **1976** in **Habitat I**. The report of this conference (**Vancouver Declaration**, **1976**) includes opportunities, solutions, principles and guidelines on human settlements while focusing on the relations between human needs and their social, environmental and environmental interests (United Nations, 1976). Carvalho (2001), referring to the **World Resources Institute Conference on the Global Possible** (Repetto, **1986**), mentioned that the papers presented at the conference included clues about sustainable development and "emphasized rational utilization of resources and increased efficiency as the means to achieve sustainability".

The term ‘sustainable development’ was first used in the report of the United Nations World Commission on Environment and Development, called “**Our Common Future – Brundtland Report**” in **1987**. The most accepted definition of ‘sustainable development’ in literature was formed as a development that “meets the needs of the present without compromising the ability of future generations to meet their own needs” and key concepts of sustainable development were defined as “the concept of ‘needs’, in particular the essential needs of the world’s poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment’s ability to meet present and future needs” (United Nations, 1987).

The concept of ‘sustainable development’ was also handled in the **United Nations Conference on Environment and Development** in **1992** in Rio de Janeiro. (Kızılaslan, Gürler, & Kızılaslan, 2007). The concrete strategies to achieve sustainable development were developed in the two of the main documents (**Rio Declaration** and **Local Agenda 21)** which include action plans for local developments to make settlements more sustainable (Yazar, 2006). In the report of this conference, there are a number of principles for all states and communities to achieve sustainable development (Rio Declaration, 1992). “Local Agenda 21 provides the basis for debate on and awareness of sustainable development at the community level” (Cotter and Hannan, 1999). The following summit on sustainable urban development was **Habitat II** in İstanbul in **1996**. This conference determined two aims; “adequate shelter for all” and “sustainable human settlements in an urbanizing world”. The developments in the following ten years after the conference in Rio de Janeiro were evaluated in the **World Summit on Sustainable Development** in Johannesburg in **2002**. This summit was the first international conference in which the name of ‘sustainable development’ was used (Emrealp, 2005). The representatives of this summit “are resolved through decisions on targets, timetables and partnerships to speedily increase access to basic requirements such as clean water, sanitation, energy, health care, food security and the protection of bio-diversity” (United Nations, 2002). It was an important step in the implementations of the concept of sustainable urban development. Other related organizations of United Nations are **UNECE (United Nations Economic Commission for Europe), The Sustainable Cities Program and Hong Kong Declaration on Sustainable Development for Cities** (Yazar, 2006).

As well as United Nations, other international organizations and unions such as European Union and Council of Europe also handled sustainable urban development as an important concept. **European Union** stated the sustainability in its main policies and also gave importance to the cities and urban developments. The union's interest on environment started in **1970s**, but the term 'sustainability' was first seen in the main policies in **1992** in the **Treaty of Maastricht**. Also, it was the first time that a spatial policy in European Union level was seen. Another step of European Union on this concept was the **5th Environmental Action Program** which was called '**Towards Sustainability**' (**1993**). Another important document of the Union on sustainable development is **Aalborg Charter**, **1994**. Sustainability is seen as a local process in this charter which is 'Charter of European Cities and Towns: Towards Sustainability'. It is related with the management of the city and the urban ecosystem balance. In this management the decisions are also representing the interests of both current and future generations according to this charter. The conference in which this charter is produced "marked an important step towards the achievement of urban sustainability" (Mega, 1996). The next important event in European Union History about sustainability is **Cardiff European Council** in **1998**. The integration of all policies with environment was underlined in this council. The council stated that "our economies must combine prosperity with protection of the environment". In addition, **Göteborg European Council** (2001) was the council in which the formation of an international sustainable development pact was decided. The council agreed with a strategy for sustainable development. The strategy was renewed in 2006, because of the negative and unsustainable trends in relation to climate change, energy use, public health, poverty, social exclusion, demographic pressure and ageing, management of natural resources, biodiversity loss, land-use and transport (European Union, 2006). **Leipzig Charter on Sustainable European Cities** (May **2007**) is also an important charter of European Union and a supporter of this renewed strategy. The concern on sustainability of the European Union includes some networks and organizations such as **EUROCITIES** and **METREX**, and some tools such as **INTERREG III, URBAN II** and **LEADER+** and **EQUAL** (Yazar, 2006).

Also, the documents and policies of the **Council of Europe** are also related with sustainable urban development. The **European Urban Charter** and the declaration arose from this charter: the **European Urban Rights Declaration**, **1992** (Yazar, 2006).

This charter is complemented and updated in **2008** in "**European Urban Charter II Manifesto for a new urbanity**" (Council of Europe, 2008).

Berke and Conroy (2000) defined sustainable development as "a dynamic process in which communities anticipate and accommodate the needs of current and future generations in ways that reproduce and balance local social, economic, and ecological systems, and link local actions to global concerns". This definition underlines the characteristics of sustainable development; reproduction, balance, link local to global action and dynamic process. "There is no such thing as a single unified philosophy of sustainable development; there is no sustainable development 'ism'. In most cases people bring to the debates on sustainable development already existing political and philosophical outlooks" (Hopwood, Mellor, & O'Brien, 2005). The environmental and economic aspects are seen more important in definition of Bithas and Christofakis (2006) as "sustainable development suggests a framework for the development of economic systems that respect the limits set by the natural environment".

The emergence of the term 'sustainable development' is mostly related with the realization of the importance of looking at 'whole' in development. The 'whole' here includes all generations; current and future, all living things; human and other species in the environment, all geographic locations and all humans; without any exceptions from different cultures, genders, races, nations, etc. The developments considering economics, social welfare and environment are integrated in this concept. "The growing awareness of the global links between mounting environmental problems, socio-economic issues to do with poverty and inequality and concerns about a healthy future for humanity" is seen as the result of the concept of sustainable development by Hopwood et al. (2005). The holistic view defined by Yazar (2006) supports this by focusing on the integration of environment with other sectors such as development, urbanism, industrialization, poverty, etc.

Sustainable urban development refers to urban development which human needs are met equally and efficiently in and ensures the maintenance of this situation and environment for current and future generations living in the urban boundaries.

There is a strong relationship between urbanization and sustainable development. The "promotion to sustainable urbanization" is seen as "a key to global sustainable development" by Camhis (2006). Also, according to Kenworthy (2006), "making existing cities and new urban development more ecologically based and

liveable is an urgent priority in the global push for sustainability". The sustainability debate has global dimensions, but there is a mutual integration of global and local levels. The urban focus of sustainability is caused by cities' trends in consumption of natural resources and in production of pollution and waste. "Sustainability in an urban setting describes the potential of a city to reach a new level of socioeconomic, demographic, environmental and technological performance which in the long run reinforces the foundations of the urban system itself. Thus urban sustainability ensures a long-term continuity of the urban system" (Nijkamp and Pepping, 1998).

**Sustainable city** is the concrete spatial reflection of the sustainable urban development. Sustainable cities according to Nijkamp and Pepping (1998) "ensure continuity in change" with a harmony of socioeconomic, environmental and energy concerns. Yazar (2006) also underlined this harmony and added that the city adopting a development type which prevents the depletion of natural resources after their usage over their carrying capacities are also defined as sustainable cities. Another definition by European Common Indicators (2003) is that it is "one that enhances the efficiency of land use within its territory, protects highly valued unbuilt land, biodiversity value and green areas from development and restores contaminated and derelict land (brownfield sites)". As a broad view, sustainable city in its simple description is a city succeeding in all aspects of sustainable urban development.

### 2.2.1. The Goals and Content of Sustainable Urban Development

There are several studies mentioning goals and contents of sustainable urban development. A broad summary of them found in studies of Newman (1999) and Yazar (2006) are quoted briefly below:

The **goal** of urban sustainable development is defined as "the reduction of the city's use of natural resources and production of wastes while simultaneously improving its livability, so that it can better fit within the capacities of the local, regional and global ecosystems" (Newman, 1999). Its goals are:

- improving the quality of life,
- presenting development alternatives,

- standing against poverty,
- solving the problems of unemployment and starvation,
- meeting basic needs of health,
- developing and protecting the biological diversity,
- reconstruction in technology,
- controlling the increase in the population,
- using renewable energy resources,
- supplying clean water and eradicating risks (translated from Çubuk, 2000, quoted in Yazar, 2006).

The **content** of sustainable urban development can be classified into five groups (political and supervisory, physical, environmental, economic and social) in terms of these goals.

- political and supervisory,
  - creating a participatory and efficient process,
  - preparing sustainability charts related with economic,
  - environmental and social resources management,
  - forward-looking for the sustainability of society,
  - deciding an action strategy for sustainability
  - controlling the implementations among sustainability goals and objectives.

  In addition to these, a successful local management for sustainable development needs to have
    - technical expertness with qualified environmental knowledge,
    - satisfactoriness in the environmental decision making process,
    - implementations of qualified environmental strategies,
    - efficient use of technical and financial resources.
- physical,
  - spatial relations between cities and surroundings,
  - population,
  - geographic location,
  - land-use forms,
  - construction types,
  - transportation, etc.
- environmental,
  - providing adequate water,
  - health,
  - drainage and waste services,

- decreasing the physical and chemical danger in the housing and working areas,
- providing a high environmental quality for all citizens by protecting natural and cultural heritages,
- providing adequate and qualified green spaces for citizens,
- minimizing the transfer of environmental costs to other living organisms in ecosystems surrounding the cities and to other neighboring settlements,
- to strengthen the process of sustainable consumption.

➢ economic
- production and consumption systems in cities,
- employment,
- migration, etc.

The changes in the understanding of limits to growth and raw material and energy consumption are also related with this content. This group also concerns

- limited carrying capacities of resources and land,
- multi-functionality in land depending on actions,
- communication and interaction webs in transferring the technology and knowledge.

➢ social
- equity,
- security,
- adequacy,
- participation,
- quality of life
- urban poverty (Yazar, 2006).

The content of the concept includes key dimensions for sustainable development in city scale which are "compact, mixed-use urban form, well-defined higher density, human oriented centers, priority to the development of superior public transport systems and conditions for non-motorized modes, with minimal road capacity increases, and protection of the city's natural areas and food-producing capacity", including "environmental technologies", a high-quality "public realm", "sustainable design principles" applied to urban development, and economic growth "emphasizing creativity and innovation" and "strengthening the environmental, social and cultural

amenities of the city" (Kenworthy, 2006). These dimensions show the comprehensiveness of the concept relating different aspects.

### 2.2.2. How to Achieve Sustainable Urban Development

Creating sustainable urban areas requires a change from traditional assumptions about how cities grow and develop. "It requires an acceptance that personal and economic well-being can go hand in hand with the preservation of natural systems, and with dramatic reductions in the consumption of material resources and the production of waste products" (Sustainable Urban Development, n.d.). Achieving sustainable urban development first requires changes in understandings and trends. The achievement of sustainable development strategies is possible if it is understood not to be only a technologic problem or an ecosystem approach and its content and strategies are strengthened (Çetinkaya and Görer, 1995).

The translation of sustainability objectives into concrete actions is found to be a challenge without a clear end (Keysar, 2005; Bagheri and Hjorth, 2007). Achievement of sustainable development requires effort according to Bagheri and Hjorth (2007); however, Keysar (2005) stated that "the lack of consensus on how to make sustainability a reality is not due to a lack of effort" and mentioned that some modification and combination of traditional tools are necessary. Malbert (1998) agreed that there is an effort of urban planners and decision makers to understand the practical application of sustainable development on urban processes since the idea was launched by WCED (World Commission on Environment and Development) in 1987.

Sustainable development can be seen in planning practice as a long-term political vision. It should be applied to practice with more specific and operational definitions at local level and integrated to global vision according to Malbert (1998). It is related with all processes in both local and global level. "Sustainability should become a priority and the key principle governing all the processes, rather than remaining an additional requirement of development (Pakalnis, Sakalauskas, & Zavadskas, 2007).

Hopwood et al. (2005) defined 3 broad views in achieving sustainable development. These are "status quo, reform and transformation". The first one is the view that sustainable development can be achieved within the present political and economic structures and human-environment relationships. In the second view a fundamental reform is required without changing all the existing arrangements, while in the last one a radical transformation is needed in the power structures of the society.

Conroy and Beatley (2007) described two approaches of implementing sustainability in planning literature. One requires a holistic and integrated process in which problem oriented radical changes in governmental level are needed rather than topic oriented changes whereas the other approach focuses on short-term or easy-to-implement actions in smaller levels such as city or region and assumes that "any move towards more sustainable activities is positive progress" (Conroy and Beatley, 2007).

The importance of relationships of human beings and their environments in achieving sustainability is dealt with by Van Diepen and Voogd (2003) and Satterthwaite (1997). "For making urban land-use planning more sustainable, it is essential to have insight into the relationships between the urban 'users' and their surroundings" (Van Diepen and Voogd, 2003). Also, Satterthwaite (1997) emphasized that relationships of a city with people and ecosystems outside their boundaries are important. According to the scholar, "….to progress towards the achievement of sustainable development goals, the environmental performance of cities has to improve not only in terms of improved environmental quality within their boundaries, but also in terms of reducing the transfer of environmental costs to other people, other ecosystems or into the future" (Satterthwaite, 1997).

Nine steps toward sustainability according to Walz (2007):

1. Design with the local environment.
2. Extend design standards to include sustainability, with the goal of reducing energy use and water consumption.
3. Create a master plan for a diverse and changing community.
4. Provide walking and bicycle paths.
5. Connect and contribute to the larger community.
6. Create centers.
7. Make use of economies of scale.
8. Broaden the role of the property owners association.
9. Help residents make the transition to a more sustainable style of life (Walz, 2007).

Two guiding principles on achieving sustainability can be defined in a framework in which sustainability is accepted as the basis of all activities rather than a long-term objective according to Schmid and Eggenberger (1997).

- The first one is that “human activities should not add to present risks”.
- The second is that “human activities should use scarce resources prudently”.

These principles need further specification depending on specific policies, regulations, programs, plans, etc. (Schmid and Eggenberger, 1997).

There are some projects on implementing sustainable development according to United Nations in some issues such as:

- poverty eradication,
- environmental management,
- social services,
- economic development,
- infrastructure,
- housing,
- urban governance,
- civic engagement,
- gender and equity,
- disaster,
- production and consumption patterns,
- urban and regional planning,
- technology,
- land use management,
- children and youth,
- architecture and urban design,
- older persons,
- use of information (United Nations, 2001).

The World Summit (2005) takes care of achieving sustainable development while defining action points and requirements. The essential requirements for sustainable development and overarching objectives are “poverty eradication, changing unsustainable patterns of production and consumption and protecting and managing the natural resource base of economic and social development”. The summit includes commitments to achieve sustainable development dealing with:

- climate change,
- clean energy,
- hunger and poverty,
- biological diversity,
- disaster reduction,
- safe drinking water,
- affordable housing,
- housing-related infrastructure,
- slum prevention,
- safety,
- security, etc. (United Nations, 2005).

According to the renewed sustainable development strategy of the European Union, the key objectives to create sustainable communities are grouped in four main

topics of environmental protection, social equity and cohesion, economic prosperity, and meeting international responsibilities.

- The first group includes objectives to "safeguard the earth's capacity to support life in all its diversity, to respect the limits of the planet's natural resources and ensure a high level of protection and improvement of the quality of the environment", to "prevent and reduce environmental pollution and to promote sustainable consumption and production to break the link between economic growth and environmental degradation".
- The second group of objectives is related with promoting "a democratic, socially inclusive, cohesive, healthy, safe and just society with respect for fundamental rights and cultural diversity that creates equal opportunities and combats discrimination in all its forms".
- The key objective on economic prosperity is to "promote a prosperous, innovative, knowledge-rich, competitive and eco-efficient economy which provides high living standards and full and high-quality employment throughout the European Union".
- The last group includes objectives to "encourage the establishment and defend the stability of democratic institutions across the world, based on peace, security and freedom" (European Union, 2006).

After defining these objectives the European Union agreed on policy guiding principles which are:

- promotion and protection of fundamental rights,
- solidarity within and between generations,
- open and democratic society,
- involvement of citizens,
- involvement of businesses and social partners,
- policy coherence and governance,
- policy integration,
- use best available knowledge,
- precautionary principle,
- make polluters pay (European Union, 2006).

European Union Strategy for Sustainable Development identifies some key challenges and corresponding targets, operational objectives and actions. These challenges are:

- climate change and clean energy,
- sustainable transport,

- sustainable consumption and production,
- conservation and management of natural resources,
- public health,
- social inclusion,
- demography and migration,
- global poverty
- sustainable development challenges (European Union, 2006).

European Union draws a comprehensive framework which covers the complexity of the sustainable development. This framework helps to achieve sustainable development if it is supported with the countries own action plans and legislation. The importance of all these objectives and guiding principles should be taken into account in all countries for the implementation of them but also the priorities for local and specific fields should be developed too. This consideration was also underlined in the first European Union Strategy for Sustainable Development (2001). In this strategy the national, regional and local actions were also noticed as the importance of global actions. "Action must be taken by all and at all levels" (European Union, 2001a). In addition to this, "the link between the European Union strategy and national and local strategies" is important and there is a need for better integration of all areas of activity (European Union, 2004a). The questionnaires on public consultation on strategies of European Union on sustainable development also show that an overwhelming majority either "agree" or "strongly agree" that there is a need for "stronger coordination between sustainable development strategies in different levels" (European Union, 2005).

European Environment Agency named five urban sustainability principles (1995) to achieve sustainability in cities.

- environmental capacity which limits city planners imposed by natural environment
- the reversibility of planning interventions which prevents endangering the adaptation of city to the future demands without damaging environment
- resilience of the city for recovering from external stresses
- efficiency in terms of environmental and welfare
- equity in terms of accessing to the services and resources (Lautso, Spiekermann, Wegener, Sheppard, Steadmann, Martino, Domingo, & Gayda, 2004).

These principles are followed by five goals:

- minimizing the consumption of space and natural resources,
- rationalizing and efficiently managing urban flows,
- protecting the health of the urban population,
- ensuring equal access to resources and services,
- maintaining cultural and social diversity (Lautso et al., 2004).

The achievement of these goals and principles is not easy but necessary in making cities sustainable (Lautso et al., 2004). The successful implementation of sustainable development requires integrated planning, and social learning process (Rees, 1989, quoted in Marien & Pizam, 1997). Sustainable urban development process and principles should be flexible, because all cities are different from each other and they have their own situations, problems and potentials. The problems might be relevant in some cities in some specific situations, so the main principles can be their solutions, but the differences should be considered (Yazar, 2006).

The fact that sustainability is a dynamic concept makes it difficult to clarify what it implies, so focusing on process rather than product is required. Also, the term changes over time and across different cultures and states of development (Schmid & Eggenberger, 1997). In this point of view it is important to focus on urban planning processes while addressing sustainability in a spatial context. "The broad nature of urban sustainability suggests also that urban policies aiming to achieve sustainable development should be strategic in nature, integrative, visionary regarding the role of the private sector, focused on the provision of market incentives, and more oriented towards the needs of citizens" (Nijkamp and Pepping, 1998).

Sustainable urban forms can only be achieved with supporting policies which consider global sustainability goals while defining local implementation strategies (Williams, Burton, & Jenks, 2000; Jarrar and Al-Zoabi, 2008). However, in another view, "the lack of a widely accepted policy framework for achieving sustainable development has resulted in ad hoc approaches tailored to specific localities and regions" (Staley, 2006).

## 2.4. Urban Planning and Sustainable Urban Development

Urban planning is an important tool to achieve sustainable urban development. "It is clear that sustainability and planning have much in common. Moreover, they are complementary in the sense that sustainability has the potential of providing much, if not all, of the conceptual context (theories, goals, objectives, etc.) for the activity of

planning in the twenty-first century… Sustainability and the field of planning are inextricably linked and mutually relevant" (Jepson, 2001). The importance of sustainability for planning is proved by its reflections in planning theory, planning practice and planning education (Staley, 2006; Kelly et al., 2004; Gunder, 2006). The importance given to the relationship between sustainable urban development and urban planning is increasing according to these scholars.

Urban planning is a profession which handles urban development with its economic, social, environmental, physical aspects and includes their interactions. Its aims fit the goals and principles of sustainability. The content of sustainable urban development and the importance of the relation between environment and development have been integrated into urban planning before it was named as 'sustainable urban development' in 1987 (Özer, 1995). In this perspective, urban planning has a crucial role in achieving sustainable urbanization when it includes these goals.

The importance of sustainability for urban planning is emphasized in literature. Sustainability, which is a fundamentally and increasingly important concept in the theory and practice of planning, is one of the normative concepts in urban planning and also a guiding principle that should be adopted for plans, projects, programs and policies across all private and public sector activities (Choguill, 2008; Taylor, 2003; Kelly et al., 2004; Unsworth, 2007; Lindsey 2003). Sustainability should be considered in and integrated into planning profession; recognized as profitable, green and fair and something that relates to planning; and incorporated into both planning policies and their implementation (Choguill, 2008; Jepson, 2001; Lindsey, 2003; Van Lier, 1994).

The importance of urban planning in achieving sustainable urban development is also emphasized in literature. Urban planning, which is a significant tool for achieving, promoting and moving towards sustainability, is one of the important arenas in which conceptions of sustainable development are contested (Staley, 2006; Rydin, 1998; Godschalk, 2004; Holden and Norland, 2005; Çetinkaya and Görer, 1995). Spatial planning according to Alshuwaikhat and Aina (2005) promotes sustainability with plans, policies and programs and the sustainability of land use planning process is a step towards sustainability of communities. The role of urban planning in promoting sustainable development has found important since the Bruntland Report, 1987. The use of planning system is also seen as a common solution that makes achieving sustainable development possible (Holden and Norland, 2005). Also, planner involvement is important to the achievement of sustainable development according to Jepson (2004).

McEldowney et al. (2005) explains the concern of planning in supporting sustainable development. “Much of the interest in promoting sustainable development in planning for the city-region focuses on the apparently inexorable rise in the demand for car travel and the contribution that certain urban forms and land-use relationships can make to reducing energy consumption” (McEldowney et al., 2005). Planning has to support sustainable urban development with appropriate tools, instruments and methodologies. Spatial planning is fundamental in promoting sustainable development when it addresses the pending conflicts; shows possible solutions; helps coordinate activities and measures in view of the overall development goals. Also, it has to set development priorities favoring at different times and different aspects of a sustainable development. Finally, it has to provide land-use patterns and functional networks which support precautionary principles (Schmid & Eggenberger, 1997).

Urban and regional planners need to embed sustainability within their policies and implement it in their works. Cities are interrelated with their regional settings including major activities industry, agriculture, forestry, fisheries and tourism, so a holistic approach to sustainability is desired with the modeling and simulation software, accounting frameworks, codes of practice and other essential tools including technological solutions to specific environmental problems. Like urban planners, national and regional policy-makers are also responsible to choose cost-effective means to achieve sustainable land-use. The “topics ranged from urban management, planning and governance to more specific issues such as energy and waste management, mobility and transport, air quality, housing, cultural heritage, tourism, land use and planning, redevelopment and regeneration, and social cohesion” are also subjects of regional and national levels as well as cities (European Union, 2004b).

The main duties of spatial planning at institutional level are subsidiary, cooperation and participation, top-down and bottom-up. The first is related with the levels of decision-making, because all levels in planning should deal with the situations of their own level. The problems should be solved in local without transferring to an upper level. Each level should address its own development goals, policies, programs, strategies, plans and activities. The second duty is to provide adequate means of public participation and to apply planning tools and instruments facilitating cooperation and coordination. The last one requires feedback which helps considering obstacles such as long-term impacts, uncertainty, etc (Schmid & Eggenberger, 1997). The importance of

cooperation and participation in long-term actions to address and solve global problems such as climate change is also pointed in World Summit (2005).

## 2.5. Evaluation

'**Sustainability**' is a universal principle common in different fields such as urban planning, environmental sciences, economics, etc. **Sustainable development** refers to a development that causes to continue in a state of having equal opportunities in meeting human needs between generations and geographic locations; and that balances the environmental, social and economic aspects. **'Sustainable urban development**' refers to urban development which human needs are met equally and efficiently in and ensures the maintenance of this situation and environment for current and future generations living in the urban boundaries. The main aims of the concept are improving the quality of life, protecting values and maintaining resources. The content of the concept includes the form of the city, the environmental quality and adequate services for citizens, equity, security, health, employment, transportation, etc. **Urban planning** is an important tool of achieving urban sustainability. To support sustainability, main principles introduced by urban planning include decisions on compact and mixed land-use, protection of special sites, technical and social services, specific issues such as energy and waste management, mobility and transport, air quality, housing, cultural heritage, tourism, land use and planning, redevelopment and regeneration, and social cohesion, etc. These principles are used as guide for preparing the checklist used for the evaluations of plans in the case study. The approaches on achieving sustainable urban development are examined in terms of their contribution to planning policies. The guidelines in literature about the translation of sustainable urban development goals into concrete actions have been useful in preparing the evaluation list of this thesis. Key objectives and dimensions of sustainability are also handled as much as its principles and goals. Besides, the environmental, economic, social and institutional aspects of the sustainable urban development concept are used as a general frame of the study. These aspects are not handled separately, but their effects on all planning policies and actions are considered.

# CHAPTER 3

# WAYS TO MEASURE URBAN SUSTAINABILITY

This chapter analyzes the methods to measure sustainable urban development and planning. The literature includes studies using different methods in different contents.

The literature includes studies considering all aspects of sustainability in a comprehensive approach (Fehr, Sousa, Pereira, & Pelizer (2004), Scipioni, Mazzi, Mason, & Manzardo (2009), Unsworth (2007), Yalçıner (2007), Munda (2005), Zavadskas, Vitekiene, & Saparauskas (2007), Staley (2006), Kızılaslan et al. (2007), Cartwright (1997), Morisson-Saunders and Therivel (2006), Zilans and Abolina (2009), Berke and Conroy (2000), Counsell (1998), Bruff and Wood (2000), Duran- Encalada and Paucar-Caceres (2007), Gürer and Çamur (2005), Dogru (2006), Alshuwaikhat and Aina (2005), Yazar (2006), Yalçıner (2005), Saha and Paterson (2008), Conroy and Berke (2004), Alshuwaikhat and Aina (2006), Choguill (2008) and Budd, Lovrich, Pierce, & Chamberlain (2008)) and other studies considering only specific issues of sustainability. The specific aspects of sustainability handled by other scholars are

- transportation (Kaçıral, 2007; Fenley, Machado, & Fernandes, 2007; Goddard, 1999),
- tourism (Uğurlar, 2006; Gündüz, 2004),
- hazard (Berke, 1994),
- ecologic sustainability (Girginer, 2006),
- energy (Nijkamp and Pepping, 1998; Comakli, Kaya, & Sahin, 2008),
- social environmental analysis (Alkan, 1999),
- urban renewal and regeneration (Alpar, 2004; Aydın, 2005; Couch and Dennemann, 2000; Levent, 2005),
- open and green spaces (Özcan, 2006; Özcan, 2008),
- equity and efficacy (Zuindeau, 2006),

- sustainable consumption and production (Szlezak, Reichel, & Reisinger, 2008; Kazimieras Staniskis, 2008),
- groundwater sustainability (Lavapuro, Lipponen, Artimo, & Katko, 2008),
- security and environmental issues (Coaffee, 2008),
- energy and security (Uğurlu, 2006),
- brownfield developments (Raco and Henderson, 2006; Williams and Dair, 2007),
- neighbourhoods (Erdoğmuş, 2006; Aydın, 2005; Levent, 2005),
- sustainability in oil and gas sector (Ekins and Vanner, 2007),
- urban form (Jarrar and Al-Zoabi, 2008; Jabareen, 2006; Neuman, 2005; Çalışkan, 2004; Newman and Kenworthy, 2000; Scoffham and Marat-Mendes, 2000),
- sustainability of natural resources (Tozar, 2006),
- property relationships (Haştemoğlu, 2006),
- sustainability of cultural heritage management (Ünver, 2006),
- regional sustainability (Roberts, 2006; Van de Laak, 1994),
- sustainable architecture (Durmuş, 2003) and
- sustainable urban construction (Hakkinen, 2007)

The following part of this chapter reviews above studies measuring urban sustainability. These studies are classified into three groups due to their contents as studies evaluating urban structure, studies evaluating planning studies and studies evaluating both urban structure and planning studies.

## 3.1. Studies Evaluating Urban Structure

There are two groups of studies in this part. The studies evaluating the existing situation of urban structure are in the first group, while the second group includes studies evaluating both the existing and the future situations of urban structure.

### 3.1.1. Studies Evaluating the Existing Situations of Urban Structure

The scholars studying the existing situations of urban structure in measuring urban sustainability included in this part are the works of Fehr et al. (2004), Jarrar and Al-Zoabi (2008), Scipioni et al. (2009), Unsworth (2007), Yalçıner (2007), Munda (2005), Williams and Dair (2007), Holden and Norland (2005), Zavadskas et al. (2007) and Staley (2006).

**Fehr et al. (2004)** assessed the urban sustainability in the municipality of Toribaté in Brazil. First, "12 Environmental parameters for an ideal municipality with undefined geographical location" are presented (1. Demographic density and evolution, 2. Public transportation, 3. Solid waste handling, 4. Liquid effluent handling, 5. Air monitoring, 6. Fresh water supply, 7. Public education, 8. Public health care, 9. Cultural manifestations, 10. Energy supply, 11. Park maintenance, 12. Land use and resource preservation). For each parameter, a set of indicators is developed that can "measure the prospect of sustainability (Fehr et al., 2004)". The indicators are defined in terms of "numbers or literal concepts according to the possibility of measurement" (Fehr et al., 2004). For each indicator, the values of the case area are compared with the ideal values (that are quantified whenever possible). In conclusion, the results show that "Toribaté is an ideal city serving as reference for environmental parameters and indicators, and as testing ground for management models" (Fehr et al., 2004).

**Jarrar and Al-Zoabi (2008)** investigated "the applicability of efficiency parameter of the sustainable city paradigm on the old city of Jerusalem" (defined by walls). First, 6 main parameters (efficiency, responsibility, integrity, acceptability, liveliness and equity) for sustainable city form characteristics are categorized. For each parameter, a number of criteria and indicators are defined. For this study, one of the parameters is chosen. That is "efficiency". For this parameter, applicable criteria and indicators are defined in three areas: city form, street system and land use. Indicators do not include numerical values. The evaluation is also verbal. "The findings target the environmental and economic dimensions with minor concentration on the social ones. The findings provide evidence that the parameter 'efficiency' of the sustainable city paradigm is applicable to the old city of Jerusalem, with respect to the city's form and street system, but not in the case for land use" (Jarrar and Al-Zoabi, 2008).

**Scipioni et al. (2009)** used the Dashboard of Sustainability to measure the local urban sustainable development in the municipality of Padua, located in Veneto, in northeast Italy.

> The Dashboard of Sustainability is a mathematical and graphical tool designed to integrate the complex influences of sustainability and support the decision-making process by creating concise evaluations. It is designed to fairly represent numerous data with complex relationships using a simple, integrated approach. It provides a mathematical and graphical synthesis of all the indicators relevant to the development, even in cases of conflicting data (Scipioni et al., 2009).

It is used in Padua in Local Agenda 21 Project. The available data in the city were "sufficient to design 61 useful indicators of environmental protection, economic development and social promotion" (Scipioni et al., 2009).

"Every indicator built from the data over the 5 years of study was associated with two symbols: "→" (and similar three signs) represents the trend of the indicator itself over time, which is either increasing, stable, or decreasing, respectively; it then becomes possible to link this trend to a trend in the sustainability using the symbols ☺(and similar three signs)" (Scipioni et al., 2009). Also, in graphical representation there are three types of colors meaning: "best performance, bed performance, medium performance" (Scipioni et al., 2009). It shows the results between the years 1997-2001. Each subject is evaluated with its own graphic and also, the general results are represented with graphics too.

**Unsworth (2007)** examined the "principles and practice of city living" in terms of the economic, social and environmental elements of sustainable development in the Leeds context in the North of England. The study focused on the research of "whether city living is meeting sustainable development criteria and the ways in which the planning system has influenced outcomes" (Unsworth, 2007). The research included large-scale questionnaires sent to all units in completed developments in years 2003, 2005 and 2007. The data was processed by a professional firm of market researchers. The scholar evaluated sustainable development due to three criteria (economic, social, environmental) and concluded that "despite ticks in the boxes of 'increased urban vitality', 'high development density', and 're-use of sites and buildings', city living does not amount to a thorough manifestation of sustainable development" (Unsworth, 2007). The results also showed a narrowly economic use of the term 'sustainability' in the case area.

**Yalçıner (2007)** used different methods to analyze the sustainability in Güdül, Ankara. "SWOT analysis was made, spidergram was drawn and ecological footprint was calculated. Graphic and non-graphic data were linked with the help of geographic information systems (GIS), thematic maps were created and many analyses and three dimensional modeling were prepared" (Yalçıner, 2007). Güdül was evaluated due to the "Sustainability Indicators of European Union". The situation in Güdül was evaluated verbally due to all indicators in a table. Also, in spidergram analysis 8 criteria were defined with the help of literature and all criteria included four remarks (very good, good, medium, weak). In SWOT analysis opportunities emerged as sustainability potentials. Physical sustainability potentials were found as solar energy, thermal resources and raw materials of biomass and biogases energy. In spidergram analysis, Güdül had scores as 'very good' in environment and natural resources, while it had 'medium' scores in quality of spaces, employment and economics. The ecological footprint in center of Güdül was calculated as "~1,8 gha/person". This result shows the possibility of sustainability in Güdül, because it is under the ecological footprint in Turkey of "2,1 gha/person" and the standards in the world of "2,2 gha/person".

**Munda (2005)** used "a multi-criterion framework" and "a set of multi-dimensional indicators" to measure sustainability in four cities: Budapest, Moscow, Amsterdam and New York. "Ranking method" used in cases was "the linear aggregation rule". Nine indicators were used in three dimensions (economic, environmental, social), 24 different ranking was found possible according to this study. In addition to this, Amsterdam and New York are compared with each other after defining the values of ideal city (the distance from the group leader method). The results vary depending on ranking because of changes in weights of indicators, but generally "Moscow is on the top position" and "New York scores better than Amsterdam" (Munda, 2005).

**Williams and Dair (2007)** assessed the sustainability of five brownfield developments in England. There are two phases in this study. First one is interview and the other is the evaluation whether five cases took into consideration of a list of sustainability objectives or not. "63 semi-structured interviews with the stakeholders involved in the developments. From the interviews, the stakeholders' reasons for considering, not considering, and rejecting aspects of sustainability were established, and a picture of the sustainability of each development was formed" (Williams and Dair, 2007). 11 objectives were defined including three economic, five social, three

environmental. Then, these objectives are grouped as relevant or not by local context and some of them were found irrelevant in some cases. The remarks in the study are number of sustainability objectives considered and achieved; number of sustainability objectives not considered and achieved. The scholars concluded the research as:

> …finally, it is difficult to compare the sustainability of one scheme with another because the framework does not give a 'weighting' or prioritise the objectives. Therefore, it is not possible to 'score' a development (this was not the purpose of the framework). It is possible to determine how many objectives a scheme has met, but this is misleading because, as discussed, not all objectives are relevant in each case and in any given brownfield development some sustainability objectives will be deemed more important than others. However, through the identification of objectives that are being implemented or ignored it is possible to form a collective view of the main area of achievement in sustainability (Williams and Dair, 2007).

**Holden and Norland (2005)** focused on "the relationships between urban form (land use characteristics) and household consumption (energy use for housing and transport)". "The questions for research are related to how a more sustainable consumption pattern could be promoted". The research includes 8 residential areas in the Greater Oslo Region. A survey was conducted and "bivariate and multivariate regression analyses" were used as methods of the study. The results showed that "there is a connection between land use characteristics and household consumption of energy and transport. Findings from the survey also lend great support to the compact city as a sustainable urban form" (Holden and Norland, 2005).

**Zavadskas et al. (2007)** assessed the sustainable development of Vilnius residential districts, Lithuania. First,

> …a thorough analysis of scientific articles, specific databases and other information sources was made, different indicator systems for assessment of sustainable urban development were reviewed and a system of 22 indices defining the aspects of sustainability was compiled. Residential areas were evaluated for their facilities, residential and business environment. On the basis of the surveys performed by experts, the significance of the indices was determined (Zavadskas et al., 2007).

(1:insignificant 22:very significant) and weights of them were determined due to their significance. "Application of the multipurpose evaluation method COPRAS (Complex Proportional Assessment) allowed to establish the rank of priorities of residential areas in respect of their sustainability" (Zavadskas et al., 2007). The data about neighborhoods were taken from RAIT survey (the market research company "RAIT"Ltd) and all of them were compared with the points given by COPRAS method. 29 neighborhoods were scored in 22 indices with 5 points: excellent, 4: very good, 3:

good, 2: bad and 1: very bad. At the end of the evaluation, the neighborhoods were listed according to their sustainability points.

**Staley (2006)** criticized sustainable development practice in US town planning, particularly focusing on "institutional mechanism used to achieve sustainable development outcomes". After giving detailed information about the previous literature, a case of Santa Monica, California was studied. The targets of the city for some sustainability indicators and the performance of the city since 1994 were evaluated in a comparison table. Santa Monica's progress was found uneven and some of the trends were found discouraging.

**Sherbinin (2003)** explains ESI (Environmental Sustainability Index) which measures overall progress toward environmental sustainability for 142 countries through 20 indicators and 68 underlying datasets in five core components (environmental systems, reducing stresses, reducing human vulnerability, social and institutional capacity and global stewardship) and then presents a pilot effort to develop municipal-level indicators of sustainability for Brazil. The index is developed by adding some variables such as human capital, supply of adequate services and agricultural potential. The study also includes Urban Sustainability Index (USI) for Brazilian Municipalities in three main topics of human wellbeing, environmental quality and institutional capacity. The scores of 4492 municipalities are shown in a map. Due to this map, the southern parts of Brazil have highest environmental and human potential. The top ten and bottom ten municipalities are also mentioned in the study.

**Kayır (2007)** evaluates urban structure in Antalya through sustainability criteria. After a general evaluation, SWOT analysis is used to define a way to planning. A list of 11 sustainability criteria is used under four groups: life style and quality, density and functionality, efficacy and justice. All criteria are considered in detail with statistical data. The results are generally negative and the following part of the study proposes solutions with GIS (geographic information systems) to these critics.

### 3.1.2. Studies Evaluating Both Existing and Future Situations of Urban Structure

This part includes the studies of Kızılaslan et al. (2007) and Nijkamp and Pepping (1998). In these studies, both existing and future situations of cases were evaluated in terms of sustainable development.

**Kızılaslan et al. (2007)** used an analytical approach to evaluate the sustainable development in Turkey. "In the study, formation of the statistical model has used Minitab 12 for Windows. In the study, predictions related to Turkey's results of sustainable development criteria recommended by Meadows were formed again by prediction with time series data" (Kızılaslan et al., 2007). The data used was for the years 1980-2003. The activities were: 1:population increase, 2:economic development, 3:deforestation rate, 4:forest area, 5:agricultural development, 6:self-sufficiency, 7:urbanization-population density and 8:urbanization-urban population. The values of each activity showed the results in 3 categories: "sustainable", "critical" and "destructive". Results of the research showed that Turkey is in destructive range in the activity of population increase, in critical range in the activities of economic development, deforestation rate, the area of forests and the density of the population, and in sustainable development range in the activities of agricultural development, self-sufficiency rate and urban population. Turkey is also compared with other countries in some areas such as demographic data, gross national income, forest area, etc.

**Nijkamp and Pepping (1998)** provide a methodological framework for the assessment of critical factors related to the performance of sustainable energy strategies and offer "a cross-European comparative analysis" in 12 cities in three countries (Italy, The Netherlands and Greece – two large and two medium sized cities for each country) of "the performance of renewable energy technologies".

> This comparative analysis consists of a statistical explanation based on a probit analysis of urban sustainability data and the application of a specific meta-analytical method, called rough set analysis" ("rough set analysis is an exploratory, non-parametric statistical method that is able to handle a rather diverse and less directly tangible set of factors in a decision-theoretical context, normally in the form of 'if ... then' statements"). They use "a meta-analytical approach for identifying key factors influencing the success rate of individual energy-saving technologies in cities (Nijkamp and Pepping, 1998).

They have taken into account the influence of a variety of factors reflected by the pentagon prism (technological, user-related, financial, organizational and ecological/social aspects). The perceived success rates are assessed on a categorical scale from 1 to 5 (from a very low to a very high probability to enlarge the technology implementation or to start new investments in it). Evaluations about the subject (but not about the cases) show that "in addition to technological factors, the spatial differences are clearly important for the success of sustainable city policies"(Nijkamp and Pepping, 1998).

## 3.2. Studies Evaluating Planning Studies

The studies in this part evaluate urban sustainability in the content of planning studies. Some of these studies evaluate plan documents, while some of them evaluate planning process and others evaluate both plan documents and planning process.

### 3.2.1. Studies Evaluating Planning Process

The studies of Devuyst and Hens (2000), Hales (2000), Cartwright (1997) and Jepson (2004) are included in this part as they evaluated the planning process of their cases in terms of sustainable development.

**Devuyst and Hens (2000)** examined sustainable development initiatives by local authorities in three Canadian and three Flemish municipalities: Ottawa, Hamilton-Wentworth, Southeast False Creek-Vancouver (Canada) and Hasselt, Gent, Leuven (Flanders (Belgium)). They sent “a written questionnaire to all Flemish municipalities”, but “questionnaire approach was not repeated in Canada”; instead, they did “an extensive internet search”. “Results were verified through e-mail contacts and personal visits to key-persons in Canada” (Devuyst and Hens, 2000). Then a comparison was made about sustainable development at “the national and provincial/regional levels in

Canada and Belgium" (Devuyst and Hens, 2000). This was done on the basis of six evaluation criteria. Next, they analyzed the information of the local level sustainable development in six municipalities. They were compared in a table on the basis of eight evaluation criteria. Six questions were prepared in National and provincial/regional levels and eight questions were prepared in local levels. There were no groups or grades in answers. In conclusion,

> …this study shows that sustainable development is not yet widely practiced at the local level in Canada and Flanders, but Canadian municipalities have more experience with planning processes and vision development, measurement systems and public involvement. The Flemish municipalities were more inclined to go along with international campaigns dealing with local sustainability and take strong sustainable development actions which were not integrated in broader sustainable development policies (Devuyst and Hens, 2000).

**Hales (2000)** explores constraint and facilitation of sustainable development in the process of development plan preparation of 79 authorities from English Planning System. The method used is a questionnaire-based survey of local planning authorities. The questions are grouped in four sections. The first one is about "new and revised practices" relating to the definition and concerns of sustainable development. The second section relates to "application principles" while the third one is about "potential operational/organizational constraining factors with regard to incorporating the concerns of sustainable development into development plans" (Hales, 2000). And the last one relates to "variation in the conceptual interpretation of sustainable development and development planning" (Hales, 2000). The influence of the concerns of sustainable development upon development plan preparation has been "very limited, to date" in the results of questionnaire (Hales, 2000).

**Cartwright (1997)** assessed the degree to which local authorities are implementing sustainable development in 111 local authorities in South East of England. "A self-completion, postal questionnaire was selected as the main methodology with followup interviews as necessary" (Cartwright, 1997). First, "the meaning for each authority of the term `sustainable development' was investigated by asking responders to state two or three key phrases which encapsulated their approach, and the origins of their sustainable development strategies were sought". Then the frequency of the usage of the key phrases is analyzed. And then, eight questions [(1) Explicitly `Environmental' Services, (2) Energy, (3) Built Environment, (4) Transport Policy, (5) Council's Own Environmental Performance, (6) Economic Development

Activities, (7) Action in Community, (8) Partnerships] identifying areas of action were asked to authorities (for example: the percentage of respondents given x answer to y question). All questions were analyzed with amount or percentage of the answers. And finally,

> …the majority of local authorities in the South East region have begun the process of sustainable development by developing some policies and undertaking some actions, but there is considerable variation in the extent of the progress that they have made. The majority of councils have a lot of progress to make in order to implement sustainable development in all areas of action investigated. On average, the counties have made more progress than the districts, and the larger district councils tend to be implementing more actions than the smaller ones (Cartwright, 1997).

This study also investigated the amounts of planners in the staff responsible for sustainable development activities and found that the majority of officers are not planners.

**Jepson (2004)** measured the adoption of 39 policies and techniques of sustainable development in U.S. cities, the enactments of them, the impediments to the enactments of them and the role of planning office in their enactment. The research includes a survey sent in 2001 to 390 cities in the United States. 103 of them were completed and returned. The policy areas that were cited most frequently under the response category of 'action taken' are found as 'infill development', 'bicycle access plan', 'greenways development', 'neotraditional development' and 'pedestrian access plan'. However, 'import substitution', 'heat island analysis', 'eco-industrial park', 'wind energy development' and 'life cycle public construction' were cited in the category of 'no action taken' and 'tax base/tax revenue sharing', 'right to farm legislation', 'transfer of development rights' and 'rehabilitation building codes tied with agricultural district provisions' were cited in the category of 'action not permitted'. The findings are evaluated in various aspects and at the end six communities were marked as having 'high levels of action and integration'.

### 3.2.2. Studies Evaluating Plan Documents

The studies included in this part evaluated only written plan documents (Abolina and Zilans, 2002; Zilans and Abolina, 2009; Berke and Conroy, 2000; Counsell, 1998; Bruff and Wood, 2000; and Gürer and Çamur, 2005) or both written documents and drawings including hazard maps (Berke, 1994), road schemes (Morisson-Saunders and Therivel, 2006) and spatial analysis (Duran-Encalada and Paucar-Caceres, 2007).

**Morisson-Saunders and Therivel (2006)** explore the integration issue of environmental, economic and social considerations in sustainability assessment. The cases are just for illustrating the level of integration in sustainability assessments/appraisals. They are a project in the first case: Gorgon Gas Field, Western Australia and a local transport plan in the second case: Local Transport Plan, X County Council, England. There is not a specific method, but a general verbal evaluation. The decision question being asked and the approach being advocated (win-win-win, maximize objectives, etc.) for the assessment are defined and evaluated in cases. Scholars concluded that the approach or the question in the first case "should have been changed" and added that the first case was "not a sustainability assessment" or it was "a failed sustainability assessment" and it was "non-integrated" (Morisson-Saunders and Therivel, 2006). Also, the alternatives in the question of the second case are found "not truly sustainable, particularly in the long term". First approach in this case would have "long term environmental costs", while the second would have "short term and possibly long term social and economic costs" according to authors.

**Abolina and Zilans (2002)** analyze transportation and green space policies in the development plans of 4 largest cities in Latvia: Riga, Jelgava, Jurmala and Rezekne to evaluate urban sustainability. They compare the development plans of the cities due to transportation & green space issues listed below in Table 1. Remarks of the evaluation are "policy, measures, planning studies, plan principle, no policy, will be reduced, not mentioned, changes not shown" (Abolina and Zilans, 2002). This analysis indicates that "sustainability is presented as one of the guiding principles. However, the comparison of Development Plan policies against the urban sustainability issues reveals a great deal of ambiguity and contradiction" (Abolina and Zilans, 2002). Scholars also give point to the lack of sustainability indicators at the municipal level. They compare

the cities with the indicators that are used by their municipal departments and conclude this analysis that "decisionmakers, planners and the broad public have few and inadequate indicators with which to gauge the sustainability of urban development".

Table 1. Transportation & Green Space Issues
(Source: developed from Abolina and Zilans, 2002)

| **Issues:** | |
|---|---|
| Sustainable Development | |
| Transportation | Improvement of conditions for pedestrians studies |
| | Promotion of bicycle use studies |
| | Development of public transportation |
| | Construction of by-passes to reduce transit traffic volumes in the city |
| | Construction of new roads, bridges |
| | Construction of parking lots in the city centre |
| Green space | Area of green space |
| | Area of family gardens |
| | Integration of green space structure through the creation of green corridors |
| | Enhancement of biological diversity |

**Berke (1994)** evaluates the quality of four local (Gore, Matamata Piako, Porirua and Rotarua) and four regional (Bay of Plenty, Canterbury, Taranaki and Waikato) environmental plans produced under New Zealand's newly enacted sustainable development legislation. A list of 13 indices (dimensions) in 53 items in three groups (fact basics, goals, policies) is used to evaluate plans (Table 2). Also, "double coding" is done for best results. The scores are compared after a four-stepped calculation. Scores for fact basis items are 0=not mentioned in plan, 1=mentioned but not detailed, 2=mentioned and detailed; scores for goal items are 0=not mentioned in plan, 1=mentioned in plan; scores for policy items are 0=not mentioned in plan, 1=suggested in plan, 2=mandatory in plan. Study findings reveal that, "with the exception of the Taranaki regional plan, the quality of other plans was generally low" (Berke, 1994). The results of all items are evaluated with the possible reasons.

Table 2. Fact bases goals and policies
(Source: developed from Berke, 1994)

| | | |
|---|---|---|
| Fact bases | 1. Maps | Delineation of location of hazard |
| | | Delineation of magnitude of hazard |
| | 2. Emergency | Emergency shelter demand and capacity data |
| | | Evacuation and clearance time data |
| | 3. Exposure | Number of current population exposed |
| | | Number and total value of different types of public infrastructure exposed |
| | | Number and total value of private structures exposed |
| | | Number of critical facilities exposed |
| | | Loss estimations to public structures |
| | | Loss estimations to private structures |
| Goals | 1. Hazard | Any goal to reduce property loss |
| | | Any goal to protect safety of population |
| | | Any goal to reduce damage to public property |
| | | Any goal to minimize fiscal impacts of disasters |
| | | Any goal to distribute hazards management costs equitably |
| | | Any goal that promotes a hazards awareness programmed |
| | 2. Environment | Any goal to reduce hazards impacts that also achieves preservation of natural areas |
| | | Any goal to reduce hazards impacts that also achieves preservation of open space and recreation areas |
| | | Any goal to reduce hazards impacts that also achieves maintenance of good water quality |
| Policies | 1. Awareness | Educational awareness |
| | | Encouragement of voluntary real estate hazard disclosure |
| | | Disaster warning and response programme |
| | | Posting of signs indicating hazardous areas |
| | | Programme to encourage purchase of flood or earthquake insurance |
| | | Technical assistance to developers or property owners for mitigation |
| | 2. Regulatory | Permitted land use |
| | | Density of land use |
| | | Transfer of development rights |
| | | Cluster development |
| | | Setbacks |
| | | Site review |
| | | Special study/impact assessment |
| | | Building standards |
| | | Mandatory real estate hazard disclosure |
| | | Land and property acquisition (eminent domain) |
| | | Financing mitigation impacts |
| | | Mandatory retrofitting of private structures |

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Table 2. (cont.) Fact bases goals and policies
(Source: developed from Berke, 1994)

| | | |
|---|---|---|
| Policies | 3. Incentives | Voluntary retrofitting of private structures |
| | | Voluntary land and property acquisition |
| | | Tax abatement for using mitigation |
| | | Density bonus |
| | | Low interest loans for retrofitting buildings |
| | 4. Infrastructure | Structural controls |
| | | Capital improvements adjustments |
| | | Retrofitting public infrastructure |
| | | Critical facilities |
| | 5. Recovery | Land use change |
| | | Building design change |
| | | Moratorium |
| | | Recovery organization |
| | | Capital improvement adjustments |
| | | Private acquisition and relocation |
| | | Financing recovery |
| | 6. Preparedness | Evacuation |
| | | Sheltering |
| | | Require emergency plans |

**Zilans and Abolina (2009)** assessed urban sustainability in Riga, Latvia from five municipal documents (Municipal statutes, Policy goals of municipal sector plans, Policy measures of municipal sector plans, Policy goals in the Riga development plan, Policy measures in the Riga development plan). Evaluation was done according to 50 Aalborg Commitments (A.C.) listed in Table 3. First, five municipal documents were listed and the amount of A.C. in each of them was analyzed. (For example: in policy goals in the Riga development plan 23 Aalborg Commitments were represented, 8 were partially represented and 19 were not reflected.) Then, the degrees of representing A.C. of each municipal document were analyzed. The classification included 1:coherence with Aalborg Commitment, 2:partially coherence with A.C., -:not represented (no information because there is no indicator or relevant data) and 0:development trend contrary to A.C. Also, 10 main topics of A.C. were explored in all municipal documents. Finally, scholars concluded that "the limited representation of a broader spectrum of sustainability issues in the statutes of the municipality suggests that both at the local and national government level in Latvia there is an inadequate awareness regarding the complexity and need for sustainable development".

Table 3. Aalborg Commitments
(Source: developed from Zilans and Abolina, 2009)

| **Aalborg Commitments** | |
|---|---|
| Governance | We are committed to energizing our decision-making processes through increased participatory democracy. |
| | 1. Further develop a commonly shared long-term vision for a sustainable city or a town. |
| | 2. Build participation and sustainable development capacity in the local community and municipal administration. |
| | 3. Invite all sectors of local society to participate effectively in decision-making. |
| | 4. Make our decisions open, accountable and transparent. |
| | 5. Cooperate effectively and in partnership with adjoining municipalities, other cities and towns, and other spheres of government. |
| Local management towards sustainability | We are committed to implementing effective management cycles, from formulation through implementation to evaluation. |
| | 6. Strengthen local agenda 21 or other local sustainability processes and mainstream them into the heart of local government. |
| | 7. Deliver integrated management towards sustainability, based on the precautionary principle and with regard to the forthcoming EU Thematic Strategy on the Urban Environment. |
| | 8. Set targets and time schemes in the framework of the Aalborg Commitments and create and follow the Aalborg Commitments monitoring review. |
| | 9. Ensure that sustainability issues are central to urban decision-making processes and that resource allocation is based on strong and broad sustainability criteria. |
| | 10. Cooperate with the European Sustainable Cities & Towns Campaign and its networks to monitor and evaluate our progress towards meeting our sustainability targets. |
| Natural common goods | We are committed to fully assuming our responsibility to protect, to preserve, and to ensure equitable access to natural common goods. |
| | 11. Reduce primary energy consumption, and increase the share of renewable energies. |
| | 12. Improve water quality, save water, and use water more efficiently. |
| | 13. Promote and increase biodiversity, and extend and care for designated nature areas and green spaces. |
| | 14. Improve soil quality, preserve ecologically productive land and promote sustainable agriculture and forestry. |
| | 15. Improve air quality. |
| Responsible consumption and lifestyle choices | We are committed to adopting and facilitating the prudent and efficient use of resources and to encouraging sustainable consumption and production. |
| | 16. Avoid and reduce waste, and increase re-use and recycling |
| | 17. Manage and treat waste in accordance with best practice standards. |
| | 18. Avoid unnecessary energy consumption, and improve end-use energy efficiency. |
| | 19. Undertake sustainable procurement. |
| | 20. Actively promote sustainable production and consumption, in particular of eco-labeled, organic, ethical and fair trade products. |

**(cont. on next page)**

Table 3. (cont.) Aalborg Commitments
(Source: developed from Zilans and Abolina, 2009)

| | |
|---|---|
| Planning and design | We are committed to a strategic role for urban planning and design in addressing environmental, social, economic, health and cultural issues for the benefit of all. |
| | 21. Re-use and regenerate derelict or disadvantaged areas. |
| | 22. Avoid urban sprawl by achieving appropriate urban densities and prioritizing brownfield site over greenfield site development. |
| | 23. Ensure the mixed use of buildings and developments with a good balance of jobs, housing and services, giving priority to residential use in city centers. |
| | 24. Ensure appropriate conservation, renovation and use/re-use of our urban cultural heritage. |
| | 25. Apply requirements for sustainable design and construction and promote high quality architecture and building technologies. |
| Better mobility, less traffic | We recognize the interdependence of transport, health and environment and are committed to strongly promoting sustainable mobility choices. |
| | 26. Reduce the necessity for private motorized transport and promote attractive alternatives accessible to all. |
| | 27. Increase the share of journeys made by public transport, on foot and by bicycle. |
| | 28. Encourage transition to low-emission vehicles. |
| | 29. Develop an integrated and sustainable urban mobility plan. |
| | 30. Reduce the impact of transport on the environment and public health. |
| Local action for health | We are committed to protecting and promoting the health and wellbeing of our citizens. |
| | 31. Raise awareness and take action on the wider determinants of health, most of which lie outside the health sector. |
| | 32. Promote city health development planning, which provides our cities with a means to build and maintain strategic partnerships for health. |
| | 33. Reduce inequalities in health and address poverty, which will require regular reporting on progress towards reducing the gaps. |
| | 34. Promote health impact assessment as a means for all sectors to focus their work on health and the quality of life. |
| | 35. Mobilize urban planners to integrate health considerations in their planning strategies and initiatives. |
| Vibrant and sustainable local economy | We are committed to creating and ensuring a vibrant local economy that gives access to employment without damaging the environment. |
| | 36. Adopt measures that stimulate and support local employment and business start-ups. |
| | 37. Cooperate with local businesses to promote and implement good corporate practice. |
| | 38. Develop and implement sustainability principles for the location of businesses. |
| | 39. Encourage markets for high quality local and regional produce. |
| | 40. Promote sustainable local tourism. |
| Social equity and justice | We are committed to securing inclusive and supportive communities. |
| | 41. Develop and implement programmes to prevent and alleviate poverty. |
| | 42. Ensure equitable access to public services, education, employment opportunities, training, information, and cultural activities. |
| | 43. Foster social inclusion and gender equality. |
| | 44. Improve community safety and security. |
| | 45. Secure good quality and socially integrated housing and living conditions. |

**(cont. on next page)**

Table 3. (cont.) Aalborg Commitments
(Source: developed from Zilans and Abolina, 2009)

| | |
|---|---|
| Local to global | We are committed to assuming our global responsibility for peace, justice, equity, sustainable development and climate protection. |
| | 46. Develop and follow a strategic and integrated approach to mitigate climate change, and work towards a sustainable level of greenhouse gas emissions. |
| | 47. Mainstream climate protection policy into our policies in the areas of energy, transport, procurement, waste, agriculture, and forestry. |
| | 48. Raise awareness of the causes and probable impacts of climate change, and integrate preventive actions into our climate change policy. |
| | 49. Reduce our impact on the global environment and promote the principle of environmental justice. |
| | 50. Strengthen the international cooperation of towns and cities and develop local responses to global problems in partnership with local governments, communities and relevant stakeholders. |

**Berke and Conroy (2000)** evaluated the extent to which policies of 30 comprehensive plans in the USA promote sustainable development principles.

> First, each policy was classified based on the sustainable development principle promoted by the policy… Second, the type of development management technique (e.g., zoning and subdivision regulations or capital facility program) stipulated by each policy for promoting a given principle was identified… Third, each policy was evaluated as suggested in the plan or required by the plan (Berke and Conroy, 2000) (Table 4 and 5).

The evaluation was done by three different people to make the research reliable. Score 1 means it is "suggested in the plan" (keywords: such as encourage, consider, intend, or should) and score 2 means "required by the plan" (keywords: such as shall, will, require, or must). The cases were listed showing their total scores which include values from 63,1 (Jacksonsville, Florida) to 1,6 (Bethel, Maine). As another aim of the study, plans that use sustainable development as an organizing concept and plans that do not use it are compared in promoting sustainability principles. Findings indicate no significant differences between them. Another finding of the study is that "plans do not provide balanced support of all six sustainability principles, as they support some principles significantly more than others" (Berke and Conroy, 2000).

Table 4. Sustainable Development Principles
(Source: developed from Berke and Conroy, 2000)

| **Sustainable Development Principles:** |
|---|
| Harmony with Nature |
| Livable Built Environment |
| Place-Based Economy |
| Equity |
| Polluters Pay |
| Responsible Regionalism |

Table 5. Policy Categories of Development Techniques
(Source: developed from Berke and Conroy, 2000)

| **Policy Categories of Development Management Techniques:** | |
|---|---|
| 1. Land Use Regulation | Density |
| | Permitted use |
| | Special study zone |
| | Sensitive area overlay |
| | Subdivision |
| | Site review |
| | Local environmental impact statement |
| 2. Property Acquisition | Transfer of development rights |
| | Acquisition of land |
| | Acquisition of development rights |
| | Land bank |
| | Acquisition of development units |
| 3. Capital Facilities | Phased growth |
| | Concurrency |
| | Location of capital facilities |
| | Urban service boundary |
| | Annexation |
| 4. Financial Incentives | Impact fees |
| | Reduced taxation |
| | Bonus zoning |
| | Exaction |
| | Land trust funds |
| 5. Building Codes and Standards | Standards for new buildings |
| | Standards for retrofitting existing buildings |
| 6. Public Education and Awareness | Builder workshop |
| | Public education program (job training) |
| | Information mailing |

**Counsell (1998)** measures "the performance of structure plans against key themes and principles of sustainable development, relevant policy areas and procedures" (Table 6, 7 and 8). 27 structure plans in England and Wales are selected from 46 plans because of their approval dates are before the appearance of the 'sustainability' debate. The method used is content analysis. Plans are analyzed for "the occurrence of key words and phrases, for the strength of wording used, and for the consistency with which rhetoric in the introductory sections and supporting documents is translated into policy" (Counsell, 1998). Three categories of sustainability criteria are identified. Scores for key themes and policy criteria are 0=no mention, 1=weak reference,2=medium, 3=strong and scores for procedural criteria are 0=no evidence of the procedure being used in preparing the plan, 1=some reference to the procedure but weak wording (in the case of an overarching policy) and/or superficial treatment, 2=where the procedure is followed in a comprehensive manner (if they follow DoE (1992b) best practice guidelines).

> The conclusions of this study are not unexpected, showing that whilst there is a degree of awareness about the concept of sustainable development in county planning authorities, the translation of this awareness into operational policies is, in many cases, proving difficult. There is an enormous variation in the strength and breadth of dealing with sustainability issues, ranging in the study from a high of 73% of maximum score to a low of 19% (Counsell, 1998).

Table 6. Key Themes and Principles
(Source: developed from Counsell, 1998)

| **Key themes and principles:** |
|---|
| critical natural capital |
| precautionary principle |
| participation |
| demand management |
| carrying capacity |
| equity |
| biodiversity |
| global stewardship |
| policy integration |
| futurity |
| quality of life |

Table 7. Policy Areas
(Source: developed from Counsell, 1998)

| **Policy areas:** | |
|---|---|
| Natural resources; | Safeguarding resources |
| | Minimizing use of non-renewables |
| | Efficient use of renewables |
| | Mitigation of impacts |
| Land use/ transportation strategy; | Sustainable location/urban form |
| | Relationship of development to public transport |
| | Mixed land use policies |
| | Priority to public transport |
| | Priority to walking and cycling |
| Energy; | Improving efficiency of buildings |
| | Design standards for new development |
| | Encouragement of renewable resources |
| Pollution; | Reducing effects of pollution (air, water, land, noise) |
| | Identify and treat contaminated land |
| Waste management; | Encouraging reduction, re-use recycling and recovery |
| | Ensuring responsible disposal |
| Wildlife and countryside; | Total protection of nationally |
| | Designated sites and areas designation and protection of local |
| | Sites site enhancement |
| | Management of access and recreation |
| Economic and social well-being; | Sustaining local communities |
| | Improving awareness and involvement |
| | Supporting local economic activity |
| | Mitigation measures for industrial development |
| | Environmentally sensitive tourism and recreation |
| Built environment | Concentrating facilities in existing centers |
| | Renewal of inner city areas |
| | Re-use of redundant and vacant sites |
| | Protection and enhancement of urban green space |
| | Conservation of building and areas of cultural and historic interest |
| | Restrict car use |

Table 8. Procedures
(Source: developed from Counsell 1998)

| **Procedures:** |
|---|
| The inclusion of an overarching objective or policy giving commitment to sustainable development; |
| The preparation of a sound information base in a state of the environment report; |
| Undertaking a strategic environmental assessment of the plan; |
| The identification of indicators and targets to measure progress towards achieving a more sustainable form of development |

**Bruff and Wood (2000)** assessed "the contribution of land-use planning to the objectives of local sustainable development" in UK. The content analysis method is used for the survey of 36 urban development plans. First, eight key areas and 29 policy directions for sustainable development (Table 9) were defined and then, "policies were graded from 1, for weak, to 3, for strong". Also, "0" is used for no relevant plan policies. The policies were also differentiated into three types of urban development plan policies: strategic, development control and promotional. The results of the survey showed that all eight key areas were addressed to some extend in plans. The higher grades were found in three key areas: 'built environment', 'transportation' and 'rural land, natural habitats and biodiversity'. The lower grades were found in two key areas: 'energy' and 'land, air, water quality'. The findings also indicated that development control and strategic policies were the strongest types of policies addressing sustainable development issues in the urban development plans. The plans were ranged with their scores in all key areas at the end of the survey.

Table 9. Policy Directions for Sustainable Development
(Source: developed from Bruff and Wood, 2000)

| **Policy directions for sustainable development:** | |
|---|---|
| Natural resources | 1. Production minimization for renewable resources |
| | 2. Production limits for renewable resources |
| | 3. Protection of sensitive sites from extraction |
| | 4. Mitigation of environmental impacts |
| Energy | 5. Improve energy efficiency in existing buildings |
| | 6. Set design standards for energy efficiency in new developments |
| | 7. Encourage renewable energy sources |
| | 8. Encourage combined heat and power schemes |
| Transport | 9. Mixed land-use policies to reduce travel demand in new developments |
| | 10. Increase availability and attractiveness of public and non-motorized transport |
| Land, air and water quality | 11. Set local pollution limits |
| | 12. Identify and treat contaminated land |
| Solid waste management | 13. Encouragement and planning conditions concerning waste reduction, re-use, recycling and recovery |
| | 14. Ensure responsible disposal, minimize impact and costs of waste disposal |
| Rural land, natural habitats and biodiversity | 15. Absolute protection of nationally designated sites of landscape and habitat importance |
| | 16. Designation and protection against development of locally important sites |
| | 17. Encourage re-use of already developed and derelict land, promote compact settlements |
| | 18. Management of recreation, lowering impact of use and access in countryside |

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Table 9. (cont.) Policy Directions for Sustainable Development
(Source: developed from Bruff and Wood, 2000)

| | |
|---|---|
| Economic development | 19. Design standards for durability and repairability of new developments |
| | 20. Conditions of landscaping and compensation on new industrial developments |
| | 21. Re-use of already developed and derelict land |
| Built environment | 22. Investment in environment and facilities of inner cities |
| | 23. Strengthen and concentrate facilities in iner cities |
| | 24. Integrated land use, provision of all immediate needs locally |
| | 25. Preference for medium rise, high density developments |
| | 26. Site new developments on rebundant and vacant sites |
| | 27. Protect and enhance urban green space |
| | 28. Protection of buildings and areas of cultural and historic interest |
| | 29. Invest in public and non-motorized transport / restrict car use |

**Duran-Encalada and Paucar-Caceres (2007)** reported an on-going project on urban sustainability of "the Valsequillo Lake in Puebla, Mexico and the Puerto Aura to be developed in this region". After discussing "sustainable development proposals and initiatives from various countries (Smart Growth the BEQUEST -Building Environmental Quality Evaluation for Sustainability through Time- amongst others)", "different environmental impact assessment methods included in the BEQUEST toolkit" were reviewed and the PROPOLIS -Planning and Research of Policies for Land Use and Transport for Increasing Urban Sustainability- model is chosen as the most appropriate for the Project. Six environmental, three economic indicators and four social indicators were proposed in this study (Table 10).

Table 10. Indicators
(Source: developed from Duran-Encalada and Paucar-Caceres, 2007)

| **Indicators:** | |
|---|---|
| Environmental Indicators | Noise level |
| | Available water per house |
| | Pollutants per capita (SOx, NOx y HC) |
| | Gas per capita (GGE) |
| | Clandestine solid waste per capita |
| | Land coverage |
| Economic Indicators | Employment rate |
| | Business dynamism |
| | Traffic congestion |
| Social Indicators | Number of inhabitants per household |
| | Education service level (at different educational levels) |
| | Health service level |
| | Other services level |

**Gürer and Çamur (2005)** evaluated and compared two urban development plans in terms of urban sustainability criteria. The evaluated plans are 'Bursa Yenişehir Urban Development Plan' and 'Sapanca Basin Urban Development Plan' with 1/25000 scales. The plan documents and plan reports are evaluated through their aims, scopes, general principles and planning decisions. Basic sustainability criteria are listed (Table 11) and used for the comparison of plans. The 'Sapanca Basin Urban Development Plan' is found having more sensitive planning approach than the 'Bursa Yenişehir Urban Development Plan' in conclusion.

Table 11. Basic Sustainability Indicators
(Source: translated from Gürer and Çamur 2005)

| **Basic sustainability indicators** |
|---|
| Balanced usage of resources (balanced usage of natural resources and energy) |
| Natural and cultural life diversity |
| Level of air, water and soil pollution |
| Waste management |
| Climate change |
| Rapid urbanization |
| Balanced population growth |
| Accessibility to basic human needs and services |

### 3.2.3. Studies Evaluating Both Plan Documents and Planning Process

The studies in this part evaluated both plan documents and planning processes of their cases. They are the works of Dogru (2006), Ünver (2006), Alshuwaikhat and Aina (2005), Yazar (2006), Yalçıner (2005), Saha and Paterson (2008), Conroy and Berke (2004) and Talu (2007).

**Dogru (2006)** explores issues of sustainable development in the development plans of Muğla, while evaluating the changing planning process of cities in Turkey in terms of sustainable development criteria. "The development plans approved in 1981 and 2004 are criticized through a comparison method with the help of urban sustainable development objectives" (Doğru, 2006). A checklist of urban sustainable development objectives is prepared in groups of environmental, socio-economic, political values

(Table 12). Remarks are "No Information Available; Adverse Impact; Beneficial Impact; Uncertainty of prediction; Likely beneficial, but uncertain impact; Likely adverse, but uncertain impact" (Doğru, 2006). Some improvements and some problems were defined in conclusion. The results show that “Mugla has some problems and failures in reaching a sustainable development and planning process”. “Implementations towards a sustainable Mugla are inadequate to some extent; however, urban development plans to limited extent could contribute to the sustainability of the city, at least in some districts” (Doğru, 2006).

Table 12. Urban Sustainable Development Objectives
(Source: developed from Doğru, 2006)

| **Urban Sustainable Development Objectives:** | | | |
|---|---|---|---|
| Environmental Values | Built Environment | Urban Structure in a Livable city | Think small and smart |
| | | | Moderate density and Cluster |
| | | | Provide for pedestrian priority connections |
| | | | Enhance a sense of community |
| | | | City design strategies |
| | | Sustainable Urban Infrastructure | Public Utilitiespower, Public Works, and Other Transport Sectors |
| | | | Transportation |
| | Natural Environment | Sustainable Urban Air Management | Prevent Air Pollution |
| | | | Improving Air Quality |
| | | Sustainable Urban Soil Management | Land & resource conservation |
| | | | Prevent Soil Pollution |
| | | Sustainable Urban Water Management | Using water conservation appliances |
| | | | Developing water impoundment areas and enhance wetlands throughout the site |
| | | | Prevent Water Pollution |
| | | Urban Solid Waste Management | |
| | | Sustainable Energy Supply and Management | Renewable energy |
| | | | Green building & design |
| | Cultural Environment | Urban renaissance | |
| | | Symbolic and structural projects | |
| | | Public spaces and landmarks | |
| | | Culture and Heritage | |

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Table 12. (cont.) Urban Sustainable Development Objectives
(Source: developed from Doğru, 2006)

| | | |
|---|---|---|
| Socio-economic Values | Social Vitality of Cities | Periphery |
| | | Housing |
| | | Green and Gray Parks |
| | | Harmony, health and safety in cities, Education and Research |
| | | Solidarity and social justice and equity |
| | Economic Vitality of Cities | Employment |
| | | Urban Economy and Competitiveness |
| Political Values | Institutional architecture and civic alliances | |
| | Regional policy and strategic planning | |
| | Sustainable regeneration | |
| | Compact, mixed and diverse cities | |
| | Democracy, Governance and citizenship | |

**Ünver (2006)** evaluates the Keklik Street and its Surrounding Conservation and Development Project (as part Ulus Historical City Centre Conservation and Improvement Plan, Ulus, Ankara) "with respect to sustainability principle of Cultural Heritage Management". This is "a performance measurement of the physical, functional and organizational sustainability" using "an exploratory research approach". Onsite observations and in-depth open-ended interviews were carried out with property owners and tenants, who work as small shopkeepers in the area. The interviews included "13 open-ended questions" about the Project; "the pleasure, problems, obstacles, role and responsibilities of the property ownerships and tenants in the project and their plans for future" (Ünver, 2006). "A content analysis method" was used to evaluate the data that was "obtained from the existing plans, project reports; observations; and in-depth interviews". The case area was studied in 6 blocks. Some statistical results were gained from "the charts prepared for each block separately to list the answers of the questions according to the frequencies and to show the data systematically"; and the project was evaluated according to these data (Ünver, 2006). Also, there is a SWOT analysis. Physical, functional, organizational evaluations are seen in tables. The scholar concluded that "there are various factors such as society awareness, education, and participation which affect the sustainability of cultural heritage management"(Ünver, 2006). "As a result, it is easily seen that the conservation process has not an effective policy to provide a sustainable development of the cultural heritage in Turkey" (Ünver, 2006). "Although the Project has some achievements as an effective conservation

approach, participation of the community and coordination between stakeholders; there is a considerable failure in providing the sustainability of physical properties of the heritage, proposed functions and organizational structure" (Ünver, 2006).

**Alshuwaikhat and Aina (2005)** evaluated the municipal planning process and the plan documents of seven Saudi municipalities: Riyadh, Jeddah, Madinah, Abha, Jubail, Hofuf and Dammam. First, a survey of planning process was done with "questionnaires, field visits and interviews with the head of planning units, senior planning engineers and managers of urban planning departments of the selected Saudi municipalities" (Alshuwaikhat and Aina, 2005). Then, to analyze municipal master plans, "standardized criteria of assessing the master plans are developed"; "the method of content analysis is used"; "sustainability principles/ indicators that are used in the evaluation are developed from indicators/principles found in literature"; and also, "the selected indictors/themes/principles are classified into the three major dimensions of sustainable development — economic, social and environmental" (Alshuwaikhat and Aina, 2005) (Table 13). "Qualitative ranking is used to grade the level of integration of different sustainability indicators in the master plan" (Alshuwaikhat and Aina, 2005). "The three ranks adopted are no coverage, limited coverage, policy level (fully covered and supported with action plans and implementation procedure)" (Alshuwaikhat and Aina, 2005). The assessment shows that "there is the need to improve sustainability planning practice in the Kingdom" (Alshuwaikhat and Aina, 2005). "About 18 of the 36 indicators are covered at the policy level by the master plans, but critical examination of the result revealed the inadequacy in the coverage. The economic indicators are more covered than the social and environmental indicators" (Alshuwaikhat and Aina, 2005). Also, "the municipal planning process still needs major improvements to effectively promote the principles of sustainability" (Alshuwaikhat and Aina, 2005). "The present level of integration of sustainability in plan-making is inadequate" (Alshuwaikhat and Aina, 2005).

Table 13. Indicators
(Source: developed from Alshuwaikhat and Aina, 2005)

| **Sustainability Dimensions, Indicators / Themes / Principles** | | |
|---|---|---|
| Dimension | Theme | Indicator |
| Environmental | Urban area footprint | Total community land area in acres per resident |
| | Infill | Percentage of building permits issued annually on property platted more than five years prior to building permitting |
| | Use mix | Dissimilarity among one-acre grid cells containing predominant land use |
| | Land redeveloped | Percentage of designated land area redeveloped per year |
| | Travel density | Distance travel per capita by mode of transportation |
| | Transit service density | Index of miles of transit routes multiplied by the number of transit vehicles traveling those routes each day, divided by total land area |
| | Auto use | Auto vehicles miles traveled per capita per day |
| | Pedestrianisation | Percentage of all person trips made by walk / bike modes |
| | Natural areas protection | Percentage of total land area protected as natural area or equivalent |
| | Species biodiversity | Abundance of selected key species |
| | Agricultural land conversion | Acres of agricultural land urbanized per capita |
| | Imperviousness | Percentage of total land area covered by impervious surfaces |
| | Water quantity | Annual withdrawal of ground and surface water as a percent of total available water |
| | Water quality | BOD in water bodies |
| | Air quality | Ambient concentration of air pollutants in urban areas |
| | Climate change | Emissions of greenhouse gases |
| | Ozone depletion | Consumption of ozone depleting substances |
| | Water consumption | Residential water use in galloons per capita per day |
| | Park space availability | Acres of park and school yards per 1000 residents |
| | Waste generation and management | Waste recycling and reuse |
| | Energy use | Intensity of energy use and share of consumption of renewable energy resources |
| Social | Preservation of historic and archaeological sites and buildings | Percentage of historic and archaeological sites and building designated for preservation |
| | Open space protection | Percentage of total land dedicated to open space |
| | Density | Persons per acre in residential built-up area |
| | Affordability | Ratio of average house sale price versus an "affordable price" |
| | Transit proximity | Average travel distance from dwellings to closest transit stop in feet |
| | Human health | Years of healthy life expectancy |
| | Poverty | Percent of population living below poverty line |
| | Education | Literacy rate |
| | Security | Recorded crime per 1000 population |
| | Social inclusiveness | Percent of the poor, children, women and disabled people that have access to community facilities and services. Percent of deprived people that participate in decision making |

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Table 13. (cont.) Indicators
(Source: developed from Alshuwaikhat and Aina, 2005)

| | | |
|---|---|---|
| Economic | Economic performance | GDP per capita |
| | Level of investment | Inward investment (as per level of output) |
| | Employment | Number of employees per net acre of land designated for employment uses and unemployment rate |
| | Jobs / housing balance | Ratio of jobs to dwelling units |

**Yazar (2006)** first evaluated medium sized cities generally, second evaluated plans and planning processes in examples from world: USA (Asheville, Stapleton ve Austin), Europe (Cork City and Galway (Ireland), Salford (England), Heidelberg and Dessau (Germany), Drammen (Norway), Perugia and Siena (Italy), Lavrion and Kavala (Greece) and Alicante (Spain)) and finally evaluated examples from Turkey: Regional Plans (Eastern Black Sea, Eastern Anatolia, Southeastern Anatolia, Zonguldak-Bartın-Karabük and Yeşilırmak), Development Programs Depending on NUTS Areas (Statistical Areas – TRB2, TR82, TR83, TRA1, TRA2, TR72, TR52, TRB1, TR90), Ecologic and Strategic Urban Plans (strategic plans of Denizli and Kayseri, other urban plans (Kastamonu and Adıyaman) and other lower scale studies (Local Agenda 21 and idea projects). The existing urban planning system is verbally evaluated in three topics of legislative and supervisory, planning tradition, environmental sensitiveness. Other examples are evaluated in different methods. The strategic plan of Denizli is more inclined to provide sustainable urban development than the strategic plan of Kayseri. The plan of Kastamonu has a sustainable development approach in giving function to city and in some decisions of small scales. The eco-city planning Project in Adıyaman is participatory and it depends on ecological issues while determining activity areas and using sustainable development indicators to put the approach into practice.

**Yalçıner (2005)** evaluated development plans, laws and applications and highlighted the lacks of Turkish planning system in the view of sustainability and environment. The critical view in "Sustainable City Plans Against Development Plans" concluded that:

> …the current development plans of Turkish cities do not consider spaces between buildings, climate, lighting, direction, air circulation, natural energy etc. without urban design plans and guides, so Turkish cities are unsustainable today. Development law number 3194 is inadequate. EIA has many mistakes and lacks like urban and regional planning in this country criticized above (Yalçıner, 2005).

**Saha and Paterson (2008)** tried to find out the extent to which local governments in the United States are committed to the principles of sustainable development in their planning practices. 216 cities (the 216 of the 353 cities answered the survey) were evaluated with this purpose. First, a list of 66 initiatives was prepared with the help of literature, and in an expert panel survey 50 individuals working on sustainability issues in academic institutions, government agencies, and research organizations were directed to list these 66 initiatives according to their importance and group them in subjects of 3E (economy, environment, ecology) (five for each subject). After that, 36 initiatives were selected (Table 14). Based on these 36 initiatives a second survey with five questions is prepared and mailed to cities. All answers were evaluated separately and concluded that:

> Finally, despite the progress being made in U.S. cities, an effective effort to bring about changes must ultimately involve all levels of government and society. Many activities that lead to unsustainable ways of living are outside the purview of local governments. For instance, initiatives to promote alternative transportation and reduce traffic congestion will be more effective when they are coordinated at the regional level (Saha and Paterson, 2008).

Table 14. Sustainability Activities
(Source: developed from Saha and Paterson, 2008)

| **Sustainability Activities:** | |
|---|---|
| Environmental Protection Activities | 1. Alternative energy offered to customers |
| | 2. Energy conservation effort (other than green building program) |
| | 3. Environmental site design regulations |
| | 4. Green building program |
| | 5. Renewable energy use by city government |
| | 6. Curbside recycling program |
| | 7. Environmental education programs for the community |
| | 8. Green procurement |
| | 9. Water quality protection |
| | 10. Environmentally sensitive area protection |
| | 11. Open space preservation program |
| | 12. Operation of inner-city public transit (buses and / or trains) |
| | 13. Transportation demand management |
| | 14. Ecological footprint analysis |

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Table 14. (cont.) Sustainability Activities
(Source: developed from Saha and Paterson, 2008)

| | |
|---|---|
| Economic Development Activities | 15. Agricultural protection zoning |
| | 16. Brownfield reclamation |
| | 17. Cluster/targeted economic development |
| | 18. Eco-industrial park development |
| | 19. Infill development |
| | 20. Purchase of development rights/Transfer of development rights |
| | 21. Tax incentives for environmentally friendly development |
| | 22. Urban growth boundary/urban service boundary |
| | 23. Business retention programs |
| | 24. Empowerment/enterprise zones |
| | 25. Local business incubator program |
| Equity Activities | 26. Affordable housing provisions |
| | 27. Day care service for service sector and low-income employees |
| | 28. Homeless prevention and intervention |
| | 29. Inclusionary and incentive zoning |
| | 30. Jobs–housing balance |
| | 31. Living wage ordinance |
| | 32. Mass transit access with local income subsidies |
| | 33. Neighborhood planning |
| | 34. Sustainable food systems or food security program |
| | 35. Women / minority-oriented business Community Development Corporations (CDCs) and investment programs |
| | 36. Youth opportunity and antigang program |

**Conroy and Berke (2004)** tried to answer the question of "what can be done in planning practice to influence promotion of sustainable development?" and used plan content analysis and telephone survey methods to investigate this influence in 42 communities across the United States. The method and lists of Berke and Conroy (2000) are also used in this study "for evaluating the strength with which plans advance the principles of sustainable development". In addition, the planning processes, organizations of local land-use plans and state planning mandates are considered in this study. The findings of the study showed that "the presence of a state planning mandate" and "a variety of groups participating in the planning process" are "key factors that increase overall plan support for the sustainable development principles" (Berke and Conroy, 2004).

**Talu (2007)** evaluated nine five-year development plans in Turkey in terms of sustainability. The first six plans (1963-1995) are evaluated verbally, while the others are evaluated in detail. First plans were found not mentioning sustainability, because the

concept has not been emerged at international level in the period of these plans, so they were evaluated in terms of environmental, economic and social aspects of the concept. In the first two plans, 'environment' was not a key issue. The third plan has a separate 'environment' section, but it specified that policies should not harm development and industrialization. The fourth and fifth plans gave attention to prevention of environmental problems. The sixth one is the first plan including the sustainable development concept. That is because of the influence of Brundtland Report. The seventh plan (1996-2000) is important in integrating environmental problems in the economic and social policies. The eighth plan (2001-2005) has a holistic view to integrate sustainable development into sectors, so sustainability principle "gained ascendancy in the legal, institutional, and financial embodiments for the reconstruction of the public administration", but in its application there is no balance between its environmental, social and economic components. The ninth plan (2007-2013) determines development policies in five development axis in which components and sectors are considered with cross relationships and also a monitoring and evaluation mechanism is included. Sustainable development approach in the last plan is also evaluated with a list in which 30 development policies under five main development axis are evaluated with three colors meaning (green: positive, red: negative, yellow: null) in three headings: policy formation, implementation, monitoring including three subheadings: economic, social, environmental (Table 15). The findings showed that the 'policy formation' is generally positive, while 'monitoring' has generally yellow color and the 'negative' is seen mostly in 'implementation'. In addition, sectors of agriculture, energy, science and technology, and urbanism are also evaluated with the same list. In the evaluation of urbanization, while 'policy formation' is marked positive in all development axes, 'implementation' has all three colors in social and environmental subheadings and 'monitoring' has yellow color in social and environmental subheadings. The only negative score is seen in policies related with transportation, energy and industrialization in 'social' and 'environmental' subheadings in 'implementation'.

Table 15. Sustainable Development Evaluation
(Source: translated and developed from Talu, 2007)

| Sustainable Development | | Policy formation | | | Implementation | | | Monitoring | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Economic | Social | Environmental | Economic | Social | Environmental | Economic | Social | Environmental |
| Strengthening human development and social solidarity | Developing education system | | | | | | | | | |
| | Activating health system | | | | | | | | | |
| | Increasing the activity of social security system | | | | | | | | | |
| | Preserving and developing culture and strengthening social dialogue | | | | | | | | | |
| | Increasing the activity and quality of social expenditures | | | | | | | | | |
| Ensuring regional development | Activating regional development policy in the central level | | | | | | | | | |
| | Ensuring the development depending on local dynamics and internal potentials | | | | | | | | | |
| | Increasing the institutional capacity in local level | | | | | | | | | |
| | Ensuring development in rural parts | | | | | | | | | |
| Increasing employment | Developing employment market | | | | | | | | | |
| | Increasing the sensitivity of education to employment demand | | | | | | | | | |
| | Developing policies of active employment | | | | | | | | | |
| Increasing quality and activity in public services | Rationalizing inter-institutional authority and responsibility | | | | | | | | | |
| | Increasing the capacity of policy forming and implementing | | | | | | | | | |
| | Developing human resources in public sector | | | | | | | | | |
| | Activating the e-state implementations and making them widespread | | | | | | | | | |
| | Improving the justice system | | | | | | | | | |
| | Activating security services | | | | | | | | | |
| | Natural disasters | | | | | | | | | |
| Increasing the competition power | Improving the working environment | | | | | | | | | |
| | Decreasing the unrecordedness in economics | | | | | | | | | |
| | Developing financial system | | | | | | | | | |
| | Developing the infrastructure of energy and transportation | | | | | | | | | |

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Table 15. (cont.) Sustainable Development Evaluation
(Source: translated and developed from Talu, 2007)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Increasing the competition power | Maintaining the environment and developing urban infrastructure | | | | | | | | | |
| | Developing research-development (Ar-Ge in TR) and advocacy of change | | | | | | | | | |
| | Making information and communication technologies widespread | | | | | | | | | |
| | Activating agricultural structure | | | | | | | | | |
| | Ensuring the transition to the production structure with high added value in industry and services | | | | | | | | | |

## 3.3. Studies Evaluating Both Urban Structure and Planning Studies

This last part of the previous case studies includes three studies which evaluated both urban structure and planning studies in terms of sustainable development. These are the works of Alshuwaikhat and Aina (2006), Choguill (2008) and Budd et al. (2008).

**Alshuwaikhat and Aina (2006)** measure urban sustainability in the planning process, the master plan and the land use activities resulting from planning of Dammam City, Saudi Arabia. The study applies different assessment methods that have been developed from literature. The methods in the study of Alshuwaikhat and Aina (2005) are also included in this study (questionnaires, field visits, interviews, content analysis, qualitative ranking with sustainability indicators – Table 16) and additionally a GIS-based sustainability assessment of the city core. Standard values of indicators are given in a list (Table 17) and the values of study area are evaluated due to them. The results of the evaluation of the Dammam master plan showed that "the plan document does not adequately address the issue of sustainability" (Alshuwaikhat and Aina, 2006). About 18 of the 36 indicators are covered at the policy level by the master plan. "The planning process and the plan document addressed economic sustainability issues more than social and environmental issues" (Alshuwaikhat and Aina, 2006). Also, GIS-based analysis including thematic maps showing the walking distances from health facilities, the areas affected from traffic emissions and traffic noise level is commented.

Table 16. Indicators
(Source: developed from Alshuwaikhat and Aina, 2006)

| **Sustainability Dimensions, Indicators / Themes / Principles** | | |
|---|---|---|
| Dimension | Theme | Indicator |
| Environmental | Urban area footprint | Total community land area in acres per resident |
| | Infill | Percentage of building permits issued annually on property platted more than five years prior to building permitting |
| | Use mix | Dissimilarity among one-acre grid cells containing predominant land use |
| | Land redeveloped | Percentage of designated land area redeveloped per year |
| | Travel density | Distance travel per capita by mode of transportation |
| | Transit service density | Index of miles of transit routes multiplied by the number of transit vehicles traveling those routes each day, divided by total land area |
| | Auto use | Auto vehicles miles traveled per capita per day |
| | Pedestrianisation | Percentage of all person trips made by walk / bike modes |
| | Natural areas protection | Percentage of total land area protected as natural area or equivalent |
| | Species biodiversity | Abundance of selected key species |
| | Agricultural land conversion | Acres of agricultural land urbanized per capita |
| | Imperviousness | Percentage of total land area covered by impervious surfaces |
| | Water quantity | Annual withdrawal of ground and surface water as a percent of total available water |
| | Water quality | BOD in water bodies |
| | Air quality | Ambient concentration of air pollutants in urban areas |
| | Climate change | Emissions of greenhouse gases |
| | Ozone depletion | Consumption of ozone depleting substances |
| | Water consumption | Residential water use in galloons per capita per day |
| | Park space availability | Acres of park and school yards per 1000 residents |
| | Waste generation and management | Waste recycling and reuse |
| | Energy use | Intensity of energy use and share of consumption of renewable energy resources |
| Social | Preservation of historic and archaeological sites and buildings | Percentage of historic and archaeological sites and building designated for preservation |
| | Open space protection | Percentage of total land dedicated to open space |
| | Density | Persons per acre in residential built-up area |
| | Affordability | Ratio of average house sale price versus an "affordable price" |
| | Transit proximity | Average travel distance from dwellings to closest transit stop in feet |
| | Human health | Years of healthy life expectancy |
| | Poverty | Percent of population living below poverty line |
| | Education | Literacy rate |
| | Security | Recorded crime per 1000 population |
| | Social inclusiveness | Percent of the poor, children, women and disabled people that have access to community facilities and services. Percent of deprived people that participate in decision making |

**(cont. on next page)**

Table 16. Indicators
(Source: developed from Alshuwaikhat and Aina, 2006)

| | | |
|---|---|---|
| Economic | Economic performance | GDP per capita |
| | Level of investment | Inward investment (as per level of output) |
| | Employment | Number of employees per net acre of land designated for employment uses and unemployment rate |
| | Jobs / housing balance | Ratio of jobs to dwelling units |

Table 17. Standard Values of Indicators
(Source: developed from Alshuwaikhat and Aina, 2006)

| Dimension | Indicator | Standard | Sustainable Direction |
|---|---|---|---|
| Environment | Ratio of non-residential to residential land use | 2 (Burton, 2002) | Upward |
| | Percentage of designated land area redeveloped per year | 50 | Upward |
| | Auto vehicle miles traveled per capita per day | 300 | Downward |
| | Number of auto vehicle per 100 people | 50 | Downward |
| | Percentage of total street frontage with improved sidewalks on both sides | 80 | Upward |
| | Percentage of total land area covered by impervious surfaces | 60 | Downward |
| | Percentage of citizens exposed to level of pollutants (NOx and CO) higher than 40 kg/capita (NOx) and 136 kg/capita (CO) | 10 (OECD, 1996) | Downward |
| | Percentage of citizens exposed to traffic noise pollution greater than 65 dB (A) | 10 (OECD, 1996; CSD, 2002) | Downward |
| | Percentage of citizens exposed to levels of particulates higher than 31 kg/capita | 10 (OECD, 1996) | Downward |
| | Residential water use in cubic meters per capita per day | 2,5 | Downward |
| | Percentage of land area designated for off-street parking | 2 | Downward |
| | Weight of domestic waste in kg per capita | 500 | Downward |
| | Intensity of electric energy consumption per capita in Mwh per capita | 8 | Downward |
| Social | Percentage of historic and archaeological sites and buildings designated for preservation | 10 (OECD42) | Upward |
| | Percentage of total land dedicated to open space | 10 | Upward |
| | Persons per hectare in residential built-up area | 250 | Upward |
| | Ratio of average house sale price to an ‘affordable price’ | 1 | Upward |
| | Years of healthy life expectancy | 65 (CSD, 2002) | Upward |
| | Percentage of population living below poverty line (earn less than US$4 per day) | 10 | Downward |
| | Literacy rate (completion of primary education by primary school-age children) | 80 (CSD, 2002) | Upward |
| | Recorded crime per 1,000 population | 10 | Downward |
| | Access to health services (percentage of population) | 80 | Upward |
| | Access to basic education (percentage of population) | 80 | Upward |
| | Access to open spaces (percentage of population) | 80 | Upward |

**(cont. on next page)**

Table 17. (cont.) Standard Values of Indicators
(Source: developed from Alshuwaikhat and Aina, 2006)

| | | | |
|---|---|---|---|
| Economic | Number of employees per net acre of land designated for employment uses | 30 (Criterion Planners, 2001) | Upward |
| | Rate of unemployment | 10 | Downward |
| | Ratio of jobs to dwelling units (total number of jobs divided by number of dwelling units) | 2 (Criterion Planners, 2001) | Upward |

**Choguill (2008)** evaluated the existing situation of neighborhoods in Riyadh, Saudi Arabia due to the characteristics of a sustainable neighborhood and criticized the Doxiadis Plan, approved in 1973, and its superblocks. The issues of rapid growth and the urban plan were taken into consideration in their effects on neighborhood development. The neighborhoods were evaluated due to four dimensions of sustainability: economic, environmental, technical and social. The scholar found "a number of major deficiencies" in the evaluation due to criteria such as "the dependence upon the private automobile" in economic, "walls" surrounding villas that "excludes the outside world" in social, "very few shared public open spaces", lack of "green areas" and "lack of alternative public transportation" in environmental criteria, whereas "an indication of technical sustainability" was found in "cul-de-sacs" that "excluded car traffic from the block". The evaluation also included the factor of "mosque" in neighborhoods, but the scholar pointed that the modern life changed the traditional social formation around the mosque.

**Budd et al. (2008)** studied the effects of political culture on urban sustainability in 49 urban areas in 24 different states of USA. The methods used were correlation analysis and multiple regression analysis. In this study, "five dimensions of urban sustainability attributes" were examined "(environmental, public health, economic utility, sprawl, and local government plans and policies) as well as a summative index across the five dimensions". After lots of calculations the cities were put into order due to their scores between minimum 0 and maximum 5. The list of cities ranked by sustainability index indicated that San Francisco is the first city with 4.332 points and Houston is the last with 1.313 points.

## 3.4. Evaluation

38 previous researches are included in this chapter. They are analyzed due to their contents and evaluation methods and techniques (Table 18). These studies are grouped into three categories due to their contents. There are 14 previous case studies evaluating only urban structure, 21 studies evaluating planning studies and three studies evaluating both urban structure and planning studies. 12 of the 14 studies evaluating urban structure are evaluating the existing situations of the urban structures, while two of them are taking into account both existing and future situations of the urban structures. Nine of the 21 studies evaluating planning studies are evaluating plan documents, while four of them are evaluating planning process and eight of them are evaluating both plan documents and planning process.

A variety of plan documents including development plans (Zilans and Abolina, 2009; Bruff and Wood, 2000), comprehensive plans (Berke and Conroy, 2000), structure plans (Counsell, 1998), transportation plans (Morisson-Saunders and Therivel, 2006; Abolina and Zilans, 2002) and environmental plans (Berke, 1994) were evaluated in the studies. In addition, 14 of all 38 studies are evaluating one case area, while other 23 studies are evaluating several case areas.

In terms of evaluation methods and techniques it is noted that these studies used four categories of different methods and techniques; general evaluation, list, questionnaire / interview and others (dashboard of sustainability, SWOT analysis, GIS, spidergram analysis, ecological footprint analysis, multi-criterion framework with multi-dimensional indicators, a specific meta-analytical method called rough set analysis, PROPOLIS, onsite observation / field visit), while some of them used two or more methods. 25 studies used lists to analyze the sustainability. 11 studies used questionnaire or interview for their evaluation, while general evaluation is used in eight studies.

Table 18. Method and Content Analysis of Previous Case Studies
(Source: Author)

| | | | | EVALUATION METHODS AND TECHNIQUES | | | |
|---|---|---|---|---|---|---|---|
| | | | | general evaluation | list | questionnaire/ interview | other |
| CONTENTS | Studies Evaluating Urban Structure | Existing situation | Fehr et al., 2004 | | x | | |
| | | | Jarrar and Al-Zoabi, 2008 | | x | | |
| | | | Scipioni et al., 2009 | | | | Dashboard of sustainability |
| | | | Unsworth, 2007 | | | x | |
| | | | Yalçıner, 2007 | | x | | SWOT, GIS, spidergram, ecological footprint analysis |
| | | | Munda, 2005 | | x | | Multi-criterion framework, multi-dimensional indicators |
| | | | Williams and Dair, 2007 | | x | | |
| | | | Holden and Norland, 2005 | | x | | |
| | | | Zavadskas et al., 2007 | | x | x | |
| | | | Staley, 2006 | | x | | |
| | | | Sherbinin, 2003 | | x | | |
| | | | Kayır, 2007 | x | x | | SWOT |
| | | existing & future situa-tions | Kızılaslan et al., 2007 | x | | | |
| | | | Nijkamp and Pepping, 1998 | | | | A specific meta-analytical method, rough set analysis |
| | Studies Evaluating Planning Studies | Plan documents | Morisson-Saunders and Therivel, 2006 | x | | | |
| | | | Abolina and Zilans, 2002 | | x | | |
| | | | Berke, 1994 | | x | | |
| | | | Zilans and Abolina, 2009 | | x | | |
| | | | Berke and Conroy, 2000 | | x | | |
| | | | Bruff and Wood, 2000 | | x | | |
| | | | Duran-Encalada and Paucar-Caceres, 2007 | | x | | Propolis |
| | | | Counsell, 1998 | | x | | |
| | | | Gürer and Çamur, 2005 | | x | | |
| | | Planning process | Devuyst and Hens, 2000 | | | x | |
| | | | Hales, 2000 | | | x | |
| | | | Cartwright, 1997 | | | x | |
| | | | Jepson, 2004 | | | x | |
| | | Both plan documents and planning process | Dogru, 2006 | | x | | |
| | | | Ünver, 2006 | | | x | SWOT, onsite observation/field visit |
| | | | Alshuwaikhat and Aina, 2005 | | x | x | Onsite observation/field visit |
| | | | Yazar, 2006 | x | | | |
| | | | Yalçıner, 2005 | x | | | |
| | | | Saha and Paterson, 2008 | | x | x | |
| | | | Conroy and Berke, 2004 | x | x | x | |
| | | | Talu, 2007 | x | x | | |
| | Studies evaluating both urban structure and planning studies | | Alshuwaikhat and Aina, 2006 | | x | x | Onsite observation/field visit, GIS |
| | | | Choguill, 2008 | x | | | |
| | | | Budd et al., 2008 | | x | | |

When the studies evaluating plan documents with a list are analyzed due to their findings, it can be seen that there are no studies finding a plan 'sustainable' or 'not sustainable'. The findings include statements such as "not truly sustainable" ( Morisson-Saunders and Therivel, 2006), "less sustainable" (Abolina and Zilans, 2002), "low quality plans" (Berke, 1994), "better performing plans" (Counsell, 1998) and "plan with more sensitive planning approach due to the sustainability criteria" (Gürer and Çamur, 2005). The case plans are ranged with their scores in the findings of some studies (Berke and Conroy, 2000; Counsell, 1998 and Bruff and Wood, 2000). In the work of Zilans and Abolina (2009), the detailed conclusions about the evaluated plan include "inadequate professional understanding", "a lack of municipal inter-sectoral cooperation", "a lack of political coordination" and "contrary considerations". These results are found by scoring the cases in five studies (Berke, 1994; Zilans and Abolina, 2009; Berke and Conroy, 2000; Bruff and Wood, 2000; and Counsell, 1998). For the interpretation of the findings of these studies, grouping the results under policy areas or key themes are seen in four studies (Zilans and Abolina, 2009; Berke and Conroy, 2000; Bruff and Wood, 2000; and Counsell, 1998) and using charts are seen in three studies (Zilans and Abolina, 2009; Bruff and Wood, 2000; and Counsell, 1998).

When the studies using lists are analyzed, it can be observed that they have named items in their lists with different terminologies. These names are issues, indices, dimensions, principles, policy directions, policy areas, indicators, criteria, objectives, initiatives, activities, themes, key themes, parameters, independent variables, underlying datasets, components and procedures. They are listed in Table 19 under three groups. The most used term in studies evaluating urban structure is 'indicators' which is seen in 6 studies. The 'independent variables' and 'indices' have similar characteristics with 'indicators' used in this group of studies. The 'objectives' and 'criteria' used in this group refers to more general items like 'issues' which is the most used name for the items in the lists of the studies evaluating plan documents. Other names used in studies evaluating plan documents are 'indices/dimensions', 'principles', 'policy directions', 'key themes/principles', 'policy areas' and 'procedures', and 'indicators/criteria'. The lists using these names in this group, except 'indices/dimensions' and 'procedures', are also similar to lists using 'issues' due to using general items. This kind of items are also seen in studies evaluating both plan documents and planning processes or urban structures; 'objectives' and 'principles'. The lists with items named 'initiatives/activities' and indicators are also similar to each other and to 'indicators' in

the first group. The studies using three names ‘indicators/themes/principles’ in their evaluation list include both items like ‘issues’ in the second group and items like ‘indicators’ in the first group.

Table 19. Terminology for Items in Lists of Previous Case Studies Using Lists for Evaluating Sustainability (Source: Author)

| Studies | | Items in lists |
|---|---|---|
| Studies Evaluating Urban Structure | Fehr et al., 2004 | parameters, indicators |
| | Jarrar and Al-Zoabi, 2008 | parameters, indicators, criteria |
| | Yalçıner, 2007 | indicators |
| | Munda, 2005 | indicators, dimensions |
| | Williams and Dair, 2007 | objectives |
| | Holden and Norland, 2005 | independent variables |
| | Zavadskas et al., 2007 | indices |
| | Staley, 2006 | indicators |
| | Sherbinin, 2003 | indicators, underlying datasets, components |
| | Kayır, 2007 | criteria |
| Studies Evaluating Plan Documents | Abolina and Zilans, 2002 | issues |
| | Berke, 1994 | indices/dimensions |
| | Zilans and Abolina, 2009 | Aalborg Commitments |
| | Berke and Conroy, 2000 | principles |
| | Bruff and Wood, 2000 | policy directions |
| | Duran-Encalada and Paucar-Caceres, 2007 | issues |
| | Counsell, 1998 | key themes/principles, policy areas, procedures |
| | Gürer and Çamur, 2005 | indicators, criteria |
| Studies Evaluating Plan Documents And Planning Processes Or Urban Structures | Dogru, 2006 | objectives |
| | Alshuwaikhat and Aina, 2005 | indicators/themes/principles |
| | Saha and Paterson, 2008 | initiatives/activities |
| | Conroy and Berke, 2004 | principles |
| | Talu, 2007 | development policies |
| | Alshuwaikhat and Aina, 2006 | indicators/themes/principles |
| | Budd et al., 2008 | indicators |

The case study part of this thesis includes evaluation of plan documents with a list like the majority of the previous studies evaluating plan documents. The list is prepared with the help of lists of all previous studies using a list for evaluating sustainability, examination of general aims and contents of the sustainability and urban planning concepts and reviews of several plan reports in different scales. This thesis evaluates plan documents like nine studies in 38 previous researches. As 23 studies

using several case areas in 38 previous studies, the case study in this thesis includes four plans of eight cities. In terms of terminology of the items in the list, the thesis chose items similar to ‘issues’ rather than ‘indicators’. The analyses of previous studies showed that the studies evaluating plan documents does not usually use indicators. The items called ‘issues’ in previous studies are found so general that needs supporting sub-items. Therefore, the items used in this thesis are categorized in three groups from comprehensive to specific: policy areas, policies, urban planning actions for sustainability.

The previous researches studied in this thesis have been useful guides in structuring the evaluation method oriented towards the aim of the thesis. The studies with contents different from the thesis have also been useful to analyze the differences between the methods.

# CHAPTER 4

# THE CASE STUDY: EVALUATION OF THE ENVIRONMENT PLANS OF THE CITIES IN AEGEAN REGION IN TERMS OF SUSTAINABILITY ISSUES

The environment plans of the cities in the Aegean Region are selected as the case of this thesis. Four environment plans of eight cities are evaluated in terms of sustainability with a checklist.

This chapter includes general information about environment plans in Turkey, description of the Aegean Region, presentation of the proposed checklist, introduction of four environment plans and evaluation and comparison of them in terms of this checklist.

## 4.1. Environment Plans in Turkey

In Turkey, Environment Plans are spatial plans with upper scales which are based on Development Plans and regional plans, if existing, and are fundamental for the lower scale plans. They are plans determining strategies, policies and land use decisions such as agriculture, tourism, housing, industry, transportation, etc. and aiming a balanced and continuous development and rational usage of natural resources allowing to integrate economic and ecological decisions (Ministry of Environment and Forestry, 2009). They are prepared in 1/25000, 1/50000, 1/100000 and upper scales (Çevre Düzeni Planları, n.d.). Environment Plans as defined in the Regulation about Environment Plans in Turkey (11.11.2008) are ensuring continuity of land-uses and

wholeness of ecosystems with planning decisions; being prepared by the participation of experts from different professions; having a feedback process which ensures evaluations of previous stages in every stage of the plan; having a standard database which has the ability of being compared, evaluated, questioned, developed and updated; and finally determining strategies and policies supporting sustainable development.

Environment Plans are important due to several reasons according to Ministry of Environment and Forestry (MoEF). First, they are conserving and developing the natural and historic values of our country in the frame of national and international norms and pacts. Secondly, they are integrating economic and ecologic values. Also, they are directing urban and rural developments healthy and preventing rapid urbanization and industrialization. They are also important in term of creating healthy and safe environment and preventing pollution before happening. Finally, they are physical plans with upper scales guiding the institutions, organizations and local administrations in preparing plans with lower scales (MoEF, 2009).

Environment planning process is categorized in three stages by MoEF. The first one is analysis and synthesis stage in which research reports are produced. The second one includes alternative plans and proposed plan. Lastly, the final plan, planning decisions and plan explanation report are produced in the third stage (MoEF, 2009).

Before 2003, Environment Plans were made and approved by the Ministry of Public Works and Settlement. They were usually prepared for the cities in coastal areas of Mediterranean and Aegean Regions at 1/25000 scale (Figure 1). They covered a total area of 4,290,000 ha which corresponded to 5.5% of the country area (MoEF, 2009).

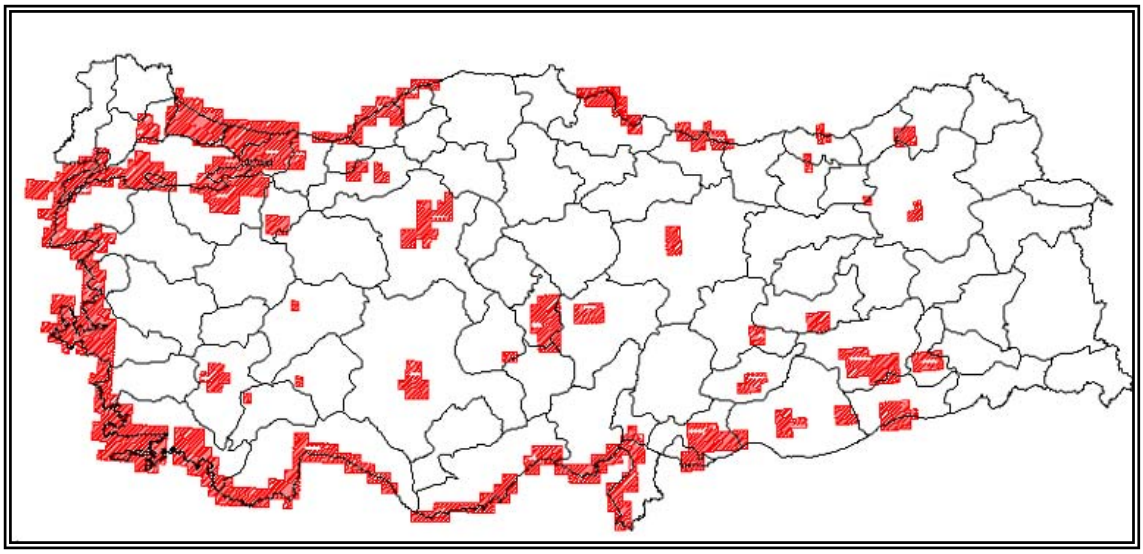


Figure 1. Environment Plans in Turkey approved before 2003
(Source: Ministry of Environment and Forestry, 2009)

Environment Plans which have been approved since 2003 can be classified in two groups due to the responsible institution for their preparation. These institutions are the Ministry of Environment and Forestry and local administrations. The responsibility of Environment Plan making, having make and approving is given to the Ministry of Environment and Forestry in 8th May 2003 with the law called 'Law about Organization and Duties of the Ministry of Environment and Forestry' No. 4856 (2nd Paragraph, item 'h' and 10th Paragraph, item 'c') and the 'Environment Law' No. 5491/2872 (9th Paragraph, item 'b'). In addition, this responsibility is given to Special Provincial Administrations and Municipalities in cities and Metropolitan Municipalities in metropolitan cities with the 6th Paragraph of the 'Special Provincial Administration Law' No. 5302 approved in 22.02.2005 and published in Official Gazette No. 2545 in 04.03.2005.

Environment Plans which are made and approved by provincial administrations or municipalities are 17% of the country area with 13,186,000 hectares of area. They are made in 18 provinces (Table 20). Seven of these plans are made with the support of the Ministry of Environment and Forestry (Ministry of Environment and Forestry, 2009).

Table 20. Provinces in which environment plans are made by provincial administrations or municipalities (Source: Ministry of Environment and Forestry, 2009)

| ENVIRONMENT PLAN | | AREA (Hectares) | Support of the MoEF |
|---|---|---|---|
| 1 | Kocaeli | 363,500 | - |
| 2 | Sakarya | 481,700 | √ |
| 3 | Kırıkkale | 436,500 | √ |
| 4 | Osmaniye | 376,700 | √ |
| 5 | Hatay | 540,300 | √ |
| 6 | Adana | 1,425,600 | - |
| 7 | Afyonkarahisar | 1,453,200 | - |
| 8 | Bilecik | 418,100 | - |
| 9 | Bolu | 1,071,600 | - |
| 10 | Bursa | 1,108,700 | - |
| 11 | Düzce | 259,300 | - |
| 12 | Eskişehir | 1,390,400 | - |
| 13 | Yalova | 85,000 | - |
| 14 | Amasya | 573,100 | - |
| 15 | Balıkesir | 1,429,200 | √ |
| 16 | Uşak | 534,100 | √ |
| 17 | Gaziantep | 719,400 | - |
| 18 | İstanbul | 519,600 | √ |
| TOTAL | | 13,186,000 | 7√ |

Environment Plans which are made and approved by the Ministry of Environment and Forestry between 2003 and 2007 include 11 planning regions. The boundaries of these regions are decided by taking into consideration of NUTS (Nomenclature of Territorial Units for Statistics) Areas (Statistical Areas) which are determined by the State Planning Organization – SPO (Ministry of Environment and Forestry, 2009). NUTS Areas are used to define the framework of regional policies, statistical data collection and development and regional socio-economic analysis. The aim of them is to create a unique database for European Union including standardized regional statistics which can be compared with each other. Three levels including NUTS1 (12 regions), NUTS2 (26 regions) and NUTS3 (81 provinces) are decided by SPO in 2002 (İstatistiki Bölge Birimleri Sınıflandırması, n.d.).

The total area (32,705,588 hectares) of the Environment Plans made and approved by the Ministry of Environment and Forestry between 2003 and 2007 covers 41% of the country area and includes 34 provinces (Table 21). Their scales are 1/100,000. The applications of four of them (Aydın-Muğla-Denizli Environment Plan, Manisa-Kütahya-İzmir Environment Plan, Antalya-Burdur Environment Plan, and Ordu-Trabzon-Rize-Giresun-Gümüşhane-Artvin Environment Plan) are stopped as they were approved before the regulation (published in 11.11.2008) about the environment plans is published. According to the city planners in the Ministry of Environment and Forestry, these plans will be reapproved soon.

Table 21. Environment Plans which are made and approved by the Ministry of Environment and Forestry between 2003 and 2007 (Source: Ministry of Environment and Forestry, 2009)

| ENVIRONMENT PLAN | | AREA (Hectares) |
|---|---|---|
| 1 | TRAKYA ALTBÖLGESİ ERGENE HAVZASI ÇDP | 1.864.200 |
| 2 | KIRŞEHİR-NEVŞEHİR-NİĞDE-AKSARAY PLN.BÖL.ÇDP | 2.707.276 |
| 3 | SİNOP-KASTAMONU-ÇANKIRI PLN.BÖL.ÇDP | 2.646.642 |
| 4 | KONYA-ISPARTA PLN.BÖL.ÇDP | 4.968.460 |
| 5 | SAMSUN-ÇORUM-TOKAT PLN.BÖL.ÇDP | 3.793.671 |
| 6 | MERSİN-KARAMAN PLN.BÖL.ÇDP | 2.438.115 |
| 7 | ZONGULDAK-BARTIN-KARABÜK PLN.BÖL.ÇDP | 949.902 |
| 8 | AYDIN-MUĞLA-DENİZLİ PLN.BÖL.ÇDP | 3.265.783 |
| 9 | MANİSA-KÜTAHYA-İZMİR PLN.BÖL.ÇDP | 3.725.768 |
| 10 | ANTALYA-BURDUR PLN.BÖL.ÇDP | 2.792.551 |
| 11 | ORDU-TRABZON-RİZE-GİRESUN-GÜMÜŞHANE-ARTVİN PLN.BÖL.ÇDP | 3.517.420 |
| TOTAL | | 32.705.588 |

Environment Plans which are planned to be made and approved by the Ministry of Environment and Forestry between 2008 and 2011 cover 27,721,800 hectares of total area which is 35% of the country area (Table 22).

Table 22. Environment Plans which are planned to be made and approved by the Ministry of Environment and Forestry between 2008 and 2011 (Source: Ministry of Environment and Forestry, 2009)

| ENVIRONMENT PLAN | | AREA (Hectares) | PROGRAM |
|---|---|---|---|
| 1 | Yozgat-Sivas-Kayseri | 5.932.800 | 2009 – 2010 |
| 2 | Erzincan-Bayburt-Erzurum | 4.073.100 | 2009 – 2010 |
| 3 | Ardahan-Kars-Iğdır-Ağrı | 2.998.800 | 2009 – 2010 |
| 4 | Muş-Bitlis-Van | 3.736.300 | 2008 – 2009 |
| 5 | Malatya-Elazığ-Bingöl-Tunceli | 3.722.400 | 2009 – 2010 |
| 6 | Adıyaman-Şanlıurfa-Diyarbakır | 4.605.500 | 2009 – 2011 |
| 7 | Mardin-Batman-Siirt-Şırnak | 2.652.900 | 2009 – 2011 |
| TOTAL | | 27.721.800 | |

The provinces which are not included in any of these planning studies and do not have any Environment Plans are Ankara, Çanakkale, Hakkari, Kilis and Kahramanmaraş. Their total area is 5,868,300 hectares which is 7% of the country area (Table 23). They are planned to be added to the planning studies in the following years, because the Ministry of Environment and Forestry is planning to finish all Environment Plans for all provinces in the country until 2012 (Ministry of Environment and Forestry, 2009).

Table 23. Provinces without Environment Plans
(Source: Ministry of Environment and Forestry, 2009)

| PROVINCES | | AREA (Hectares) |
|---|---|---|
| 1 | Ankara | 2.561.500 |
| 2 | Çanakkale | 988.700 |
| 3 | Hakkari | 772.900 |
| 4 | Kilis | 123.900 |
| 5 | Kahramanmaraş | 1.421.300 |
| TOTAL | | 5.868.300 |

The above findings show that there is an important increase in the preparation and approval of Environment Plans since 2003. Also, the Environment Plans made and approved by the Ministry of Environment and Forestry are more than the Environment Plans made and approved by the Provincial Administrations and Municipalities in terms

of the areas and amount of provinces (Figure 2 and Figure 3). The provinces in which Environment Plans are planned to be made and approved by the Ministry of Environment and Forestry between 2008 and 2011 are generally seen in western parts of the country (Figure 2).

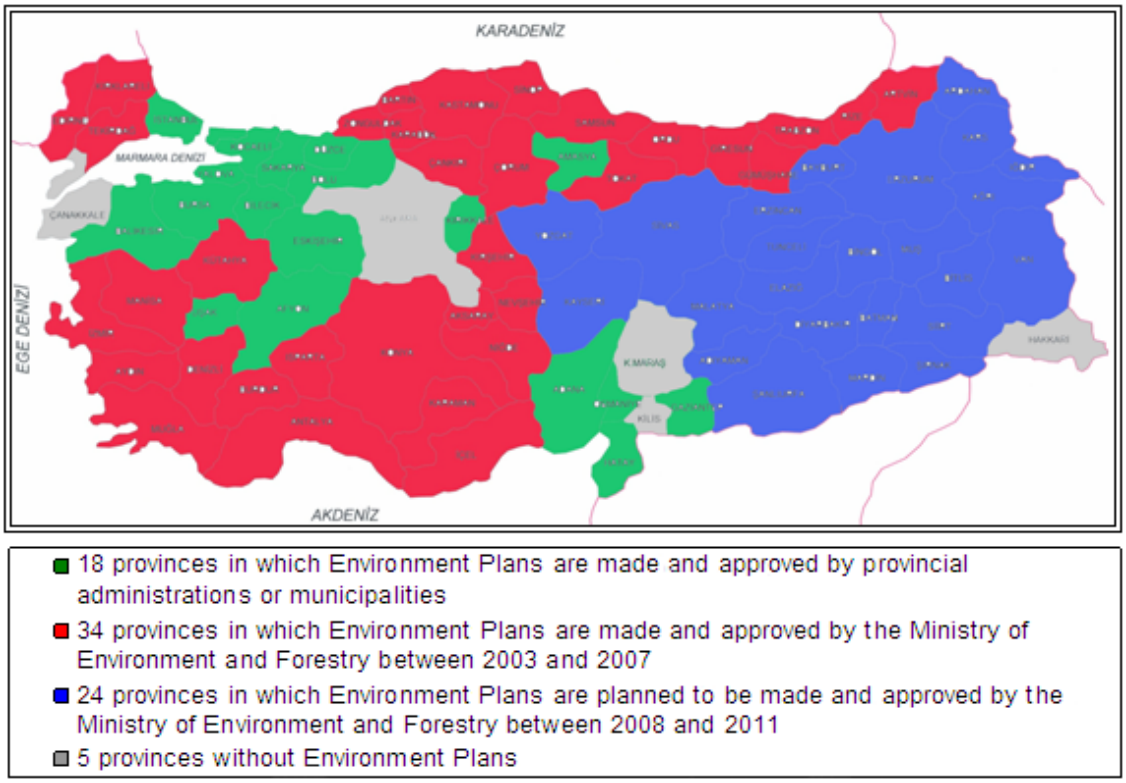



Figure 2. Map of provinces in Turkey with respect to their Environment Plans (Source: Ministry of Environment and Forestry, 2009)

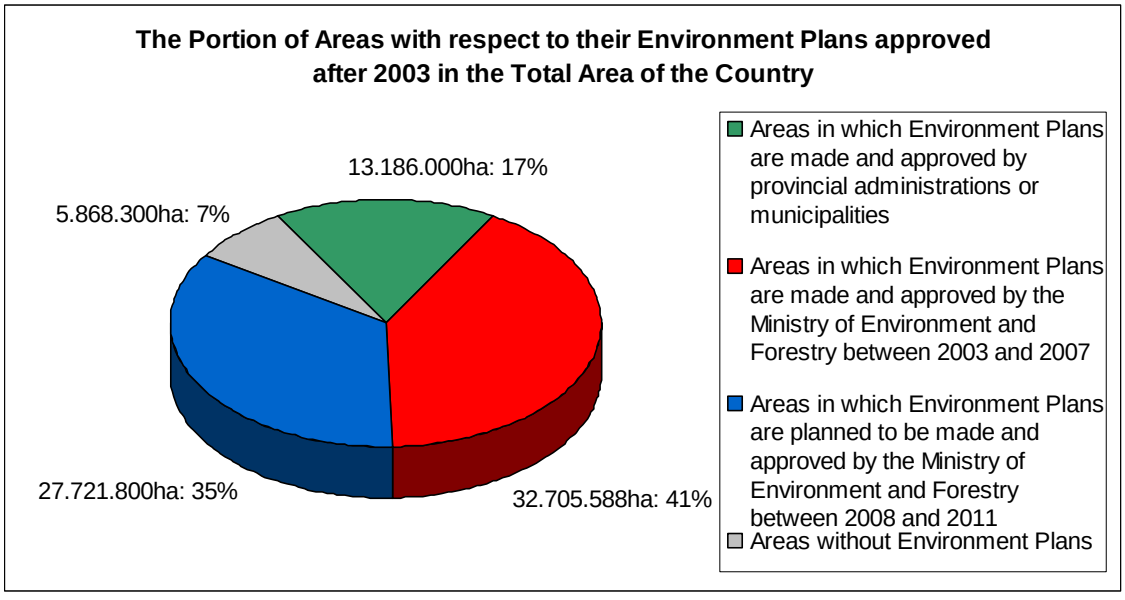


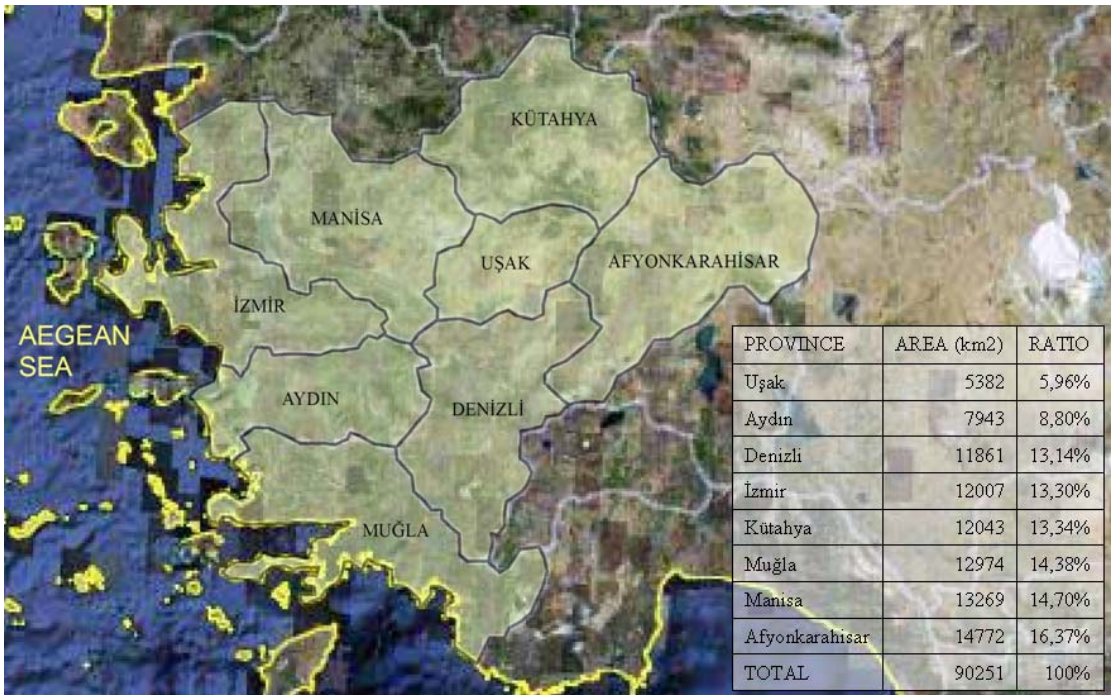

Figure 3. The Portion of Areas with respect to their Environment Plans approved after 2003 in the Total Area of the Country (Source: developed from Ministry of Environment and Forestry, 2009)

## 4.2. Description of the Study Area: Aegean Region

The Aegean Region is one of the seven geographical regions in Turkey. It is located in west of the country near the Aegean Sea (Figure 4). The total area of the region is 90251 $km^2$ which is 11.45% of the country area (785347 $km^2$) (Uşak Plan Report, 2008).


Figure 4. Location of the Aegean Region
(Source: Drawing by Author on the Image from Google Earth)

There are eight provinces in the region: İzmir, Manisa, Kütahya, Aydın, Muğla, Denizli, Uşak and Afyonkarahisar (Figure 5). The province with the largest area is Afyonkarahisar and the province with the smallest area is Uşak.




| PROVINCE | AREA (km2) | RATIO |
|---|---|---|
| Uşak | 5382 | 5,96% |
| Aydın | 7943 | 8,80% |
| Denizli | 11861 | 13,14% |
| İzmir | 12007 | 13,30% |
| Kütahya | 12043 | 13,34% |
| Muğla | 12974 | 14,38% |
| Manisa | 13269 | 14,70% |
| Afyonkarahisar | 14772 | 16,37% |
| TOTAL | 90251 | 100% |

Figure 5. Location and Areas of Provinces in the Aegean Region
(Source: Drawing by Author on the Image from Google Earth with the table developed from TurkStat, 2009)

The total population in the Aegean Region is 9,384,848. The population in province and district center is 71.61% of the total population in the region. The province with the biggest population is İzmir, while Uşak has the smallest population (Table 24).

Table 24. Province and district center and village population and annual growth rate of population by provinces, 31.12.2008 (Source: developed from the data of Address Based Population Registration System 2008 Population Census, from TurkStat, 2009)

| Province | Total | Province and District Center Population | Village Population | Annual Growth Rate of Population (‰) |
|---|---|---|---|---|
| Uşak | 334 111 | 217 567 | 116 544 | -0,01 |
| Kütahya | 565 884 | 347 073 | 218 811 | -31,36 |
| Afyon | 697 365 | 355 753 | 341 612 | -6,01 |
| Muğla | 791 424 | 329 126 | 462 298 | 32,45 |
| Denizli | 917 836 | 620 193 | 297 643 | 11,52 |
| Aydın | 965 500 | 556 700 | 408 800 | 19,38 |
| Manisa | 1 316 750 | 843 999 | 472 751 | -2,40 |
| İzmir | 3 795 978 | 3 450 537 | 345 441 | 15,03 |
| TOTAL | 9 384 848 | 6 720 948 | 2 663 900 | 38,58 |

The geographical formations in the Aegean Region include shore, mountains, rivers and plains. There are lots of gulfs and bays along the shores in the region with a length of approximately 2500km. The terrain is rugged in the region where 96.7% of its area is between 1-1500m lengths. The inner side of the region which is far from the sea is more mountainous. The mountains are perpendicular to the shore and there are rivers between these mountains. These rivers are Bakırçay, Gediz, Büyük Menderes and Küçük Menderes. The basins of these rivers have alluvial soil which is convenient for agricultural activities. There are also productive plains called Bakırçay, Bergama and Gediz (Uşak Plan Report, 2008).

The climate in the Aegean Region is mild and the average heat is 6ºC minimum in January and 27-28ºC maximum in July and August. Freezing is seen rarely and its period is usually few. Also, the total annual fall is 55% in winter, 40% in autumn and spring, and 5% in summer. The climate in summers is hot and dry. There is much evaporation in summers, so soil needs much water. The pressure in the air in the parts near the shore is more than the pressure in the inner parts. The wind in the region is seen as sea breeze which blows on the Aegean coast during summer (Uşak Plan Report, 2008).

The natural vegetation in the region is mostly seen as maquis and scrubs. Also, olive groves have importance in Bakırçay Basin and vicinity of Muğla and fig groves have importance in Büyük Menderes Basin. 40% of the region area is covered with forests. The province with the biggest amount of forest area in the region is Muğla (Uşak Plan Report, 2008).

The geologic structure of the region has different formations. The alluvial soil seen in productive plains and smooth areas are good for agricultural activities. The alluvial lands are rich in terms of underground water, but weak as foundation ground in earthquake regions. The soil with clay is also seen sloppy lands of the region and it has the risk of being affected from erosion. There are also lands suitable for settlements such as sedimentary soil in the region (Uşak Plan Report, 2008).

The region is in the Western Anatolian earthquake area which includes fault lines called Bakırçay, Gediz, Büyük Menderes, Küçük Menderes, Aegean Coastal Region, Kepme and Fethiye Gulfs, and Muğla Region (Uşak Plan Report, 2008).

The region's economic structure, which has an important role in country economy, changes in different provinces due to their populations. İzmir is the province which contributes to the region economy most, while Uşak has the least contribution.

Agriculture is biggest sector with almost the half of the employment in the region. The second and the third sectors are services and industries. The industrial sector is agglomerated in İzmir, Denizli and Manisa (Uşak Plan Report, 2008).

The region has appropriate lands for settlement location in terms of geographical formations and geologic structure despite some constraints such as earthquake zones along fault lines, sloppy lands and productive plains. The climatic conditions and economic opportunities provide suitable environments for settlements as well.

## 4.3. Evaluation of the Environment plans in the Cities of Aegean Region

The Environment plans with upmost scales (1/100000) in the cities of Aegean Region are evaluated in this chapter. These are Manisa – Kütahya – İzmir Environment plan, Aydın – Muğla – Denizli Environment plan, Uşak Environment Plan and Afyonkarahisar Environment Plan (Figure 6).


Figure 6. Location of the Environment Plans (1/100000) in the Aegean Region (Source: Drawing by Author on the Image from Google Earth)

Plans are evaluated in terms of the proposed checklist shown in Table 25. The proposed checklist has three columns: policy areas, policies and urban planning actions for sustainability. They are organized to indicate items about sustainability from comprehensive to specific. All items in the proposed checklist are handled separately and what the plans say on each item is noted in an added column in the evaluation lists of plans. The policies and urban planning actions are scored according to these notes with “0” (not included in plan), “1” (included in plan) and “nr” (not relevant). The contrary statements mentioned in plan opposing the policies and actions are included in the part titled with “BUT”. At the end of this separate scoring, a checklist including all scores of all plans is prepared. All plans got two types of scores: one from policy column and one from urban planning action column in the checklist.

The tables including the proposed checklist and the goals and objectives of each plan regarding each policy and its actions are included separately in the following evaluations of each plan (Table 26, 27, 28, 29). In other words, the evaluation list of each plan includes items about sustainability and what the plan says about these items, so there are six columns in these lists including three main columns in the proposed checklist, two columns for scores (one for policy score and one for action score), and one column for goals and objectives of the plan regarding each policy and its actions.

Table 25. Proposed Checklist (Source: Author)

| policy areas | policies | urban planning actions for sustainability |
|---|---|---|
| natural resources | P1: safeguarding natural areas | A1: preventing construction on natural areas |
| | | A2: continuing existing legal restrictions and site decisions for sites with special characteristics (such as wetlands, forests and basins) and proposing new legal restrictions if needed |
| | P2: mitigation of impacts of harmful activities to natural areas | A3: locating possibly harmful activities (such as industry and mining) far from natural areas |
| | | A4: setting standards for possibly harmful activities |
| | P3: preserving flora and fauna and promoting biodiversity | A5: protecting sensitive sites from extraction |
| | | A6: proposing environmentally sensitive recreational areas (such as areas for mountain trekking and horse riding, wildlife observatories and nature parks) which do not make any changes in nature |
| | | A7: determining wildlife conservation areas |
| | P4: conserving water resources | A8: determining conservation zones in and around wetlands, river basins, valleys and groundwater resources |
| | | A9: improving connections of water systems to existing water resources |
| | P5: improving water quality | A10: improving existing infrastructure systems for potable water |
| | | A11: ensuring an infrastructure system of potable water for new settlements and the settlements with a lack of potable water |
| | | A12: taking mitigation measures for activities which possibly cause water pollution (such as industry and agriculture) |
| | P6: using water more efficiently | A13: improving existing water purification facilities |
| | | A14: proposing new water purification facilities |
| | | A15: using underground water efficiently (such as recharging) |
| | P7: preserving ecologically productive land | A16: locating possibly harmful activities (such as industry and mining) far from ecologically productive land |
| | | A17: setting standards for the manner, location and sort of agricultural activities (such as irrigation, depots, cultivation methods and location in sloping land) to prevent erosion and not to harm productive land |
| | | A18: setting standards for possibly harmful activities (such as pest, pesticide and toxic waste) in agricultural soil |
| | P8: improving soil quality | A19: identifying and treating contaminated land |
| | | A20: taking mitigation measures for activities which possibly cause soil pollution (such as industry and mining) |
| | P9: using soil more efficiently | A21: proposing agricultural activities in lands with productive soil |
| | P10: preserving and improving air quality | A22: taking mitigation measures for activities which are possibly harmful to air quality (such as industry and residential heating) to prevent air pollution |
| | | A23: considering wind and drafts/air flows in planning decisions (such as avoiding high barriers and locating facilities with bad smell into the opposite direction of wind) |

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Table 25. (cont.) Proposed Checklist (Source: Author)

| | | |
|---|---|---|
| cultural heritage | P11: ensuring appropriate conservation, renovation and use/reuse of urban cultural and historic heritage | A24: continuing existing legal restrictions and site decisions and proposing new conservation zones in areas of cultural and historic interest if needed |
| | | A25: increasing accessibility of buildings and areas of cultural and historic interest |
| | | A26: maintaining cultural and historic tourism with some standards not to damage heritages and sites |
| | | A27: ensuring areas for cultural facilities in and around urban cultural and historic heritages with some standards not to damage them |
| | P12: increasing consciousness about cultural heritage and urban identity | A28: preparing symbolic and structural projects |
| | | A29: creating cultural and historical public spaces (such as museums, libraries and theatres) and landmarks |
| | | A30: proposing activity areas for presentation of cities and settlements (such as festival areas) |
| economic activity areas | P13: supporting economic activity in agriculture sector | A31: preventing construction on agricultural lands |
| | | A32: proposing appropriate types of agricultural production due to the characteristics of local soil, climate and other natural conditions |
| | | A33: using productive soil as food fields for agricultural activities |
| | | A34: improving pastures and ensuring their access to support animal feeders in rural settlements |
| | | A35: proposing sites for agricultural cooperatives |
| | P14: developing industrial developments integrated with agriculture | A36: managing transportation connections between agricultural lands and industrial developments |
| | P15: increasing awareness and supporting the usage of new technologies in agriculture sector | A37: proposing educational centers for new techniques and technologies in agricultural production |
| | | A38: managing transportation connections between agricultural lands and university or techno parks |
| | | A39: developing eco-villages and farms in which tourism and agricultural activities are taken place together |
| | P16: promoting eco-labeled, organic, ethical and fair trade products | A40: proposing organic farms in appropriate locations |
| | P17: supporting economic activity in ecologically sensitive industrial development | A41: providing adequate area for ecologically sensitive industrial development |
| | | A42: managing the relationship of ecologically sensitive industrial development to public transport to ensure accessibility |
| | | A43: setting standards for warehouses and depots in relation with ecologically sensitive industrial districts (such as preventing storage of hazardous materials and proposing forestation around them) |
| | | A44: ensuring product and labor mobility with integrated alternative modes of transport |
| | | A45: setting design standards for durability and reparability of new developments (such as setting minimum requirements for hazard resistant design and proposing high performance construction materials) |
| | | A46: converting existing industrial districts to ecologically sensitive industrial districts |

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Table 25. (cont.) Proposed Checklist (Source: Author)

| | | |
|---|---|---|
| economic activity areas | P18: supporting ecologically sensitive industrial development with new technologies | A47: planning areas for techno parks and technology development districts and relating them to industrial developments |
| | P19: ensuring environmentally sensitive tourism and recreation | A48: locating areas of natural sports, botanical gardens, zoological gardens, festival areas, fairs, etc. which make small changes in nature |
| | | A6: proposing environmentally sensitive recreational areas (such as areas for mountain trekking and horse riding, wildlife observatories and nature parks) which do not make any changes in nature |
| | | A26: maintaining cultural and historic tourism with some standards not to damage heritages and sites |
| | | A49: encouraging alternative and ecologic tourism including tour routes connecting small touristic settlements |
| | | A50: avoiding harmful types of tourism (such as mass tourism and golf tourism) |
| | P20: supporting local economic activity | A51: proposing local markets and bazaars for selling local products |
| | | A30: proposing activity areas for presentation of cities and settlements (such as festival areas) |
| | | A52: ensuring provision of all immediate needs (such as services and market areas) locally |
| settlement location and form | P21: avoiding urban sprawl and promoting compact settlements | A53: preference for medium rise, high density developments |
| | | A54: reusing derelict, rebundant and vacant areas |
| | | A55: regenerating disadvantaged areas |
| | | A56: renewal of inner city areas if necessary |
| | | A57: concentrating facilities in inner cities |
| | | A58: controlling and avoiding incremental developments (such as housing and mines) |
| | P22: selecting appropriate location for new settlements | A59: considering climatic conditions (such as wind, sun and fall) while locating settlements |
| | | A60: considering physical conditions (such as geologic structure and topography) while locating settlements |
| | | A61: locating residential areas far from dangerous sites (such as sites with soil liquefaction, erosion and earthquake faults) |
| | | A62: locating facilities (such as industry, mining, cemetery and waste disposal areas) which may harm human health far from settlements and especially residential areas |
| | | A63: considering regulations about technical infrastructure (such as natural gas pipe lines, energy transport lines, water pipe lines, transformers and gas stations) and setting location standards through and around them |
| urban infrastructure and services | P23: ensuring infrastructure facilities | A64: improving existing infrastructure systems |
| | | A65: ensuring infrastructure facilities for new developments |
| | | A66: avoiding development in areas without infrastructure |
| | | A63: considering regulations about technical infrastructure (such as natural gas pipe lines, energy transport lines, water pipe lines, transformers and gas stations) and setting location standards through and around them |

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Table 25. (cont.) Proposed Checklist (Source: Author)

| | | |
|---|---|---|
| urban infrastructure and services | P24: managing transportation connections to support economic activity | A67: managing the transportation connections with airports |
| | | A68: managing the transportation connections with existing harbors |
| | | A69: ensuring integrated land-use |
| | P25: reducing travel demand in new developments | A70: ensuring the mixed use of buildings and developments with a good balance of jobs, housing and services |
| | | A53: preference for medium rise, high density developments |
| | | A71: reducing the distances between residences, employment and services |
| | P26: reducing the necessity for private motorized transport | A72: promoting attractive alternative modes of transportation (such as railways, airways and river transport) accessible to all |
| | P27: improving and giving priority to public transport | A73: improving the quality of existing public transportation services (such as integration with other modes and adequate number of bus stops) |
| | | A74: designing new and integrated public transportation services for new developments |
| | P28: improving and giving priority to walking and cycling | A75: designing new and safe walking and cycling paths |
| | | A76: integrating walking and cycling paths to public transport |
| | | A77: improving conditions for pedestrians |
| | P29: minimizing impacts of highways to settlements | A78: locating through traffic far from city centers to reduce transit traffic volumes in the city |
| | | A79: planning buffer zones along two sides of main transportation arteries |
| | P30: ensuring equitable access to public services and facilities | A80: ensuring adequate number of major services (such as grocery, library, school, heath centers and playing fields) in all settlements |
| | | A81: locating public services (such as schools, clinics and retail centers) within walking distance of residents |
| | | A82: managing the relationship of major services to public transport |
| | | A83: using special areas (such as coastal areas and bridges) as public spaces to ensure accessibility to all citizens |
| | P31: fostering social inclusion and equity in public services and facilities | A84: improving conditions of pavements for disabled people in wheelchairs |
| | | A85: ensuring public transportation especially for the parts of city in which urban poor lives |
| | | A86: ensuring alternative types of activities in public spaces for people from different genders, ages and income groups |
| | | A87: ensuring alternative types of religious buildings, areas and services for people from different religions |
| | P32: encouraging waste reduction, re-use, recycling and recovery | A88: proposing waste disposal facilities in new settlements |
| | | A89: improving existing waste disposal facilities |
| | | A90: proposing waste recycling and recovery facilities in new settlements |
| | | A91: improving existing waste recycling and recovery facilities |
| | | A62: locating facilities (such as industry, mining, cemetery and waste disposal areas) which may harm human health far from settlements and especially residential areas |

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Table 25. (cont.) Proposed Checklist (Source: Author)

| | | |
|---|---|---|
| urban infrastructure and services | P33: minimizing impact and costs of waste disposal | A92: setting standards for waste management in industrial developments |
| | | A93: ensuring responsible disposal for hazardous waste (such as setting standards for industrial developments and health centers to manage toxic and medical waste) |
| | | A94: proposing a common waste disposal unit for several neighborhood settlements in optimal location |
| | P34: providing balanced and efficient usage of energy resources | A95: setting design standards for energy efficiency in new settlements and buildings(such as locating buildings in places with maximum sun utilization in areas designed as using solar power as alternative energy) |
| | | A96: using alternative energy resources (such as solar, wind and geothermal) instead of nonrenewable energy resources in existing buildings and settlements |
| | | A97: using local and renewable energy |
| | P35: enhancing urban green space | A98: protecting existing green space in urban settlements |
| | | A99: increasing the quality of existing green spaces |
| | | A100: ensuring adequate green spaces for all neighborhoods |
| | | A101: integrating green space structures through the creation of green corridors |
| | | A102: proposing family gardens |
| | P36: ensuring accessibility of urban green spaces | A103: connecting pedestrian and cycling paths to urban green spaces |
| | | A104: locating new green spaces within walking distance of residents |
| | P37: integrating health considerations in planning strategies | A105: ensuring areas for health facilities (such as hospitals and health centers) |
| | | A106: improving existing health centers (such as strengthening constructions, designing landscapes, providing public spaces or parks near them and locating public transportation stops near them) |
| | | A62: locating facilities (such as industry, mining, cemetery and waste disposal areas) which may harm human health far from settlements and especially residential areas |
| | | A107: proposing facilities and areas for health tourism |
| | P38 : reducing effects of pollution to health | A108: setting local pollution limits |
| | | A79: planning buffer zones along two sides of main transportation arteries |
| | P39: ensuring educational facilities | A109: improving existing educational centers (such as integration of schools with public transport and planning children playgrounds near nurseries) |
| | | A110: ensuring new educational centers in developing residential areas |
| | | A111: ensuring educational centers aimed at employment (such as studios and handicraft ateliers) |
| | | A112: ensuring educational centers for local (and nongovernmental) organizations and public education centers |

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Table 25. (cont.) Proposed Checklist (Source: Author)

| | | |
|---|---|---|
| residential areas | P40: ensuring safety and security in residential areas | A45: setting design standards for durability and reparability of new developments (such as setting minimum requirements for hazard resistant design and proposing high performance construction materials) |
| | | A113: securing good quality and socially integrated housing and living conditions |
| | | A114: avoiding urban pattern which includes narrow streets and cul-de-sacs (for developing areas) |
| | | A61: locating residential areas far from dangerous sites (such as sites with soil liquefaction, erosion and earthquake faults) |
| | | A62: locating facilities (such as industry, mining, cemetery and waste disposal areas) which may harm human health far from settlements and especially residential areas |
| | | A115: ensuring adequate permeable soil in residential areas to prevent flood |
| | | A63: considering regulations about technical infrastructure (such as natural gas pipe lines, energy transport lines, water pipe lines, transformers and gas stations) and setting location standards through and around them |
| | | A116: proposing areas for usage after disaster (such as areas for tent pitching, emergency treatment and distribution of food, water and other materials) |
| | P41: fostering social inclusion and equity in housing opportunities | A117: ensuring small and efficient affordable housing for urban poor |
| | | A118: ensuring alternative types of forms and functions in residential districts for people with different pleasures |
| | | A119: ensuring housing units for people who lost their houses after disasters and urban renewal projects |

### 4.3.1. Manisa – Kütahya – İzmir Environment Plan (1/100000)

Manisa – Kütahya – İzmir Environment Plan is made by a partnership of two private companies which are assigned by the Ministry of Environment and Forestry for the planning period until 2025. It is firstly approved in 19.07.2007 by the Ministry of Environment and Forestry. Then, objections occurred in the hanging period of the plan. After the objections are evaluated, the plan is reapproved in 10.03.2008. The application of the plan is stopped in 07.07.2008 by the Council of State because of the reason that it is approved before the regulation (published in 11.11.2008) about the environment plans is published. Currently, the plan is ready to be reapproved as mentioned by the authorities of the Ministry of Environment and Forestry (2009).

The planning area of the Manisa – Kütahya – İzmir Environment Plan is located in the two NUTS Areas (Statistical Areas): İzmir Second Level Statistical Region coded TR-31 and Manisa – Kütahya – Uşak – Afyon Second Level Statistical Region coded TR-33. The planning area includes 3 provinces (Manisa, Kütahya, İzmir).

The main aim of the plan is to eliminate the problems caused by rapid and uncontrolled urbanization and incremental and sector plans, to ensure controlled development of urbanization and industrialization and sustain this development, to prevent actions which may harm ecologic balance and to direct a land-use pattern in which cultural and natural values are conserved.

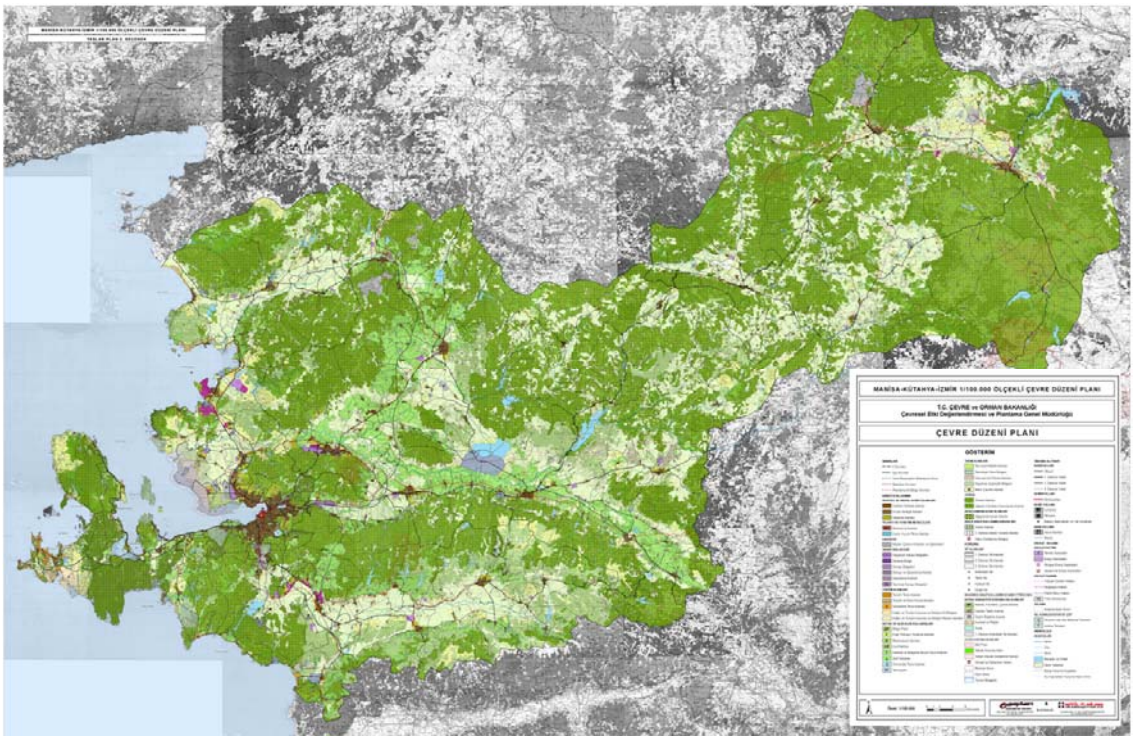


Figure 7. Manisa-Kütahya-İzmir Environment Plan
(Source: Chamber of City Planners, İzmir)

Table 26. Evaluation of Manisa-Kütahya-İzmir Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| policy areas | POLICIES | policy scores | URBAN PLANNING ACTIONS FOR SUSTAINABILITY | action scores | GOALS AND OBJECTIVES OF MANİSA-KÜTAHYA-İZMİR ENVIRONMENT PLAN REGARDING EACH POLICY AND ITS ACTIONS |
|---|---|---|---|---|---|
| natural resources | P1: safeguarding natural areas | 1 | A1: preventing construction on natural areas | 1 | ➢ protecting natural resources<br>➢ safeguarding forests, maquis, scrubs, wetlands, pastures and other natural areas considering their boundaries and integrity<br>➢ considering legal requirements in officially registered sites, National Parks, etc.<br>➢ preventing construction on natural areas except private forests, areas which labeled as forest in the plan but not registered officially, and recreation spots<br>➢ proposing forestation |
| | | | A2: continuing existing legal restrictions and site decisions for sites with special characteristics and proposing new legal restrictions if needed | 1 | |
| | P2: mitigation of impacts of harmful activities to natural areas | 1 | A3: locating possibly harmful activities far from natural areas | 1 | ➢ preventing actions which may harm ecologic balance<br>➢ proposing forestation in some existing mines and stone quarries which have impacts on nature and locating others far from natural conservation areas<br>➢ avoiding possibly harmful development in the wetland in İzmir listed in Ramsar Convention<br>➢ reviewing previous planning and land use decisions which may have negative impacts on nature |
| | | | A4: setting standards for possibly harmful activities | 1 | |
| | P3: preserving flora and fauna and promoting biodiversity | 1 | A5: protecting sensitive sites from extraction | 1 | ➢ protecting areas with ecologic characteristics and rich in flora and fauna (wetland, lake, forest, lagoon, dune, etc.)<br>➢ protecting biodiversity and ecologically sensitive sites and ecosystems which are determined in national and international laws<br>➢ determining wildlife conservation areas<br>➢ proposing botanical gardens<br>➢ locating possibly harmful activities far from sensitive sites |
| | | | A6: proposing environmentally sensitive recreational areas which do not make any changes in nature | 1 | |
| | | | A7: determining wildlife conservation areas | 1 | |

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Table 26. (cont.) Evaluation of Manisa-Kütahya-İzmir Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| natural resources | P4: conserving water resources | 1 | A8: determining conservation zones in and around wetlands, river basins, valleys and groundwater resources | 1 | ➢ conserving water resources<br>➢ preventing pollution in water resources<br>➢ preventing construction on conservation zones of water resources<br>➢ determining conservation zones in and around water resources<br>➢ preventing possibly harmful activities in and around water resources, but allowing some activities such as mining in long-distance conservation zones with some restrictions<br>➢ proposing Integrated Environmental Management for Basins<br>➢ proposing wastewater purification facilities in settlements, industrial areas, thermal power plants (Soma Thermal Power Plant in Bakırçay Basin), etc. |
| | | | A9: improving connections of water systems to existing water resources | 1 | |
| | P5: improving water quality | 1 | A10: improving existing infrastructure systems for potable water | 0 | ➢ preventing pollution in water resources<br>➢ proposing lower scale plans to ensure necessary technical and social infrastructure areas for population in urban settlements<br>➢ preventing air, soil and water pollution and treating existing polluted environment<br>➢ controlling industrial development to prevent pollution<br>➢ forcing investors to solve environmental problems if their investment has a possibility to cause pollution |
| | | | A11: ensuring an infrastructure system of potable water for new settlements and the settlements with a lack of potable water | 1 | |
| | | | A12: taking mitigation measures for activities which possibly cause water pollution | 1 | |
| | P6: using water more efficiently | 1 | A13: improving existing water purification facilities | 0 | ➢ using water efficiently<br>➢ establishing local unions as service units for ensuring and recycling water<br>➢ proposing responsible administrations to make water projections and to take some measures for efficient use of water such as pricing, taxing, etc.<br>➢ proposing integrated water management and avoiding random well digging<br>➢ proposing lower scale plans to ensure necessary technical and social infrastructure areas for population in urban settlements |
| | | | A14: proposing new water purification facilities | 1 | |
| | | | A15: using underground water | 0 | |

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Table 26. (cont.) Evaluation of Manisa-Kütahya-İzmir Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| natural resources | P7: preserving ecologically productive land | 1 | A16: locating possibly harmful activities far from ecologically productive land | 1 | ➢ conserving areas with agricultural characteristics<br>➢ preventing industrial developments on agricultural or productive lands<br>➢ canceling previous planning decisions about industrial activities on productive lands if they are not constructed yet<br>➢ maintaining irrigation areas<br>➢ preventing the usage of agricultural building with aims different from their main usage aim<br>➢ preventing storage of hazardous materials such as explosives, hunting materials, etc. in depots |
| | | | A17: setting standards for the manner, location and sort of agricultural activities to prevent erosion and not to harm productive land | 0 | |
| | | | A18: setting standards for possibly harmful activities in agricultural soil | 1 | |
| | P8: improving soil quality | 1 | A19: identifying and treating contaminated land | 1 | ➢ preventing soil pollution<br>➢ preventing air, soil and water pollution and treating existing polluted environment<br>➢ controlling industrial development to prevent pollution<br>➢ forcing investors to solve environmental problems if their investment has a possibility to cause pollution |
| | | | A20: taking mitigation measures for activities which possibly cause soil pollution | 1 | |
| | P9: using soil more efficiently | 1 | A21: proposing agricultural activities in lands with productive soil | 1 | ➢ preventing parcel divisions making lots so small that agricultural productivity is decreased<br>➢ preventing the usage of agricultural building with aims different from their main usage aim<br>➢ maintaining irrigation areas |
| | P10: preserving and improving air quality | 1 | A22: taking mitigation measures for activities which are possibly harmful to air quality to prevent air pollution | 1 | ➢ preventing air pollution<br>➢ preventing air, soil and water pollution and treating existing polluted environment<br>➢ controlling industrial development to prevent pollution<br>➢ forcing investors to solve environmental problems if their investment has a possibility to cause pollution |
| | | | A23: considering wind and drafts/air flows in planning decisions | 0 | |

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Table 26. (cont.) Evaluation of Manisa-Kütahya-İzmir Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| cultural heritage | P11: ensuring appropriate conservation, renovation and use/reuse of urban cultural and historic heritage | 1 | A24: continuing existing legal restrictions and site decisions and proposing new conservation zones in areas of cultural and historic interest if needed | 1 | ➢ preserving cultural values<br>➢ considering legal requirements in officially registered sites, but no new legal restrictions<br>➢ improving the Başkomutan Historical National Park to increase the amount of visitors<br>➢ ensuring cultural facilities in urban settlements<br>➢ proposing lower scale plans to ensure cultural facilities appropriate to legal standards<br>➢ accepting and transferring the plan decisions of the Ministry of Culture and Tourism in the areas of 'Culture and Tourism Conservation and Development Areas' and 'Tourism Centers' |
| | | | A25: increasing accessibility of buildings and areas of cultural and historic interest | 0 | |
| | | | A26: maintaining cultural and historic tourism with some standards not to damage heritages and sites | 1 | |
| | | | A27: ensuring areas for cultural facilities in and around urban cultural and historic heritages with some standards not to damage them | 1 | |
| | P12: increasing consciousness about cultural heritage and urban identity | 1 | A28: preparing symbolic and structural projects | 0 | ➢ improving the Başkomutan Historical National Park to increase the amount of visitors<br>➢ locating festival areas in which local products are presented |
| | | | A29: creating cultural and historical public spaces and landmarks | 1 | |
| | | | A30: proposing activity areas for presentation of cities and settlements | 1 | |
| economic activity areas | P13: supporting economic activity in agriculture sector | 1 | A31: preventing construction on agricultural lands | 1 | ➢ conserving areas with agricultural characteristics<br>➢ preventing industrial developments on agricultural or productive lands<br>➢ canceling previous planning decisions about industrial activities on productive lands if they are not constructed yet<br>➢ maintaining irrigation areas<br>➢ preventing the usage of agricultural building with aims different from their main usage aim<br>➢ proposing sites for animal feeding and flower greenhouses |
| | | | A32: proposing appropriate types of agricultural production due to the characteristics of local soil, climate and other natural conditions | 0 | |
| | | | A33: using productive soil as food fields for agricultural activities | 1 | |
| | | | A34: improving pastures and ensuring their access to support animal feeders in rural settlements | 1 | |
| | | | A35: proposing sites for agricultural cooperatives | 0 | |

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Table 26. (cont.) Evaluation of Manisa-Kütahya-İzmir Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| economic activity areas | P14: developing industrial developments integrated with agriculture | 1 | A36: managing transportation connections between agricultural lands and industrial developments | 0 | ➢ proposing sites for agricultural industry<br>➢ maintaining irrigation areas<br>➢ using geothermal resources in agricultural industry |
| | P15: increasing awareness and supporting the usage of new technologies in agriculture sector | 1 | A37: proposing educational centers for new techniques and technologies in agricultural production | 0 | ➢ proposing sites for technological greenhouses |
| | | | A38: managing transportation connections between agricultural lands and university or techno parks | 0 | |
| | | | A39: developing eco-villages and farms in which tourism and agricultural activities are taken place together | 0 | |
| | P16: promoting eco-labeled, organic, ethical and fair trade products | 1 | A40: proposing organic farms in appropriate locations | 1 | ➢ encouraging organic farms in short-distance and absolute conservation zones of basins which include surface water resources |
| | P17: supporting economic activity in ecologically sensitive industrial development | 1 | A41: providing adequate area for ecologically sensitive industrial development | 1 | ➢ proposing sites for industrial activities<br>➢ avoiding single or scattered industrial development and encouraging organized industrial districts<br>➢ encouraging agglomeration of similar types of industrial development<br>➢ improving standards and regenerating existing industrial districts which harm environment<br>➢ making forestation obligatory in the area around warehouses<br>➢ preventing storage of hazardous materials such as explosives, hunting materials, etc. in depots |
| | | | A42: managing the relationship of ecologically sensitive industrial development to public transport to ensure accessibility | 0 | |
| | | | A43: setting standards for warehouses and depots in relation with ecologically sensitive industrial districts | 1 | |
| | | | A44: ensuring product and labor mobility with integrated alternative modes of transport | 0 | |
| | | | A45: setting design standards for durability and reparability of new developments | 0 | |
| | | | A46: converting existing industrial districts to ecologically sensitive industrial districts | 1 | |

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Table 26. (cont.) Evaluation of Manisa-Kütahya-İzmir Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| economic activity areas | P18: supporting ecologically sensitive industrial development with new technologies | 1 | A47: planning areas for techno parks and technology development districts and relating them to industrial developments | 1 | ➢ encouraging high technology in industrial districts<br>➢ proposing sites for techno parks<br>➢ locating techno park in an area which is accessible from industrial district |
| | P19: ensuring environmentally sensitive tourism and recreation | 1 | A48: locating areas of natural sports, botanical gardens, zoological gardens, festival areas, fairs, etc. which make small changes in nature | 1 | ➢ accepting and transferring the plan decisions of the Ministry of Culture and Tourism in the areas of 'Culture and Tourism Conservation and Development Areas' and 'Tourism Centers'<br>➢ using thermal resources for tourism activities<br>➢ proposing camping and daily tourism activity areas in coastal zones<br>➢ determining wildlife conservation areas<br>➢ locating festival areas in which local products are presented<br>BUT<br>➢ encouraging golf investments |
| | | | A6: proposing environmentally sensitive recreational areas which do not make any changes in nature | 1 | |
| | | | A26: maintaining cultural and historic tourism with some standards not to damage heritages and sites | 1 | |
| | | | A49: encouraging alternative and ecologic tourism including tour routes connecting small touristic settlements | 0 | |
| | | | A50: avoiding harmful types of tourism | 0 | |
| | P20: supporting local economic activity | 1 | A51: proposing local markets and bazaars for selling local products | 1 | ➢ locating festival areas in which local products are presented<br>➢ maintaining mining activities of some settlements where these activities have important contributions to their local economies<br>➢ encouraging specializations in existing and possible sectors in planning sub-zones<br>➢ ensuring markets, services and infrastructure facilities in all settlements |
| | | | A30: proposing activity areas for presentation of cities and settlements | 1 | |
| | | | A52: ensuring provision of all immediate needs locally | 1 | |

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Table 26. (cont.) Evaluation of Manisa-Kütahya-İzmir Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| settlement location and form | P21: avoiding urban sprawl and promoting compact settlements | 1 | A53: preference for medium rise, high density developments | 0 | ➢ eliminating the problems caused by rapid and uncontrolled urbanization and incremental and sectored planning<br>➢ ensuring and sustaining controlled development of urbanization and industrialization<br>➢ avoiding incremental land use decisions which damage population balances and plan integrity<br>➢ avoiding unnecessary secondary housing in coastal areas<br>➢ avoiding single industrial developments in the surrounding parts of cities<br>➢ no proposed development areas for rural settlements<br>➢ proposing renewal and regeneration in the inner parts of İzmir with low density<br>BUT<br>➢ accepting urban sprawl in İzmir and supporting it with investments in industrial districts and mass housing projects in settlements in the surrounding parts of the city and transportation connections to these small urban parts<br>➢ using urban fringes in İzmir to provide a part of the development area for proposed population<br>➢ ensuring proposed residential areas for the population increased with migration because of the rapid industrial development in Manisa |
| | | | A54: reusing derelict, rebundant and vacant areas | 0 | |
| | | | A55: regenerating disadvantaged areas | 1 | |
| | | | A56: renewal of inner city areas if necessary | 1 | |
| | | | A57: concentrating facilities in inner cities | 0 | |
| | | | A58: controlling and avoiding incremental developments | 1 | |
| | P22: selecting appropriate location for new settlements | 1 | A59: considering climatic conditions while locating settlements | 0 | ➢ eliminating the problems caused by rapid and uncontrolled urbanization and incremental and sectored planning<br>➢ ensuring and sustaining controlled development of urbanization and industrialization<br>➢ avoiding incremental land use decisions which damage population balances and plan integrity<br>➢ avoiding unnecessary secondary housing in coastal areas<br>➢ avoiding single industrial developments in the surrounding parts of cities<br>➢ no proposed development areas for rural settlements<br>➢ proposing renewal and regeneration in the inner parts of İzmir with low density<br>BUT<br>➢ accepting urban sprawl in İzmir and supporting it with investments in industrial districts and mass housing projects in settlements in the surrounding parts of the city and transportation connections to these small urban parts<br>➢ using urban fringes in İzmir to provide a part of the development area for proposed population<br>➢ ensuring proposed residential areas for the population increased with migration because of the rapid industrial development in Manisa |
| | | | A60: considering physical conditions while locating settlements | 1 | |
| | | | A61: locating residential areas far from dangerous sites | 1 | |
| | | | A62: locating facilities which may harm human health far from settlements and especially residential areas | 1 | |
| | | | A63: considering regulations about technical infrastructure and setting location standards through and around them | 1 | |

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Table 26. (cont.) Evaluation of Manisa-Kütahya-İzmir Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| urban infrastructure and services | P23: ensuring infrastructure facilities | 1 | A64: improving existing infrastructure systems | 1 | ➢ proposing legal restrictions to industrial developments about compulsory infrastructure and purification facilities<br>➢ forcing uncontrolled establishments to finish their infrastructure investments, especially purification facilities in a definite time, otherwise closing them<br>➢ proposing lower scale plans to ensure necessary technical and social infrastructure areas for population in urban settlements<br>➢ proposing integrated water management and avoiding random well digging<br>➢ setting location standards through natural gas pipe lines, energy transport lines and water pipe lines<br>➢ setting location standards for transformers, gas stations and establishments using explosives |
| | | | A65: ensuring infrastructure facilities for new developments | 1 | |
| | | | A66: avoiding development in areas without infrastructure | 1 | |
| | | | A63: considering regulations about technical infrastructure and setting location standards through and around them | 1 | |
| | P24: managing transportation connections to support economic activity | 1 | A67: managing the transportation connections with airports | 1 | ➢ proposing highways and railways to connect the North Aegean Harbor to the city center of İzmir<br>➢ improving the railways between Menderes-Aliağa and transforming it to metro<br>➢ proposing new lines in railways to ensure connections to airports and tourism developments<br>➢ proposing railway connections between harbor and two industrial districts |
| | | | A68: managing the transportation connections with existing harbors | 1 | |
| | | | A69: ensuring integrated land-use | 0 | |
| | P25: reducing travel demand in new developments | 0 | A70: ensuring the mixed use of buildings and developments with a good balance of jobs, housing and services | 0 | ➢ proposing residential developments around or near industrial developments BUT<br>➢ separating working spaces, especially Central Business Districts from the other functions and parts of the city<br>➢ proposing development axis, supporting it with highways, and then proposing additional developments considering these highways<br>➢ accepting urban sprawl in İzmir and supporting it with investments in industrial districts and mass housing projects in settlements in the surrounding parts of the city and transportation connections to these small urban parts |
| | | | A53: preference for medium rise, high density developments | 0 | |
| | | | A71: reducing the distances between residences, employment and services | 1 | |
| | P26: reducing the necessity for private motorized transport | 1 | A72: promoting attractive alternative modes of transportation accessible to all | 1 | ➢ improving the railways between Menderes-Aliağa and transforming it to metro<br>➢ proposing new lines in railways to ensure connections to airports and tourism developments<br>➢ proposing railway connections between harbor and two industrial districts<br>➢ proposing residential developments around or near industrial developments BUT<br>➢ proposing highways and railways to connect the North Aegean Harbor to the city center of İzmir |

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Table 26. (cont.) Evaluation of Manisa-Kütahya-İzmir Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| urban infrastructure and services | P27: improving and giving priority to public transport | 1 | A73: improving the quality of existing public transportation services | 1 | ➢ improving the railways between Menderes-Aliağa and transforming it to metro<br>➢ proposing new lines in railways to ensure connections to airports and tourism developments<br>➢ proposing railway connections between harbor and two industrial districts |
| | | | A74: designing new and integrated public transportation services for new developments | 1 | |
| | P28: improving and giving priority to walking and cycling | 0 | A75: designing new and safe walking and cycling paths | 0 | No policy / action |
| | | | A76: integrating walking and cycling paths to public transport | 0 | |
| | | | A77: improving conditions for pedestrians | 0 | |
| | P29: minimizing impacts of highways to settlements | 0 | A78: locating through traffic far from city centers to reduce transit traffic volumes in the city | 0 | No policy / action |
| | | | A79: planning buffer zones along two sides of main transportation arteries | 0 | |
| | P30: ensuring equitable access to public services and facilities | 1 | A80: ensuring adequate number of major services in all settlements | 1 | ➢ proposing lower scale plans to ensure necessary technical and social infrastructure areas for population in urban settlements |
| | | | A81: locating public services within walking distance of residents | 1 | |
| | | | A82: managing the relationship of major services to public transport | 0 | |
| | | | A83: using special areas as public spaces to ensure accessibility to all citizens | 0 | |

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Table 26. (cont.) Evaluation of Manisa-Kütahya-İzmir Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| urban infrastructure and services | P31: fostering social inclusion and equity in public services and facilities | 0 | A84: improving conditions of pavements for disabled people in wheelchairs | 0 | No policy / action |
| | | | A85: ensuring public transportation especially for the parts of city in which urban poor lives | 0 | |
| | | | A86: ensuring alternative types of activities in public spaces for people from different genders, ages and income groups | 0 | |
| | | | A87: ensuring alternative types of religious buildings, areas and services for people from different religions | 0 | |
| | P32: encouraging waste reduction, re-use, recycling and recovery | 1 | A88: proposing waste disposal facilities in new settlements | 1 | ➢ proposing responsible institution to ensure waste management system<br>➢ considering legal requirements about infrastructure systems<br>➢ forcing uncontrolled establishments to finish their infrastructure investments, especially purification facilities in a definite time, otherwise closing them<br>➢ proposing legal restrictions to industrial developments about compulsory infrastructure and purification facilities<br>➢ proposing lower scale plans to ensure necessary technical and social infrastructure areas for population in urban settlements<br>➢ proposing infrastructure union in İzmir for solid waste disposal facilities and using disposal areas efficiently while preventing their pollution<br>➢ locating solid waste disposal areas considering the land structure and geographical conditions<br>➢ proposing one or two solid waste disposal areas for usage of all small settlements in İzmir<br>➢ proposing a regular and integrated disposal facility for solid waste in Manisa<br>➢ proposing recycling, composting and regular disposal facilities for solid waste in Kütahya with the coordination of a service union specialized on them |
| | | | A89: improving existing waste disposal facilities | 1 | |
| | | | A90: proposing waste recycling and recovery facilities in new settlements | 1 | |
| | | | A91: improving existing waste recycling and recovery facilities | 1 | |
| | | | A62: locating facilities which may harm human health far from settlements and especially residential areas | 1 | |

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Table 26. (cont.) Evaluation of Manisa-Kütahya-İzmir Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| urban infrastructure and services | P33: minimizing impact and costs of waste disposal | 1 | A92: setting standards for waste management in industrial developments | 1 | ➢ forcing uncontrolled establishments to finish their infrastructure investments, especially purification facilities in a definite time, otherwise closing them<br>➢ proposing legal restrictions to industrial developments about compulsory infrastructure and purification facilities<br>➢ proposing infrastructure union in İzmir for solid waste disposal facilities and using disposal areas efficiently while preventing their pollution<br>➢ locating solid waste disposal areas considering the land structure and geographical conditions<br>➢ proposing one or two solid waste disposal areas for usage of all small settlements in İzmir<br>➢ proposing a regular and integrated disposal facility for solid waste in Manisa<br>➢ proposing recycling, composting and regular disposal facilities for solid waste in Kütahya with the coordination of a service union specialized on them<br>➢ preventing storage of hazardous materials such as explosives, hunting materials, etc. in depots |
| | | | A93: ensuring responsible disposal for hazardous waste | 1 | |
| | | | A94: proposing a common waste disposal unit for several neighborhood settlements in optimal location | 1 | |
| | P34: providing balanced and efficient usage of energy resources | 1 | A95: setting design standards for energy efficiency in new settlements and buildings | 1 | ➢ encouraging and making widespread of the usage of sustainable energy resources and sustaining the existing resources<br>➢ using wind and geothermal energy as sustainable and local energy<br>➢ using wind energy for electricity in appropriate sites<br>➢ using geothermal energy in agricultural industry facilities, heating in housing, electricity, industrial vapor production, lumber works, heating in coops and barns, mushroom planting, baths, soil heating, food drying, salt and sugar processing, canneries, fermentation and distillation, swimming pools, fish farms, greenhouses and tourism facilities considering the heat of the resource |
| | | | A96: using alternative energy resources instead of nonrenewable energy resources in existing buildings and settlements | 1 | |
| | | | A97: using local and renewable energy | 1 | |

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Table 26. (cont.) Evaluation of Manisa-Kütahya-İzmir Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| urban infrastructure and services | P35: enhancing urban green space | 1 | A98: protecting existing green space in urban settlements | 1 | ➢ proposing green belt around the inner city of İzmir<br>➢ proposing forestation in the scrubs which damaged by settlements and proposing green belts in these areas around large settlements<br>➢ proposing regional parks and recreation areas for the needs of open and green spaces, picnicking and having rest |
| | | | A99: increasing the quality of existing green spaces | 1 | |
| | | | A100: ensuring adequate green spaces for all neighborhoods | 1 | |
| | | | A101: integrating green space structures through the creation of green corridors | 1 | |
| | | | A102: proposing family gardens | 0 | |
| | P36: ensuring accessibility of urban green spaces | 0 | A103: connecting pedestrian and cycling paths to urban green spaces | 0 | No policy / action |
| | | | A104: locating new green spaces within walking distance of residents | 0 | |
| | P37: integrating health considerations in planning strategies | 1 | A105: ensuring areas for health facilities | 1 | ➢ using thermal resources in tourism facilities<br>➢ proposing 'health protection line' in boundaries of all properties in industrial districts, depots and warehouses<br>➢ prohibiting factories causing pollution and depots storing explosives in central business districts<br>➢ proposing lower scale plans to ensure necessary technical and social infrastructure areas for population in urban settlements<br>➢ locating mines and stone quarries far from settlements<br>➢ setting location standards through natural gas pipe lines, energy transport lines and water pipe lines<br>➢ setting location standards for transformers, gas stations and establishments using explosives |
| | | | A106: improving existing health centers | 0 | |
| | | | A62: locating facilities which may harm human health far from settlements and especially residential areas | 1 | |
| | | | A107: proposing facilities and areas for health tourism | 1 | |
| | P38 : reducing effects of pollution to health | 1 | A108: setting local pollution limits | 0 | ➢ preventing air, soil and water pollution and treating existing polluted environment<br>➢ controlling industrial development to prevent pollution<br>➢ forcing investors to solve environmental problems if their investment has a possibility to cause pollution |
| | | | A79: planning buffer zones along two sides of main transportation arteries | 0 | |

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Table 26. (cont.) Evaluation of Manisa-Kütahya-İzmir Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| urban infrastructure and services | P39: ensuring educational facilities | 1 | A109: improving existing educational centers | 0 | ➢ proposing lower scale plans to ensure cultural facilities appropriate to legal standards<br>➢ proposing sites for techno parks<br>➢ proposing sites for university developments in west and north İzmir |
| | | | A110: ensuring new educational centers in developing residential areas | 1 | |
| | | | A111: ensuring educational centers aimed at employment | 0 | |
| | | | A112: ensuring educational centers for local organizations and public education centers | 0 | |
| residential areas | P40: ensuring safety and security in residential areas | 1 | A45: setting design standards for durability and reparability of new developments | 0 | ➢ proposing lower scale plans to consider disaster risk (earthquake, flood, landslide, etc.)<br>➢ considering fault lines while locating development areas between Güzelbahçe-Seferihisar in İzmir<br>➢ considering natural (slope, fault lines, floodplains, wetlands, soil type) legal (Sites, forests, agricultural lands, natural conservation areas, conservation zones of dams, pastures, maquis, scrubs) and artificial (highways, railways, industrial zones) thresholds in location decisions<br>➢ limiting the dimensions of industrial activities in urban settlements and avoiding huge industrial districts in inner city<br>➢ preventing storage of hazardous materials such as explosives, hunting materials, etc. in depots<br>➢ setting location standards through natural gas pipe lines, energy transport lines and water pipe lines<br>➢ setting location standards for transformers, gas stations and establishments using explosives |
| | | | A113: securing good quality and socially integrated housing and living conditions | 0 | |
| | | | A114: avoiding urban pattern which includes narrow streets and cul-de-sacs | 0 | |
| | | | A61: locating residential areas far from dangerous sites | 1 | |
| | | | A62: locating facilities which may harm human health far from settlements and especially residential areas | 1 | |
| | | | A115: ensuring adequate permeable soil in residential areas to prevent flood | 0 | |
| | | | A63: considering regulations about technical infrastructure and setting location standards through and around them | 1 | |
| | | | A116: proposing areas for usage after disaster | 0 | |
| | P41: fostering social inclusion and equity in housing opportunities | 0 | A117: ensuring small and efficient affordable housing for urban poor | 0 | No policy / action |
| | | | A118: ensuring alternative types of forms and functions in residential districts for people with different pleasures | 0 | |
| | | | A119: ensuring housing units for people who lost their houses after disasters and urban renewal projects | 0 | |

As an evaluation of the Manisa-Kütahya-İzmir Environment Plan (Table 26), it should be noted that the policies of sustainability are generally considered in policy areas except urban infrastructure and services and residential areas. The situations in which both policies and their actions are not considered are seen in five policies (P28, P29, P31, P36 and P41). Also, there is a lack of supporting actions in policies coded P14, P15 and P38. There are some statements opposing to the policies coded P19, P21, P25 and P26. These BUT statements may cause unsustainable results in the planning area.

### 4.3.2. Aydın – Muğla – Denizli Environment Plan (1/100000)

The Aydın – Muğla – Denizli Environment Plan is made by a private planning office which is assigned by the Ministry of Environment and Forestry for the planning period until 2025. It is firstly approved in 17.07.2007 by the Ministry of Environment and Forestry. Then, the objections occurred in the hanging period of the plan are evaluated and the plan is reapproved in 30.01.2008. The application of the plan is also stopped in 14.07.2008 by the Council of State because of the reason that it is approved before the regulation (published in 11.11.2008) about the environment plans is published. Currently, the plan is also ready to be reapproved as mentioned by the authorities of the Ministry of Environment and Forestry (2009).

The planning area of the Aydın – Muğla – Denizli Environment Plan is located in the Aydın – Muğla – Denizli Second Level Statistical Region (NUTS Area), coded TR-32. The planning area includes 3 provinces (Aydın, Muğla, Denizli).

The aim of this plan is to create a sustainable and livable environment in the whole planning area, to preserve the agricultural, touristic and historic identity and to ensure planned development and growth with planning principles appropriate to the sectored development goals and in the scope of the development policies of Turkey.

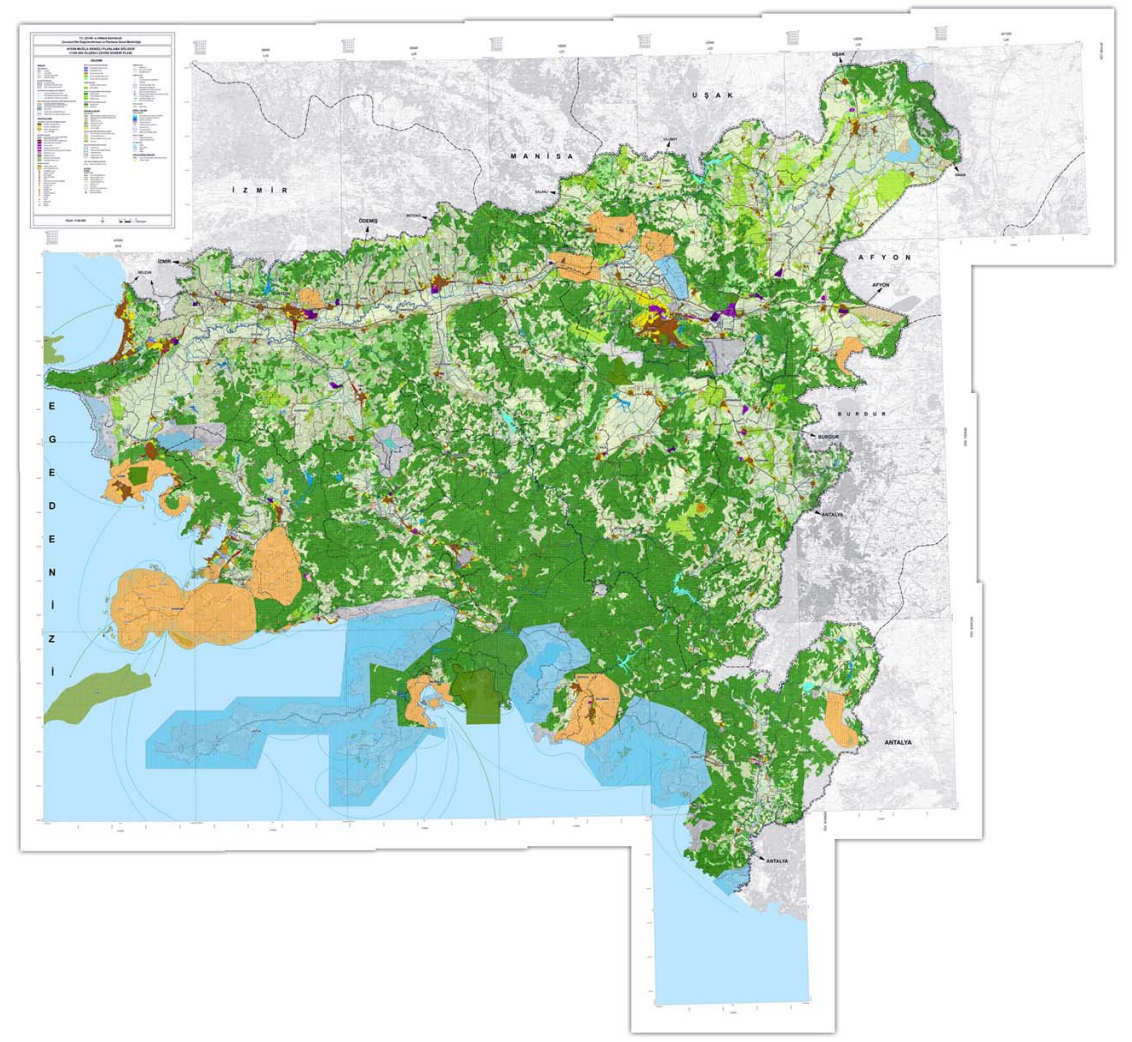


Figure 8. Aydın-Muğla-Denizli Environment Plan
(Source: Chamber of City Planners, İzmir)

Table 27. Evaluation of Aydın-Muğla-Denizli Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| policy areas | POLICIES | policy scores | URBAN PLANNING ACTIONS FOR SUSTAINABILITY | action scores | GOALS AND OBJECTIVES OF AYDIN-MUĞLA-DENİZLİ ENVIRONMENT PLAN REGARDING EACH POLICY AND ITS ACTIONS |
|---|---|---|---|---|---|
| natural resources | P1: safeguarding natural areas | 1 | A1: preventing construction on natural areas | 1 | ➢ ensuring preservation and usage balance<br>➢ preserving, vitalizing and developing natural, cultural and historic environment<br>➢ preserving natural values while improving them and increasing their added-values<br>➢ labeling ecologically sensitive areas, special environment conservation areas, national parks, natural parks, natural conservation areas, wildlife conservation areas, wetlands and habitats of birds and plants as absolute conservation areas<br>➢ considering legal requirements in officially registered sites<br>➢ considering water basins, dams, conservation areas of dams, rivers, lakes, forests, sloppy lands, landslide areas, habitats of sea turtles, Aegean seal, important birds and plants, cultural and tourism preservation and development regions, tourism centers, national parks, natural parks and wildlife development areas as natural thresholds of planning<br>➢ preserving natural topography of coasts and avoiding excavation and fill, mines and stone quarries, waste disposal and burning and pulling sand, seaweed, pebble and rush from coasts |
| | | | A2: continuing existing legal restrictions and site decisions for sites with special characteristics and proposing new legal restrictions if needed | 1 | |
| | P2: mitigation of impacts of harmful activities to natural areas | 1 | A3: locating possibly harmful activities far from natural areas | 1 | ➢ taking precautions to mitigate impacts of developments to conservation areas<br>➢ proposing huge urban green spaces as buffer zones around facilities which might pollute nature<br>➢ considering natural, legal and artificial thresholds in planning decisions to mitigate negative impacts of plan to environment and especially to ecologically sensitive areas, special environment conservation areas, national parks, natural parks, natural conservation areas, wildlife conservation areas, wetlands and habitats of birds and plants<br>➢ forcing existing industrial establishments to take precautions for mitigating their impacts on environment and controlling them<br>➢ proposing compulsory infrastructure facilities for new industrial establishments and controlling them in their construction stage<br>➢ proposing agricultural industry as a few affecting type of industrial development<br>➢ avoiding impacts of agricultural facilities to soil and water resources and controlling usage of chemical materials in agriculture |
| | | | A4: setting standards for possibly harmful activities | 1 | |

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Table 27. (cont.) Evaluation of Aydın-Muğla-Denizli Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| natural resources | P3: preserving flora and fauna and promoting biodiversity | 1 | A5: protecting sensitive sites from extraction | 1 | ➢ labeling ecologically sensitive areas, special environment conservation areas, national parks, natural parks, natural conservation areas, wildlife conservation areas, wetlands and habitats of birds and plants as absolute conservation areas<br>➢ considering water basins, dams, conservation areas of dams, rivers, lakes, forests, sloppy lands, landslide areas, habitats of sea turtles, Aegean seal, important birds and plants, cultural and tourism preservation and development regions, tourism centers, national parks, natural parks and wildlife development areas as natural thresholds of planning<br>➢ protecting ecologically sensitive sites, areas rich in flora and fauna and ecosystems which are determined in national and international laws<br>➢ ensuring preservation and usage balance in ecologically sensitive sites (Bird Ecosystems in Büyük Menderes Delta and Bafa Lake and Plant Ecosystems in Batı Menteşe Mountains in Didim, and Plant Ecosystems in Akdağ-Çivril District and Bird Ecosystems in Işıklı Lake and Akdağ in Denizli) in coordination with tourism activities<br>➢ considering ecologically sensitive areas in location of new developments in Güllük Delta and Metruk Saltpan in Muğla<br>➢ ensuring development with existing character of the Yalıkavak town while preserving the ecosystems of Aegean seal in Küdür Peninsula<br>➢ locating unhealthy facilities far from sensitive regions and surroundings |
| | | | A6: proposing environmentally sensitive recreational areas which do not make any changes in nature | 1 | |
| | | | A7: determining wildlife conservation areas | 1 | |
| | P4: conserving water resources | 1 | A8: determining conservation zones in and around wetlands, river basins, valleys and groundwater resources | 1 | ➢ labeling water basin conservation areas as absolute conservation areas<br>➢ proposing wastewater purification facilities in settlements, tourism and industrial areas<br>➢ proposing unions of wastewater purification facilities for the usage of small settlements and avoiding single solutions<br>➢ avoiding impacts of agricultural facilities to soil and water resources and controlling usage of chemical materials in agriculture especially to prevent pollution of underground water |
| | | | A9: improving connections of water systems to existing water resources | 1 | |

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Table 27. (cont.) Evaluation of Aydın-Muğla-Denizli Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| natural resources | P5: improving water quality | 1 | A10: improving existing infrastructure systems for potable water | 0 | ➢ avoiding impacts of agricultural facilities to soil and water resources and controlling usage of chemical materials in agriculture especially to prevent pollution of underground water |
| | | | A11: ensuring an infrastructure system of potable water for new settlements and the settlements with a lack of potable water | 0 | |
| | | | A12: taking mitigation measures for activities which possibly cause water pollution | 1 | |
| | P6: using water more efficiently | 1 | A13: improving existing water purification facilities | 0 | ➢ calculating water reserves and promoting their sustainable usage to meet potential needs of the proposed population in 2025<br>➢ proposing wastewater purification facilities in settlements, tourism and industrial areas<br>➢ proposing unions of wastewater purification facilities for the usage of small settlements and avoiding single solutions<br>➢ avoiding impacts of agricultural facilities to soil and water resources and controlling usage of chemical materials in agriculture especially to prevent pollution of underground water |
| | | | A14: proposing new water purification facilities | 1 | |
| | | | A15: using underground water | 1 | |
| | P7: preserving ecologically productive land | 1 | A16: locating possibly harmful activities far from ecologically productive land | 1 | ➢ labeling ecologically sensitive areas, special environment conservation areas, national parks, natural parks, natural conservation areas, wildlife conservation areas, wetlands and habitats of birds and plants as absolute conservation areas<br>➢ ensuring sustainability of agricultural land with existing laws and regulations<br>➢ avoiding unplanned industrial constructions on productive lands<br>➢ avoiding added development area on agriculturally productive areas in existing settlements such as Mursallı and Ortaklar in Germencik, Aydın<br>➢ conserving existing character of agricultural lands and special product areas<br>➢ using agricultural areas with low productivity when location of development areas is necessary<br>➢ controlling irrigation facilities to minimize their negative impacts on biological and ecological land and proposing Environmental Impact Assessment in irrigation projects<br>➢ proposing precautions against wind and coast erosion<br>➢ avoiding impacts of agricultural facilities to soil and water resources and controlling usage of chemical materials in agriculture especially to prevent pollution of underground water |
| | | | A17: setting standards for the manner, location and sort of agricultural activities to prevent erosion and not to harm productive land | 1 | |
| | | | A18: setting standards for possibly harmful activities in agricultural soil | 1 | |

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Table 27. (cont.) Evaluation of Aydın-Muğla-Denizli Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| natural resources | P8: improving soil quality | 1 | A19: identifying and treating contaminated land | 1 | ➢ avoiding impacts of agricultural facilities to soil and water resources and controlling usage of chemical materials in agriculture especially to prevent pollution of underground water |
| | | | A20: taking mitigation measures for activities which possibly cause soil pollution | 1 | |
| | P9: using soil more efficiently | 1 | A21: proposing agricultural activities in lands with productive soil | 1 | ➢ supporting the operation of Yaylakavak Dam to increase the agricultural productivity in Karpuzlu, Aydın<br>➢ supporting olive growing and greenhouse facilities in agricultural land in threat of tourism and industrial facilities in Akköy, Denizli |
| | P10: preserving and improving air quality | 1 | A22: taking mitigation measures for activities which are possibly harmful to air qualityto prevent air pollution | 1 | ➢ proposing 'health protection line' in boundaries of all properties in industrial districts, depots, warehouses and thermal power plants |
| | | | A23: considering wind and drafts/air flows in planning decisions | 0 | |
| cultural heritage | P11: ensuring appropriate conservation, renovation and use/reuse of urban cultural and historic heritage | 1 | A24: continuing existing legal restrictions and site decisions and proposing new conservation zones in areas of cultural and historic interest if needed | 1 | ➢ preserving, vitalizing and developing natural, cultural and historic environment<br>➢ preserving cultural values while improving them and increasing their added-values<br>➢ considering legal requirements in officially registered sites<br>➢ determining a cultural tourism focus in Padesa Antic City in Konacık Settlement in Bodrum, Muğla<br>➢ maintaining development of low density, conscious tourism facilities in Akyaka Settlement in Ula, Muğla while maintaining its architectural character and natural values<br>➢ determining a cultural tourism focus in Padesa Antic City in Konacık Settlement in Bodrum, Muğla |
| | | | A25: increasing accessibility of buildings and areas of cultural and historic interest | 0 | |
| | | | A26: maintaining cultural and historic tourism with some standards not to damage heritages and sites | 1 | |
| | | | A27: ensuring areas for cultural facilities in and around urban cultural and historic heritages with some standards not to damage them | 1 | |

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Table 27. (cont.) Evaluation of Aydın-Muğla-Denizli Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| cultural heritage | P12: increasing consciousness about cultural heritage and urban identity | 1 | A28: preparing symbolic and structural projects | 0 | ➢ preserving agricultural, touristic and historic identity<br>➢ maintaining development of low density, conscious tourism facilities in Akyaka Settlement in Ula, Muğla while maintaining its architectural character and natural values<br>➢ proposing daily tourism facilities in Atça in Sultanhisar, Aydın while supporting its characteristic of having a settlement plan similar to Paris urban plan<br>➢ ensuring the presentation of antic cities to support daily tourism in villages (Amyzon Antic City in villages called Mersinbeleni and Gaffarlar in Aydın)<br>➢ proposing huge urban green spaces in natural and cultural heritage areas with high potential of tourism<br>➢ determining Ortakent-Yahşi Settlement as a socio-cultural center of Bodrum Peninsula, Muğla |
| | | | A29: creating cultural and historical public spaces and landmarks | 1 | |
| | | | A30: proposing activity areas for presentation of cities and settlements | 1 | |
| economic activity areas | P13: supporting economic activity in agriculture sector | 1 | A31: preventing construction on agricultural lands | 1 | ➢ supporting agricultural industrial activities which is important in sustainable economics<br>➢ avoiding impacts of agricultural facilities to soil and water resources and controlling usage of chemical materials in agriculture especially to prevent pollution of underground water<br>➢ considering legal requirements in agricultural lands to ensure their sustainability<br>➢ avoiding unplanned industrial constructions on productive lands<br>➢ avoiding added development area on agriculturally productive areas in existing settlements such as Mursallı and Ortaklar in Germencik, Aydın<br>➢ conserving existing character of agricultural lands and special product areas<br>➢ using agricultural areas with low productivity when location of development areas is necessary<br>➢ controlling irrigation facilities to minimize their negative impacts on biological and ecological land and proposing Environmental Impact Assessment in irrigation projects<br>➢ supporting ecologic agriculture and eco-tourism<br>➢ proposing organized agricultural districts<br>➢ supporting greenhouse facilities<br>➢ determining areas having agricultural potential and supporting this sector in these settlements<br>➢ supporting olive growing and greenhouse facilities in agricultural land in threat of tourism and industrial facilities in Akköy, Denizli<br>➢ proposing agricultural warehouses |
| | | | A32: proposing appropriate types of agricultural production due to the characteristics of local soil, climate and other natural conditions | 1 | |
| | | | A33: using productive soil as food fields for agricultural activities | 1 | |
| | | | A34: improving pastures and ensuring their access to support animal feeders in rural settlements | 0 | |
| | | | A35: proposing sites for agricultural cooperatives | 0 | |

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Table 27. (cont.) Evaluation of Aydın-Muğla-Denizli Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| economic activity areas | P14: developing industrial developments integrated with agriculture | 1 | A36: managing transportation connections between agricultural lands and industrial developments | 1 | ➢ supporting agricultural industrial activities which is important in sustainable economics<br>➢ supporting greenhouse facilities<br>➢ proposing agricultural warehouses<br>➢ locating organized agricultural districts and warehouses near industrial districts<br>➢ proposing agricultural industrial establishments in organized industrial districts<br>➢ proposing an organized agricultural district in which wine industry is supported in Baklan, Denizli<br>➢ supporting agricultural industry depending on viticulture and wine industry in Bekilli, Denizli |
| | P15: increasing awareness and supporting the usage of new technologies in agriculture sector | 0 | A37: proposing educational centers for new techniques and technologies in agricultural production | 0 | No policy / action |
| | | | A38: managing transportation connections between agricultural lands and university or techno parks | 0 | |
| | | | A39: developing eco-villages and farms in which tourism and agricultural activities are taken place together | 0 | |
| | P16: promoting eco-labeled, organic, ethical and fair trade products | 1 | A40: proposing organic farms in appropriate locations | 0 | ➢ supporting ecologic agriculture and eco-tourism |

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Table 27. (cont.) Evaluation of Aydın-Muğla-Denizli Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| economic activity areas | P17: supporting economic activity in ecologically sensitive industrial development | 0 | A41: providing adequate area for ecologically sensitive industrial development | 0 | ➢ proposing attraction centers for industrial investments to mitigate the extravagance of financial resources<br>➢ proposing an organized industrial district and an airport in Söke, Aydın<br>➢ avoiding some facilities in industrial development districts (thermal power plants, nuclear power plants and nuclear reactors, radioactive waste disposals, toxic and hazardous waste disposals, exclusive producers and industrial facilities and depots unhealthy for nature and human beings)<br>➢ proposing depots and warehouses<br>➢ proposing new industrial development sites in Yatağan to support the industrial identity of the settlement<br>➢ supporting textile industry in Denizli<br>➢ proposing a small industrial focus in Yassıhöyük in Acıpayam, Denizli with its travertine marble factories<br>➢ proposing new industrial development areas in city center of Babadağ Settlement in Denizli<br>➢ determining thermal power plants as main resource of industrial sector in Yatağan, Yeniköy and Kemerköy in Muğla |
| | | | A42: managing the relationship of ecologically sensitive industrial development to public transport to ensure accessibility | 0 | |
| | | | A43: setting standards for warehouses and depots in relation with ecologically sensitive industrial districts | 1 | |
| | | | A44: ensuring product and labor mobility with integrated alternative modes of transport | 0 | |
| | | | A45: setting design standards for durability and reparability of new developments | 0 | |
| | | | A46: converting existing industrial districts to ecologically sensitive industrial districts | 0 | |
| | P18: supporting ecologically sensitive industrial development with new technologies | 1 | A47: planning areas for techno parks and technology development districts and relating them to industrial developments | 1 | ➢ proposing new technologies in solid waste disposal facilities<br>➢ proposing a techno park area in Aydın |

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Table 27. (cont.) Evaluation of Aydın-Muğla-Denizli Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| economic activity areas | P19: ensuring environmentally sensitive tourism and recreation | 1 | A48: locating areas of natural sports, botanical gardens, zoological gardens, festival areas, fairs, etc. which make small changes in nature | 1 | ➢ supporting tourism in all settlements which have tourism potential to provide justice in the share of added-value of tourism sector<br>➢ supporting coastal, cultural, natural and thermal tourism<br>➢ including small settlements rich in cultural values to the cultural tour routes<br>➢ using local geothermal resources in tourism<br>➢ supporting tourism in mountain pastures<br>➢ supporting pension operators in villages and mountain pastures<br>➢ increasing contribution of tourism facilities to local economics in small settlements<br>➢ ensuring the presentation of antic cities to support daily tourism in villages (Amyzon Antic City in villages called Mersinbeleni and Gaffarlar in Aydın)<br>➢ proposing a huge urban green space to support daily tourism in Yeniköy, Aydın<br>➢ canceling the planning decisions about development zones in the plan with 1/25000 scale in Kuşadası to control tourism facilities and secondary housing and to prevent uncontrolled urbanism which damage sea, nature and history<br>➢ supporting ecologic agriculture and eco-tourism<br>➢ supporting small commercial units in small touristic settlements<br>➢ proposing daily tourism facilities in Atça in Sultanhisar, Aydın while supporting its characteristic of having a settlement plan similar to Paris urban plan<br>➢ increasing tourism incomes of Muğla by preserving its ecologically sensitive areas, special environment conservation areas, national parks, natural parks, natural conservation areas, natural and archeological sites and habitats of birds and plants<br>➢ proposing international ski centers<br>➢ proposing river tourism<br>➢ supporting rural tourism facility spaces such as farm-houses, village-houses, mountain pasture houses and mountain houses<br>➢ proposing trekking routes<br>➢ proposing landscape project for Tabakhane River and surrounding spaces to support recreation facilities, eco-tourism and mountain pasture tourism in the proposed special planning zone in Tralleis-Paşa Mountain Pasture in Aydın<br>➢ proposing six touristic tour routes<br>➢ proposing tourism facilities for wine tasting in vineyards<br>➢ regulating tourism facilities to find solutions appropriate to natural vegetation and topography in their architectural projects and lower scale plans<br>➢ preserving historical and cultural identity of the region with architectural solutions appropriate to environmental characteristics while deciding color, roof cover, solid void ratio in elevation, etc.<br>➢ maintaining development of low density, conscious tourism facilities in Akyaka Settlement in Ula, Muğla while maintaining its architectural character and natural values<br>➢ BUT<br>➢ maintaining existing rapid tourism and entertainment sector in Göltürkbükü in Bodrum, Muğla<br>➢ proposing golf tourism in Milas and in the center of Muğla<br>➢ maintaining the existing character of Bitez in Bodrum, Muğla with its secondary housing units and small hotels |
| | | | A6: proposing environmentally sensitive recreational areas which do not make any changes in nature | 1 | |
| | | | A26: maintaining cultural and historic tourism with some standards not to damage heritages and sites | 1 | |
| | | | A49: encouraging alternative and ecologic tourism including tour routes connecting small touristic settlements | 1 | |
| | | | A50: avoiding harmful types of tourism | 0 | |

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Table 27. (cont.) Evaluation of Aydın-Muğla-Denizli Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| economic activity areas | P20: supporting local economic activity | 1 | A51: proposing local markets and bazaars for selling local products | 1 | ➢ supporting local economic development in Çakmar village in Koçarlı, Aydın by locating a university area near the settlement<br>➢ supporting family businesses on textile industry in villages of Karacasu in Aydın<br>➢ supporting economics of small settlements by proposing tourism, recreational and agricultural facility areas<br>➢ supporting the production and sale of copper gifts while supporting mine dependent industry and agriculture in Kavaklıdere in Muğla<br>➢ supporting sale stands in village houses in Buldan in Denizli while supporting textile industry<br>➢ proposing tourism facilities for wine tasting in vineyards |
| | | | A30: proposing activity areas for presentation of cities and settlements | 1 | |
| | | | A52: ensuring provision of all immediate needs locally | 0 | |
| settlement location and form | P21: avoiding urban sprawl and promoting compact settlements | 1 | A53: preference for medium rise, high density developments | 0 | ➢ ensuring planned development and growth<br>➢ developing spatial development strategies and avoiding rapid and uncontrolled construction<br>➢ canceling the planning decisions about unnecessary development areas for the exaggerated population proposed in existing previous development plans and proposing their revision<br>➢ avoiding unnecessary development areas and using inner city areas for proposed population in Aydın<br>➢ canceling the planning decisions about development zones in the plan with 1/25000 scale in Kuşadası to control tourism facilities and secondary housing and to prevent uncontrolled urbanism which damage sea, nature and history<br>➢ proposing a priority for preparing the lower scale plans in Ula in Muğla to avoid the local planning studies<br>➢ proposing lower scale plans to ensure renewal and rehabilitation of existing residential areas<br>➢ BUT<br>➢ maintaining the existing character of Bitez in Bodrum, Muğla with its secondary housing units and small hotels |
| | | | A54: reusing derelict, rebundant and vacant areas | 1 | |
| | | | A55: regenerating disadvantaged areas | 1 | |
| | | | A56: renewal of inner city areas if necessary | 1 | |
| | | | A57: concentrating facilities in inner cities | 1 | |
| | | | A58: controlling and avoiding incremental developments | 1 | |

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Table 27. (cont.) Evaluation of Aydın-Muğla-Denizli Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| settlement location and form | P22: selecting appropriate location for new settlements | 1 | A59: considering climatic conditions while locating settlements | 0 | ➢ considering water basins, dams, conservation areas of dams, rivers, lakes, forests, sloppy lands, landslide areas, habitats of sea turtles, Aegean seal, important birds and plants, cultural and tourism preservation and development regions, tourism centers, national parks, natural parks and wildlife development areas as natural thresholds of planning<br>➢ determining conservation areas in which location of constructions is avoided<br>➢ considering transportation projects, dams, irrigation areas, organized industrial districts and projects of governmental institutions while locating development areas<br>➢ considering ecologically sensitive areas in location of new developments in Güllük Delta and Metruk Saltpan in Muğla<br>➢ avoiding unplanned industrial constructions on productive lands<br>➢ avoiding added development area on agriculturally productive areas in existing settlements such as Mursallı and Ortaklar in Germencik, Aydın<br>➢ proposing 'health protection line' in boundaries of all properties in industrial districts, depots, warehouses and thermal power plants locating organized agricultural districts and warehouses near industrial districts<br>➢ supporting local economic development in Çakmar village in Koçarlı, Aydın by locating a university area near the settlement<br>➢ locating unhealthy facilities far from sensitive regions and surroundings<br>➢ considering regulations and legal restrictions about disasters and proposing lower scale plans to preparing geological research and geophysical and geotechnical researches when necessary while locating constructions in disaster prone areas<br>➢ proposing lower scale plans to ask responsible institutions for advices about location on areas with flood risk |
| | | | A60: considering physical conditions while locating settlements | 1 | |
| | | | A61: locating residential areas far from dangerous sites | 1 | |
| | | | A62: locating facilities which may harm human health far from settlements and especially residential areas | 1 | |
| | | | A63: considering regulations about technical infrastructure and setting location standards through and around them | 0 | |

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Table 27. (cont.) Evaluation of Aydın-Muğla-Denizli Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| urban infrastructure and services | P23: ensuring infrastructure facilities | 1 | A64: improving existing infrastructure systems | 1 | ➢ supporting technical and urban infrastructure of Bodrum Peninsula<br>➢ improving the existing roads to villages and settlements in mountains |
| | | | A65: ensuring infrastructure facilities for new developments | 1 | |
| | | | A66: avoiding development in areas without infrastructure | 0 | |
| | | | A63: considering regulations about technical infrastructure and setting location standards through and around them | 0 | |
| | P24: managing transportation connections to support economic activity | 1 | A67: managing the transportation connections with airports | 0 | ➢ accepting the economic contributing factor of the railway between Güllük Harbor and the city center of Aydın<br>➢ proposing an organized industrial district and an airport in Söke, Aydın<br>➢ proposing depots and nonresidential working areas near Güllük Harbor<br>➢ proposing a transportation system solution considering existing road hierarchy and needs of the city while depending on governmental investments and projects<br>➢ supporting and improving highways and territorial roads |
| | | | A68: managing the transportation connections with existing harbors | 1 | |
| | | | A69: ensuring integrated land-use | 0 | |
| | P25: reducing travel demand in new developments | 0 | A70: ensuring the mixed use of buildings and developments with a good balance of jobs, housing and services | 0 | No policy / action |
| | | | A53: preference for medium rise, high density developments | 0 | |
| | | | A71: reducing the distances between residences, employment and services | 0 | |
| | P26: reducing the necessity for private motorized transport | 1 | A72: promoting attractive alternative modes of transportation accessible to all | 1 | ➢ solving the problems of unbalanced and unproductive system between modes of transportation, the lack of improvements in railways and maritime lines, and the agglomeration of transportation in territorial roads<br>➢ supporting the Aydın-Çine-Güllük Railways<br>➢ proposing a light rail system in center of Aydın<br>➢ supporting Söke Airport<br>➢ supporting yacht harbors<br>➢ supporting maritime lines in Aydın and Muğla |

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Table 27. (cont.) Evaluation of Aydın-Muğla-Denizli Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| urban infrastructure and services | P27: improving and giving priority to public transport | 1 | A73: improving the quality of existing public transportation services | 0 | ➢ proposing a light rail system in center of Aydın |
| | | | A74: designing new and integrated public transportation services for new developments | 1 | |
| | P28: improving and giving priority to walking and cycling | 0 | A75: designing new and safe walking and cycling paths | 0 | No policy / action |
| | | | A76: integrating walking and cycling paths to public transport | 0 | |
| | | | A77: improving conditions for pedestrians | 0 | |
| | P29: minimizing impacts of highways to settlements | 0 | A78: locating through traffic far from city centers to reduce transit traffic volumes in the city | 0 | No policy / action |
| | | | A79: planning buffer zones along two sides of main transportation arteries | 0 | |
| | P30: ensuring equitable access to public services and facilities | 1 | A80: ensuring adequate number of major services in all settlements | 0 | ➢ accepting the publicity of coasts and ensuring their equal and free usage by everyone |
| | | | A81: locating public services within walking distance of residents | 0 | |
| | | | A82: managing the relationship of major services to public transport | 0 | |
| | | | A83: using special areas as public spaces to ensure accessibility to all citizens | 1 | |
| | P31: fostering social inclusion and equity in public services and facilities | 1 | A84: improving conditions of pavements for disabled people in wheelchairs | 0 | ➢ providing justice in the share of added-values of potentials in cities and regions |
| | | | A85: ensuring public transportation especially for the parts of city in which urban poor lives | 0 | |
| | | | A86: ensuring alternative types of activities in public spaces for people from different genders, ages and income groups | 0 | |
| | | | A87: ensuring alternative types of religious buildings, areas and services for people from different religions | 0 | |

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Table 27. (cont.) Evaluation of Aydın-Muğla-Denizli Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| urban infrastructure and services | P32: encouraging waste reduction, re-use, recycling and recovery | 1 | A88: proposing waste disposal facilities in new settlements | 1 | ➢ proposing an integrated solid waste management for aims of efficient and safe management of residential solid waste, reducing waste to minimize impacts on nature and human, reducing waste in its resource, recycling, reuse, composting, using and storing for energy gain, etc.<br>➢ proposing waste disposal areas<br>➢ proposing areas for purification facilities<br>➢ locating unhealthy facilities far from sensitive regions and surroundings |
| | | | A89: improving existing waste disposal facilities | 0 | |
| | | | A90: proposing waste recycling and recovery facilities in new settlements | 1 | |
| | | | A91: improving existing waste recycling and recovery facilities | 0 | |
| | | | A62: locating facilities which may harm human health far from settlements and especially residential areas | 1 | |
| | P33: minimizing impact and costs of waste disposal | 1 | A92: setting standards for waste management in industrial developments | 1 | ➢ proposing waste disposal areas<br>➢ proposing areas for purification facilities<br>➢ proposing new technologies in solid waste disposal facilities<br>➢ avoiding some facilities in industrial development districts (thermal power plants, nuclear power plants and nuclear reactors, radioactive waste disposals, toxic and hazardous waste disposals, exclusive producers and industrial facilities and depots unhealthy for nature and human beings) |
| | | | A93: ensuring responsible disposal for hazardous waste | 1 | |
| | | | A94: proposing a common waste disposal unit for several neighborhood settlements in optimal location | 0 | |
| | P34: providing balanced and efficient usage of energy resources | 1 | A95: setting design standards for energy efficiency in new settlements and buildings | 1 | ➢ determining spatial planning decisions depending on potential resources<br>➢ using geothermal resources efficiently to support economics and minimize environmental impacts<br>➢ using geothermal resources for tourism, electricity, residential heating and greenhouse heating<br>➢ signing natural gas pipe lines in plan<br>➢ signing electricity power transfer lines in plan |
| | | | A96: using alternative energy resources instead of nonrenewable energy resources in existing buildings and settlements | 1 | |
| | | | A97: using local and renewable energy | 1 | |
| | P35: enhancing urban green space | 1 | A98: protecting existing green space in urban settlements | 1 | ➢ proposing a huge urban green space and thematic parks in Aydın<br>➢ proposing huge urban green spaces as buffer zones around facilities which might pollute nature<br>➢ proposing a huge urban green space to support daily tourism in Yeniköy, Aydın<br>➢ proposing huge urban green spaces in natural and cultural heritage areas with high potential of tourism<br>➢ labeling ecologically sensitive areas, special environment conservation areas, national parks, natural parks, natural conservation areas, wildlife conservation areas, wetlands and habitats of birds and plants as absolute conservation areas |
| | | | A99: increasing the quality of existing green spaces | 0 | |
| | | | A100: ensuring adequate green spaces for all neighborhoods | 1 | |
| | | | A101: integrating green space structures through the creation of green corridors | 0 | |
| | | | A102: proposing family gardens | 0 | |

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Table 27. (cont.) Evaluation of Aydın-Muğla-Denizli Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| urban infrastructure and services | P36: ensuring accessibility of urban green spaces | 0 | A103: connecting pedestrian and cycling paths to urban green spaces | 0 | No policy / action |
| | | | A104: locating new green spaces within walking distance of residents | 0 | |
| | P37: integrating health considerations in planning strategies | 1 | A105: ensuring areas for health facilities | 0 | ➢ locating unhealthy facilities far from sensitive regions and surroundings<br>➢ proposing geothermal tourism<br>➢ proposing 'health protection line' in boundaries of all properties in industrial districts, depots, warehouses and thermal power plants |
| | | | A106: improving existing health centers | 0 | |
| | | | A62: locating facilities which may harm human health far from settlements and especially residential areas | 1 | |
| | | | A107: proposing facilities and areas for health tourism | 1 | |
| | P38 : reducing effects of pollution to health | 1 | A108: setting local pollution limits | 0 | ➢ locating unhealthy facilities far from sensitive regions and surroundings<br>➢ avoiding impacts of agricultural facilities to soil and water resources and controlling usage of chemical materials in agriculture especially to prevent pollution of underground water<br>➢ proposing 'health protection line' in boundaries of all properties in industrial districts, depots, warehouses and thermal power plants<br>➢ avoiding some facilities in industrial development districts (thermal power plants, nuclear power plants and nuclear reactors, radioactive waste disposals, toxic and hazardous waste disposals, exclusive producers and industrial facilities and depots unhealthy for nature and human beings) |
| | | | A79: planning buffer zones along two sides of main transportation arteries | 0 | |
| | P39: ensuring educational facilities | 1 | A109: improving existing educational centers | 0 | ➢ proposing a techno park area in Aydın<br>➢ proposing university areas |
| | | | A110: ensuring new educational centers in developing residential areas | 1 | |
| | | | A111: ensuring educational centers aimed at employment | 0 | |
| | | | A112: ensuring educational centers for local organizations and public education centers | 0 | |

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Table 27. (cont.) Evaluation of Aydın-Muğla-Denizli Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| residential areas | P40: ensuring safety and security in residential areas | 1 | A45: setting design standards for durability and reparability of new developments | 0 | ➢ reducing the impacts of disasters<br>➢ considering regulations and legal restrictions about disasters and proposing lower scale plans to preparing geological research and geophysical and geotechnical researches when necessary while locating constructions in disaster prone areas<br>➢ considering water basins, dams, conservation areas of dams, rivers, lakes, forests, sloppy lands, landslide areas, habitats of sea turtles, Aegean seal, important birds and plants, cultural and tourism preservation and development regions, tourism centers, national parks, natural parks and wildlife development areas as natural thresholds of planning<br>➢ proposing lower scale plans to ask responsible institutions for advices about location on areas with flood risk<br>➢ considering transportation projects, dams, irrigation areas, organized industrial districts and projects of governmental institutions while locating development areas |
| | | | A113: securing good quality and socially integrated housing and living conditions | 0 | |
| | | | A114: avoiding urban pattern which includes narrow streets and cul-de-sacs | 0 | |
| | | | A61: locating residential areas far from dangerous sites | 1 | |
| | | | A62: locating facilities which may harm human health far from settlements and especially residential areas | 1 | |
| | | | A115: ensuring adequate permeable soil in residential areas to prevent flood | 0 | |
| | | | A63: considering regulations about technical infrastructure and setting location standards through and around them | 0 | |
| | | | A116: proposing areas for usage after disaster | 0 | |
| | P41: fostering social inclusion and equity in housing opportunities | 0 | A117: ensuring small and efficient affordable housing for urban poor | 0 | No policy / action |
| | | | A118: ensuring alternative types of forms and functions in residential districts for people with different pleasures | 0 | |
| | | | A119: ensuring housing units for people who lost their houses after disasters and urban renewal projects | 0 | |

When the Aydın-Muğla-Denizli Environment Plan is evaluated generally in terms of the items in the checklist (Table 27), it is concluded that the policies of sustainability are considered in policy areas of natural resources, cultural heritage and settlement location and form; however, there are some policies which are not considered in policy areas of economic activity areas, urban infrastructure and services and

residential areas. The opposing BUT statements are only seen in policies of “ensuring environmentally sensitive tourism and recreation” and “avoiding urban sprawl and promoting compact settlements”.

### 4.3.3. Uşak Environment Plan (1/100000)

The Uşak Environment Plan is made by a partnership of two private companies which are assigned by the Uşak Governorship for the planning period until 2020. It is approved with the decision of Provincial Assembly, No. 82, in 8.10.2008 and the decision of Uşak Municipality Assembly, No.240, in 8.9.2008.

It is aimed to prepare an environment plan which will control socio-economic development and physical pattern parallel to this development in the context of sustainable development and environmental protection. Ensuring preservation and usage balance, preserving natural, historic and cultural values of the city with a planned and sustainable development and improving economic development of the city are main aims of the plan.

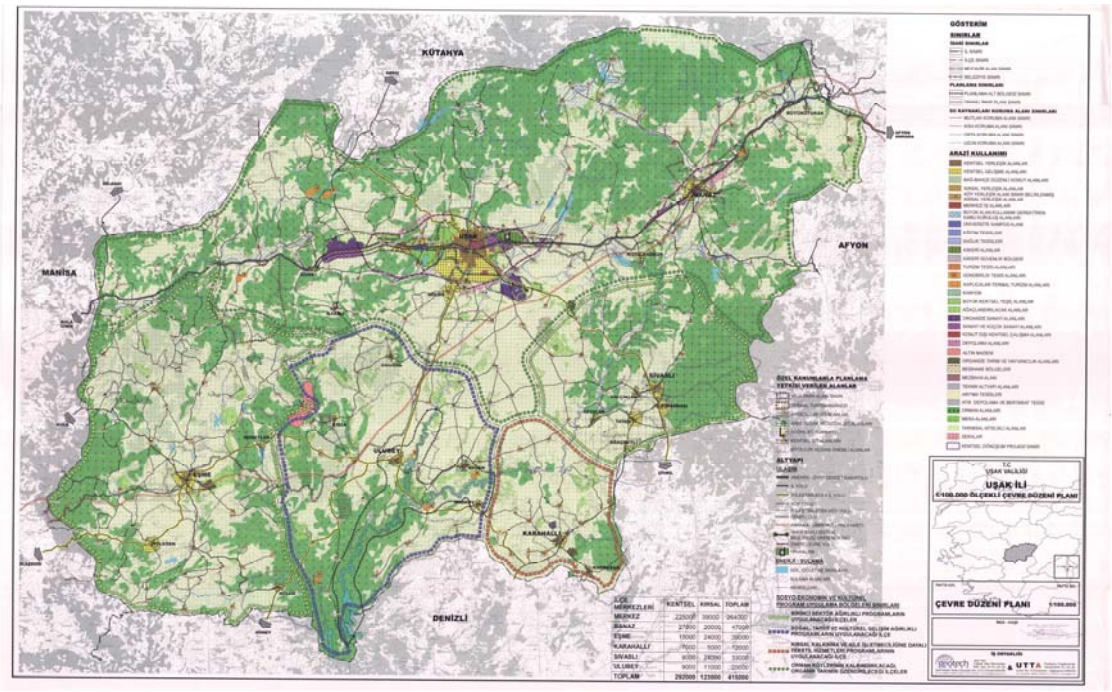


Figure 9. Uşak Environment Plan
(Source: Chamber of City Planners, İzmir)

Table 28. Evaluation of Uşak Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| policy areas | POLICIES | policy scores | URBAN PLANNING ACTIONS FOR SUSTAINABILITY | action scores | GOALS AND OBJECTIVES OF UŞAK ENVIRONMENT PLAN REGARDING EACH POLICY AND ITS ACTIONS |
|---|---|---|---|---|---|
| natural resources | P1: safeguarding natural areas | 1 | A1: preventing construction on natural areas | 1 | ➢ conserving natural, historical and cultural richness of the city to ensure sustainable development<br>➢ conserving forests, agricultural lands, rivers, ground and underground resources and flora and fauna in these areas<br>➢ conserving the environment as a whole while recognizing and using it well<br>➢ ensuring preservation and usage balance<br>➢ preserving forests and tree entities<br>➢ proposing legal requirements about asking responsible institutions for advices in allotments from forest lands to other sectors<br>➢ proposing special management plans and calculations about carrying capacity of forests while locating bungalows, mocamps and camping areas with light construction materials<br>➢ minimizing investment costs with ecologically sensitive new types of housing units<br>➢ preserving, vitalizing and contributing urban, natural and archeological sites to economics with activities like tourism and promoting to prepare their conservation plans while considering legal requirements |
| | | | A2: continuing existing legal restrictions and site decisions for sites with special characteristics and proposing new legal restrictions if needed | 1 | |
| | P2: mitigation of impacts of harmful activities to natural areas | 1 | A3: locating possibly harmful activities far from natural areas | 1 | ➢ proposing legal restrictions and sanctions about mining areas and activities to mitigate impacts of gold mines in Ulubey settlement<br>➢ proposing special management plans and calculations about carrying capacity of forests while locating bungalows, mocamps and camping areas with light construction materials |
| | | | A4: setting standards for possibly harmful activities | 1 | |
| | P3: preserving flora and fauna and promoting biodiversity | 1 | A5: protecting sensitive sites from extraction | 1 | ➢ preserving flora and fauna<br>➢ proposing passive recreational areas (such as botanical gardens, zoological gardens and nature parks)<br>➢ researching, evaluating, recognizing and conserving the biologically important sites in forests of Banaz<br>➢ proposing universities (Afyon and Uşak) to determine the inventory of flora and fauna in the city, proposing new special conservation statutes for them and ensuring their conservation and development plans and management plans<br>➢ proposing wildlife conservation and research areas |
| | | | A6: proposing environmentally sensitive recreational areas which do not make any changes in nature | 1 | |
| | | | A7: determining wildlife conservation areas | 1 | |

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Table 28. (cont.) Evaluation of Uşak Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| natural resources | P4: conserving water resources | 1 | A8: determining conservation zones in and around wetlands, river basins, valleys and groundwater resources | 1 | ➢ preserving Gediz Basin, preventing pollution of this water resource and selecting appropriate method while getting water and considering the amount of water to maintain basin's quality<br>➢ maintaining agricultural usage of Gediz Basin and preventing residential usages<br>➢ proposing ditches along two sides of transit motorways through Gediz Basin to maintain collection and purification of wastewater<br>➢ preventing pollution of stream beds, conserving streams, preventing wastewater pouring in streams, proposing restrictions for nearby usages and improving the infrastructures of them<br>➢ preserving wetlands, ensuring their healthy and adequate sustainability and proposing passive recreation areas while ensuring the preservation and usage balance<br>➢ completing the infrastructure organizations in all municipalities about wastewater purification and healthy disposals of solid waste<br>➢ encouraging new technologies such as dripping irrigation systems in agricultural facilities to maintain preservation of water resources and basins and increasing knowledge and awareness about this matter<br>➢ proposing basin management plans in lower scales with an environmental approach<br>➢ preventing pouring and connecting wastewater to streams, rivers and lakes<br>➢ preventing industries in buffer zones of rivers in wetland quality<br>➢ preventing pollution of ground and underground resources of potable and using water |
| | | | A9: improving connections of water systems to existing water resources | 1 | |
| | P5: improving water quality | 1 | A10: improving existing infrastructure systems for potable water | 1 | ➢ proposing a priority to improve urban and rural settlements located in resource conservation zones of potable and using water<br>➢ preventing pollution of ground and underground resources of potable and using water<br>➢ accelerating infrastructure investments in existing settlements and preventing construction without infrastructures in development areas |
| | | | A11: ensuring an infrastructure system of potable water for new settlements and the settlements with a lack of potable water | 0 | |
| | | | A12: taking mitigation measures for activities which possibly cause water pollution | 1 | |

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Table 28. (cont.) Evaluation of Uşak Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| natural resources | P6: using water more efficiently | 1 | A13: improving existing water purification facilities | 1 | ➢ preserving Gediz Basin, preventing pollution of this water resource and selecting appropriate method while getting water and considering the amount of water to maintain basin's quality<br>➢ encouraging new technologies such as dripping irrigation systems in agricultural facilities to maintain preservation of water resources and basins and increasing knowledge and awareness about this matter<br>➢ accelerating infrastructure investments in existing settlements and preventing construction without infrastructures in development areas<br>➢ improving existing infrastructure services to minimize costs and environmental impacts and to ensure contemporary qualities<br>➢ proposing lower scale plans to select appropriate locations for waste disposals, recycling and purification facilities |
| | | | A14: proposing new water purification facilities | 1 | |
| | | | A15: using underground water | 1 | |
| | P7: preserving ecologically productive land | 1 | A16: locating possibly harmful activities far from ecologically productive land | 1 | ➢ protecting productive land from industrial locations<br>➢ preparing projects for irrigation, completing previous project investments of irrigation, increasing investments on irrigation<br>➢ preserving and improving agricultural land and natural values to increase income level of the city<br>➢ preventing agriculture in lands with high levels of groundwater without choosing appropriate vegetation type and drainage applications<br>➢ preventing the usage of absolute agricultural lands, special product areas, planted agricultural lands and watery agricultural lands with aims different from their main usage aim (except aims of security needs, changing needs after disasters, searching and managing fuel oil and natural gas, plans and investments agreed by responsible ministries considering public interest, mining facilities agreed by responsible ministries and considering public interest, and investments about transportation and infrastructure facilities considering public interest<br>➢ allowing storage of hazardous waste and construction of their depots only if their harmlessness is proved scientifically<br>➢ preventing soil erosion<br>➢ preserving tree entities consciously, improving forest cover and preventing land allotments from forests to preserve soil and prevent soil erosion<br>➢ prohibiting agricultural activities in the areas with a slope of 20% and more<br>➢ proposing cultivation of sloping land perpendicular to the slope |
| | | | A17: setting standards for the manner, location and sort of agricultural activities to prevent erosion and not to harm productive land | 1 | |
| | | | A18: setting standards for possibly harmful activities in agricultural soil | 1 | |

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Table 28. (cont.) Evaluation of Uşak Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| natural resources | P8: improving soil quality | 1 | A19: identifying and treating contaminated land | 0 | ➢ eliminating wastes with most efficient method in shortest distance to prevent soil pollution<br>➢ prevention of pollution caused by agriculture<br>➢ preventing pollution caused by highways |
| | | | A20: taking mitigation measures for activities which possibly cause soil pollution | 1 | |
| | P9: using soil more efficiently | 1 | A21: proposing agricultural activities in lands with productive soil | 1 | ➢ preventing transformation of agricultural lands to urban usages and residential areas and encouraging their agricultural usage |
| | P10: preserving and improving air quality | 1 | A22: taking mitigation measures for activities which are possibly harmful to air qualityto prevent air pollution | 1 | ➢ preventing population growth in areas without the effect of drafts<br>➢ ensuring natural gas usage in all settlements and industries and encouraging maximum utilization from the natural gas system<br>➢ planning buffer zones (with trees whose leaves do not fall) along two sides of main transportation arteries |
| | | | A23: considering wind and drafts/air flows in planning decisions | 1 | |
| cultural heritage | P11: ensuring appropriate conservation, renovation and use/reuse of urban cultural and historic heritage | 1 | A24: continuing existing legal restrictions and site decisions and proposing new conservation zones in areas of cultural and historic interest if needed | 1 | ➢ conserving natural, historical and cultural richness of the city to ensure sustainable development<br>➢ preserving, vitalizing and contributing urban, natural and archeological sites to economics with activities like tourism and promoting to prepare their conservation plans while considering legal requirements |
| | | | A25: increasing accessibility of buildings and areas of cultural and historic interest | 0 | |
| | | | A26: maintaining cultural and historic tourism with some standards not to damage heritages and sites | 1 | |
| | | | A27: ensuring areas for cultural facilities in and around urban cultural and historic heritages with some standards not to damage them | 1 | |
| | P12: increasing consciousness about cultural heritage and urban identity | 1 | A28: preparing symbolic and structural projects | 0 | ➢ improving cultural facilities<br>➢ proposing areas for congress centers, museums, theatres, cinemas, fairs, libraries, public education centers, youth houses and exhibitions<br>➢ maintaining socio-cultural development with activities such as gastronomy and entertainment for young people from university<br>➢ locating areas of natural sports, mountain pasture tourism, mountain trekking, hunting, horse riding and wildlife observatories, festival areas, fairs and other daily tourism activities |
| | | | A29: creating cultural and historical public spaces and landmarks | 1 | |
| | | | A30: proposing activity areas for presentation of cities and settlements | 1 | |

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Table 28. (cont.) Evaluation of Uşak Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| economic activity areas | P13: supporting economic activity in agriculture sector | 1 | A31: preventing construction on agricultural lands | 1 | ➢ conserving forests, agricultural lands, rivers, ground and underground resources and flora and fauna in these areas<br>➢ promoting agricultural products with high added values<br>➢ maintaining agricultural facilities in all rural settlements<br>➢ improving animal feeding facilities with reforms, nourishment and health facilities and price and supporting policies and solving their marketing problems<br>➢ improving animal feeding facilities in infrastructure, land, transportation and microclimate<br>➢ preparing projects for irrigation, completing previous project investments of irrigation, increasing investments on irrigation<br>➢ preserving and improving agricultural land and natural values to increase income level of the city<br>➢ preventing agriculture in lands with high levels of groundwater without choosing appropriate vegetation type and drainage applications<br>➢ preventing the usage of absolute agricultural lands, special product areas, planted agricultural lands and watery agricultural lands with aims different from their main usage aim (except aims of security needs, changing needs after disasters, searching and managing fuel oil and natural gas, plans and investments agreed by responsible ministries considering public interest, mining facilities agreed by responsible ministries and considering public interest, and investments about transportation and infrastructure facilities considering public interest)<br>➢ preventing transformation of agricultural lands to urban usages and residential areas and encouraging their agricultural usage<br>➢ developing eco-villages and farms in which tourism and agricultural activities are taken place together to prevent the construction risk on agricultural lands<br>➢ proposing establishments of agricultural cooperatives<br>➢ vitalizing, activating and supporting organizational character of agricultural cooperatives |
| | | | A32: proposing appropriate types of agricultural production due to the characteristics of local soil, climate and other natural conditions | 1 | |
| | | | A33: using productive soil as food fields for agricultural activities | 1 | |
| | | | A34: improving pastures and ensuring their access to support animal feeders in rural settlements | 1 | |
| | | | A35: proposing sites for agricultural cooperatives | 1 | |
| | P14: developing industrial developments integrated with agriculture | 1 | A36: managing transportation connections between agricultural lands and industrial developments | 1 | ➢ supporting developments of agriculture, animal feeding, forestry to use these sectors as resources of industry<br>➢ taking financial, organizational and spatial precautions for utilization from animal feeding sector in leather industry<br>➢ proposing spatial decisions to promote agricultural industry and locating agricultural industries in legally appropriate areas<br>➢ proposing single and integrated agricultural industrial uses in rural settlements |

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Table 28. (cont.) Evaluation of Uşak Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| economic activity areas | P15: increasing awareness and supporting the usage of new technologies in agriculture sector | 1 | A37: proposing educational centers for new techniques and technologies in agricultural production | 1 | ➢ encouraging new technologies such as dripping irrigation systems in agricultural facilities to maintain preservation of water resources and basins and increasing knowledge and awareness about this matter<br>➢ proposing education centers to develop new agricultural production methods<br>➢ proposing Banaz rural area to be a focus of scientific researches of Uşak University<br>➢ supporting usage of high technology in agriculture and promoting organic farming<br>➢ developing eco-villages and farms in which tourism and agricultural activities are taken place together to prevent the construction risk on agricultural lands |
| | | | A38: managing transportation connections between agricultural lands and university or techno parks | 0 | |
| | | | A39: developing eco-villages and farms in which tourism and agricultural activities are taken place together | 1 | |
| | P16: promoting eco-labeled, organic, ethical and fair trade products | 1 | A40: proposing organic farms in appropriate locations | 0 | ➢ supporting usage of high technology in agriculture and promoting organic farming<br>➢ proposing new approaches on agriculture sector such as organic farming, greenhouses, alternative production and increasing efficiencies by improving existing tendencies on these approaches |
| | P17: supporting economic activity in ecologically sensitive industrial development | 1 | A41: providing adequate area for ecologically sensitive industrial development | 1 | ➢ encouraging industries and technologies which do not pollute environment<br>➢ encouraging new investments to the city<br>➢ supporting leather and textile industry<br>➢ proposing utilization from gold mine reserves to increase employment and added values<br>➢ solving problems of financing, technology, qualified staff, market and location to encourage products with high added values<br>➢ determining the type of industries as electronics, food, forestry and clothing to prevent pollution caused by industries<br>➢ controlling sizes, amounts and types of industrial establishments and encouraging medium scale industries<br>➢ ensuring employment possibilities to forest villagers and increasing their income level<br>➢ encouraging industries to be organized and informed about creating financing, activating existing financial resources, utilizing from trained human power, observing technological developments, transferring new technologies and increasing market opportunities<br>➢ proposing a light rail system between organized industrial districts and residential areas to minimize density and traffic jams in highways and prevent air and noise pollution<br>➢ allowing storage of hazardous waste and construction of their depots only if their harmlessness is proved scientifically |
| | | | A42: managing the relationship of ecologically sensitive industrial development to public transport to ensure accessibility | 1 | |
| | | | A43: setting standards for warehouses and depots in relation with ecologically sensitive industrial districts | 1 | |
| | | | A44: ensuring product and labor mobility with integrated alternative modes of transport | 1 | |
| | | | A45: setting design standards for durability and reparability of new developments | 0 | |
| | | | A46: converting existing industrial districts to ecologically sensitive industrial districts | 1 | |

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Table 28. (cont.) Evaluation of Uşak Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| economic activity areas | P18: supporting ecologically sensitive industrial development with new technologies | 1 | A47: planning areas for techno parks and technology development districts and relating them to industrial developments | 1 | ➢ encouraging industries to be organized and informed about creating financing, activating existing financial resources, utilizing from trained human power, observing technological developments, transferring new technologies and increasing market opportunities<br>➢ proposing educational facilities such as vocational schools to ensure qualified staff for textile and leather industries<br>➢ renewing and developing machinery park for new technology usage in textile and leather industry<br>➢ taking precautions to make research and development facilities more attractive |
| | P19: ensuring environmentally sensitive tourism and recreation | 1 | A48: locating areas of natural sports, botanical gardens, zoological gardens, festival areas, fairs, etc. which make small changes in nature | 1 | ➢ locating areas of natural sports, mountain pasture tourism, mountain trekking, hunting, horse riding and wildlife observatories, festival areas, fairs and other daily tourism activities<br>➢ creating recreation areas appropriate to resources<br>➢ proposing sports facility areas and fairs for cycling, golf, tennis, swimming, skateboarding<br>➢ preserving natural resources while proposing multi-purpose tourism areas for 12 months and medium sized hotels with 3 stars<br>➢ maintaining socio-cultural development with activities such as gastronomy and entertainment for young people from university<br>➢ proposing geothermal and thermal projects for mountain pasture tourism in Murat Mountain<br>➢ proposing daily tourism in rural settlements<br>➢ proposing passive recreational areas (such as botanical gardens, zoological gardens and nature parks)<br>➢ proposing special management plans and calculations about carrying capacity of forests while locating bungalows, mocamps and camping areas with light construction materials<br>➢ providing alternative and sensitive tourism in areas of cultural heritage, natural values and designated sites with some standards not to damage these sites<br>➢ encouraging organized development of tourism in both mass tourism and alternative tourism in appropriate potentials of resources and spatial conditions<br>➢ considering legal requirements, being sensitive to environment and completing infrastructure facilities in mass tourism areas |
| | | | A6: proposing environmentally sensitive recreational areas which do not make any changes in nature | 1 | |
| | | | A26: maintaining cultural and historic tourism with some standards not to damage heritages and sites | 1 | |
| | | | A49: encouraging alternative and ecologic tourism including tour routes connecting small touristic settlements | 0 | |
| | | | A50: avoiding harmful types of tourism | 0 | |

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Table 28. (cont.) Evaluation of Uşak Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| economic activity areas | P20: supporting local economic activity | 1 | A51: proposing local markets and bazaars for selling local products | 1 | ➢ supporting transformation of family companies to bigger companies and promoting mass production<br>➢ proposing programs improving agricultural family companies to contribute to economic development in Karahallı<br>➢ supporting agricultural industrial development in smaller urban settlements<br>➢ supporting handicraft production and increasing their contribution to economics<br>➢ ensuring employment possibilities to forest villagers and increasing their income level<br>➢ improving health, education, municipality and personal services, retail commerce, hotels, restaurants, transportation and depot conditions<br>➢ locating areas of natural sports, mountain pasture tourism, mountain trekking, hunting, horse riding and wildlife observatories, festival areas, fairs and other daily tourism activities |
| | | | A30: proposing activity areas for presentation of cities and settlements | 1 | |
| | | | A52: ensuring provision of all immediate needs locally | 1 | |
| settlement location and form | P21: avoiding urban sprawl and promoting compact settlements | 1 | A53: preference for medium rise, high density developments | 0 | ➢ proposing secondary business districts to control urbanization and propose new development areas around these secondary centers<br>➢ observing population growth and testing with urban development areas<br>➢ proposing special functions for settlements, managing connections between settlements, ensuring environmentally sensitive development of settlements with planning considering environmental characteristics<br>➢ controlling and avoiding incremental developments such as single housing, secondary housing, single industry and tourism investments<br>➢ proposing center villages for infrastructure and social investments and limited growth for existing villages |
| | | | A54: reusing derelict, rebundant and vacant areas | 0 | |
| | | | A55: regenerating disadvantaged areas | 0 | |
| | | | A56: renewal of inner city areas if necessary | 0 | |
| | | | A57: concentrating facilities in inner cities | 0 | |
| | | | A58: controlling and avoiding incremental developments | 1 | |

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Table 28. (cont.) Evaluation of Uşak Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| settlement location and form | P22: selecting appropriate location for new settlements | 1 | A59: considering climatic conditions while locating settlements | 1 | ➢ considering relations with neighbor settlements while selecting locations<br>➢ considering physical conditions (such as geologic structure, topography, wind, coasts, climate, sun and visual values) while locating settlements<br>➢ considering disaster risk in terms of geological structures and fault lines while selecting location<br>➢ protecting productive land from industrial locations<br>➢ avoiding location of industries in agricultural lands<br>➢ avoiding location of settlements and industries in valley floors<br>➢ selecting location on low terraces and medium height plateaus<br>➢ preventing industries in buffer zones of rivers in wetland quality<br>➢ preventing location of small industries out of organized industrial districts<br>➢ proposing spatial decisions to promote agricultural industry and locating agricultural industries in legally appropriate areas<br>➢ proposing single and integrated agricultural industrial uses in rural settlements<br>➢ considering utilization from sunlight while selecting location to use solar power as alternative energy resource<br>➢ selecting optimal locations for waste disposals to minimize costs of collecting and transferring and to prevent environmental pollution |
| | | | A60: considering physical conditions while locating settlements | 1 | |
| | | | A61: locating residential areas far from dangerous sites | 1 | |
| | | | A62: locating facilities which may harm human health far from settlements and especially residential areas | 1 | |
| | | | A63: considering regulations about technical infrastructure and setting location standards through and around them | 0 | |
| urban infrastructure and services | P23: ensuring infrastructure facilities | 1 | A64: improving existing infrastructure systems | 1 | ➢ improving health, education, municipality and personal services, retail commerce, hotels, restaurants, transportation and depot conditions<br>➢ proposing infrastructure precautions against environmental pollution in industrial districts<br>➢ accelerating infrastructure investments in existing settlements and preventing construction without infrastructures in development areas<br>➢ improving existing infrastructure services to minimize costs and environmental impacts and to ensure contemporary qualities<br>➢ proposing lower scale plans to select appropriate locations for waste disposals, recycling and purification facilities<br>➢ proposing project and credit opportunities for existing wastewater eliminating organizations<br>➢ proposing responsible institutions to take technical and financial precautions for infrastructure services |
| | | | A65: ensuring infrastructure facilities for new developments | 1 | |
| | | | A66: avoiding development in areas without infrastructure | 1 | |
| | | | A63: considering regulations about technical infrastructure and setting location standards through and around them | 0 | |

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Table 28. (cont.) Evaluation of Uşak Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| urban infrastructure and services | P24: managing transportation connections to support economic activity | 1 | A67: managing the transportation connections with airports | 1 | ➢ improving health, education, municipality and personal services, retail commerce, hotels, restaurants, transportation and depot conditions<br>➢ increasing the accessibility of the city<br>➢ ensuring the service of airport to exportation and proposing specialization of customs<br>➢ proposing new arterials between settlements and cities |
| | | | A68: managing the transportation connections with existing harbors | nr | |
| | | | A69: ensuring integrated land-use | 0 | |
| | P25: reducing travel demand in new developments | 1 | A70: ensuring the mixed use of buildings and developments with a good balance of jobs, housing and services | 0 | ➢ proposing infrastructure for ways alternative to the vehicle traffic between settlements to minimize times of trips between residential areas and central business district |
| | | | A53: preference for medium rise, high density developments | 0 | |
| | | | A71: reducing the distances between residences, employment and services | 1 | |
| | P26: reducing the necessity for private motorized transport | 1 | A72: promoting attractive alternative modes of transportation accessible to all | 1 | ➢ promoting alternative modes of transportation<br>➢ supporting and developing public transportation services to strengthen economic and social connections between settlements<br>➢ proposing infrastructure for ways alternative to the vehicle traffic between settlements to minimize times of trips between residential areas and central business district<br>➢ proposing a light rail system between organized industrial districts and residential areas to minimize density and traffic jams in highways and prevent air and noise pollution |
| | P27: improving and giving priority to public transport | 1 | A73: improving the quality of existing public transportation services | 1 | ➢ supporting and developing public transportation services to strengthen economic and social connections between settlements<br>➢ proposing a light rail system between organized industrial districts and residential areas to minimize density and traffic jams in highways and prevent air and noise pollution<br>➢ supporting the usage of light rail system with aims other than industries and ensuring the route serving development zones in their walking distances<br>➢ proposing expertise studies for feasibility and profitability of light rail system<br>➢ proposing depots, caring and repair services in starting and finishing points of light rail system |
| | | | A74: designing new and integrated public transportation services for new developments | 1 | |

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Table 28. (cont.) Evaluation of Uşak Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| urban infrastructure and services | P28: improving and giving priority to walking and cycling | 1 | A75: designing new and safe walking and cycling paths | 1 | ➢ proposing lower scale plans to ensure variety in social services such as houses for old people and meeting houses in neighborhoods and considering handicapped and disadvantaged groups in society while planning transportation services such as cycling paths, walking paths, ramps and passages<br>➢ supporting the usage of light rail system with aims other than industries and ensuring the route serving development zones in their walking distances |
| | | | A76: integrating walking and cycling paths to public transport | 1 | |
| | | | A77: improving conditions for pedestrians | 0 | |
| | P29: minimizing impacts of highways to settlements | 1 | A78: locating through traffic far from city centers to reduce transit traffic volumes in the city | 1 | ➢ proposing ditches along two sides of transit motorways through Gediz Basin to maintain collection and purification of wastewater<br>➢ planning buffer zones (with trees whose leaves do not fall) along two sides of main transportation arteries<br>➢ proposing forestation and noise obstacles along main transportation arteries especially in the edges next to settlements<br>➢ locating through traffic between Ankara and İzmir far from city center of Uşak to reduce transit traffic volumes and other problems<br>➢ considering regulations about constructions located near highways |
| | | | A79: planning buffer zones along two sides of main transportation arteries | 1 | |
| | P30: ensuring equitable access to public services and facilities | 1 | A80: ensuring adequate number of major services in all settlements | 1 | ➢ proposing lower scale plans to ensure variety in social services such as houses for old people and meeting houses in neighborhoods and considering handicapped and disadvantaged groups in society while planning transportation services such as cycling paths, walking paths, ramps and passages<br>➢ supporting the usage of light rail system with aims other than industries and ensuring the route serving development zones in their walking distances |
| | | | A81: locating public services within walking distance of residents | 0 | |
| | | | A82: managing the relationship of major services to public transport | 1 | |
| | | | A83: using special areas as public spaces to ensure accessibility to all citizens | 1 | |

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Table 28. (cont.) Evaluation of Uşak Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| urban infrastructure and services | P31: fostering social inclusion and equity in public services and facilities | 1 | A84: improving conditions of pavements for disabled people in wheelchairs | 1 | ➢ proposing lower scale plans to ensure variety in social services such as houses for old people and meeting houses in neighborhoods and considering handicapped and disadvantaged groups in society while planning transportation services such as cycling paths, walking paths, ramps and passages |
| | | | A85: ensuring public transportation especially for the parts of city in which urban poor lives | 0 | |
| | | | A86: ensuring alternative types of activities in public spaces for people from different genders, ages and income groups | 1 | |
| | | | A87: ensuring alternative types of religious buildings, areas and services for people from different religions | 0 | |
| | P32: encouraging waste reduction, re-use, recycling and recovery | 1 | A88: proposing waste disposal facilities in new settlements | 1 | ➢ proposing lower scale plans to select appropriate locations for waste disposals, recycling and purification facilities<br>➢ proposing project and credit opportunities for existing wastewater eliminating organizations<br>➢ improving existing water purification facilities and making them healthier<br>➢ proposing waste recycling and purification facilities<br>➢ proposing ditches along two sides of transit motorways through Gediz Basin to maintain collection and purification of wastewater<br>➢ preventing pollution of stream beds, conserving streams, preventing wastewater pouring in streams, proposing restrictions for nearby usages and improving the infrastructures of them<br>➢ completing the infrastructure organizations in all municipalities about wastewater purification and healthy disposals of solid waste |
| | | | A89: improving existing waste disposal facilities | 1 | |
| | | | A90: proposing waste recycling and recovery facilities in new settlements | 1 | |
| | | | A91: improving existing waste recycling and recovery facilities | 1 | |
| | | | A62: locating facilities which may harm human health far from settlements and especially residential areas | 1 | |
| | P33: minimizing impact and costs of waste disposal | 1 | A92: setting standards for waste management in industrial developments | 1 | ➢ selecting optimal locations for waste disposals to minimize costs of collecting and transferring and to prevent environmental pollution<br>➢ completing existing enterprises for utilization from solid waste<br>➢ considering regulations while eliminating all kinds of hazardous waste<br>➢ allowing storage of hazardous waste and construction of their depots only if their harmlessness is proved scientifically |
| | | | A93: ensuring responsible disposal for hazardous waste | 1 | |
| | | | A94: proposing a common waste disposal unit for several neighborhood settlements in optimal location | 0 | |

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Table 28. (cont.) Evaluation of Uşak Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| urban infrastructure and services | P34: providing balanced and efficient usage of energy resources | 1 | A95: setting design standards for energy efficiency in new settlements and buildings | 1 | ➢ ensuring natural gas usage in all settlements and industries and encouraging maximum utilization from the natural gas system<br>➢ encouraging alternative renewable energy resources to minimize or eliminate pollution and preserve environment<br>➢ considering utilization from sunlight while selecting location to use solar power as alternative energy resource<br>➢ encouraging usage of solar power in residential units |
| | | | A96: using alternative energy resources instead of nonrenewable energy resources in existing buildings and settlements | 1 | |
| | | | A97: using local and renewable energy | 1 | |
| | P35: enhancing urban green space | 1 | A98: protecting existing green space in urban settlements | 1 | ➢ proposing sports facility areas and fairs for cycling, golf, tennis, swimming, skateboarding<br>➢ locating areas of natural sports, mountain pasture tourism, mountain trekking, hunting, horse riding and wildlife observatories, festival areas, fairs and other daily tourism activities<br>➢ creating recreation areas appropriate to resources<br>➢ proposing passive recreational areas (such as botanical gardens, zoological gardens and nature parks)<br>➢ preserving forests and tree entities<br>➢ proposing wildlife conservation and research areas |
| | | | A99: increasing the quality of existing green spaces | 0 | |
| | | | A100: ensuring adequate green spaces for all neighborhoods | 1 | |
| | | | A101: integrating green space structures through the creation of green corridors | 0 | |
| | | | A102: proposing family gardens | 0 | |
| | P36: ensuring accessibility of urban green spaces | 0 | A103: connecting pedestrian and cycling paths to urban green spaces | 0 | No policy / action |
| | | | A104: locating new green spaces within walking distance of residents | 0 | |
| | P37: integrating health considerations in planning strategies | 1 | A105: ensuring areas for health facilities | 1 | ➢ improving health, education, municipality and personal services, retail commerce, hotels, restaurants, transportation and depot conditions<br>➢ improving existing standards of education and health facilities and ensuring needs of proposed population<br>➢ improving qualities and increasing amounts of existing health centers and clinics<br>➢ improving existing water purification facilities and making them healthier<br>➢ completing the infrastructure organizations in all municipalities about wastewater purification and healthy disposals of solid waste<br>➢ preserving wetlands, ensuring their healthy and adequate sustainability and proposing passive recreation areas while ensuring the preservation and usage balance<br>➢ proposing geothermal and thermal projects for mountain pasture tourism in Murat Mountain |
| | | | A106: improving existing health centers | 1 | |
| | | | A62: locating facilities which may harm human health far from settlements and especially residential areas | 1 | |
| | | | A107: proposing facilities and areas for health tourism | 1 | |

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Table 28. (cont.) Evaluation of Uşak Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| urban infrastructure and services | P38 : reducing effects of pollution to health | 1 | A108: setting local pollution limits | 0 | ➢ eliminating wastes with most efficient method in shortest distance to prevent soil pollution<br>➢ prevention of pollution caused by agriculture<br>➢ preventing pollution caused by highways<br>➢ proposing infrastructure precautions against environmental pollution in industrial districts<br>➢ selecting optimal locations for waste disposals to minimize costs of collecting and transferring and to prevent environmental pollution<br>➢ ensuring natural gas usage in all settlements and industries and encouraging maximum utilization from the natural gas system<br>➢ encouraging alternative renewable energy resources to minimize or eliminate pollution and preserve environment<br>➢ proposing a light rail system between organized industrial districts and residential areas to minimize density and traffic jams in highways and prevent air and noise pollution<br>➢ proposing forestation and noise obstacles along main transportation arteries especially in the edges next to settlements<br>➢ planning buffer zones (with trees whose leaves do not fall) along two sides of main transportation arteries |
| | | | A79: planning buffer zones along two sides of main transportation arteries | 1 | |
| | P39: ensuring educational facilities | 1 | A109: improving existing educational centers | 1 | ➢ improving existing standards of education and health facilities and ensuring needs of proposed population<br>➢ establishing nongovernmental organizations and activating existing unions to increase consciousness and improving existing public education facilities<br>➢ proposing educational and social centers for local and nongovernmental organizations and public education centers<br>➢ proposing educational centers and ateliers for traditional handicrafts in rural settlements<br>➢ encouraging unions and foundations of private establishments<br>➢ proposing education centers to develop new agricultural production methods<br>➢ proposing Banaz rural area to be a focus of scientific researches of Uşak University<br>➢ improving health, education, municipality and personal services, retail commerce, hotels, restaurants, transportation and depot conditions<br>➢ proposing educational facilities such as vocational schools to ensure qualified staff for textile and leather industries<br>➢ taking precautions to make research and development facilities more attractive<br>➢ maintaining socio-cultural development with activities such as gastronomy and entertainment for young people from university |
| | | | A110: ensuring new educational centers in developing residential areas | 1 | |
| | | | A111: ensuring educational centers aimed at employment | 1 | |
| | | | A112: ensuring educational centers for local organizations and public education centers | 1 | |

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Table 28. (cont.) Evaluation of Uşak Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| residential areas | P40: ensuring safety and security in residential areas | 1 | A45: setting design standards for durability and reparability of new developments | 0 | ➢ considering disaster risk in terms of geological structures and fault lines while selecting location<br>➢ proposing areas for usage after disaster<br>➢ allowing storage of hazardous waste and construction of their depots only if their harmlessness is proved scientifically<br>➢ considering physical conditions (such as geologic structure, topography, wind, coasts, climate, sun and visual values) while locating settlements |
| | | | A113: securing good quality and socially integrated housing and living conditions | 0 | |
| | | | A114: avoiding urban pattern which includes narrow streets and cul-de-sacs | 0 | |
| | | | A61: locating residential areas far from dangerous sites | 1 | |
| | | | A62: locating facilities which may harm human health far from settlements and especially residential areas | 1 | |
| | | | A115: ensuring adequate permeable soil in residential areas to prevent flood | 0 | |
| | | | A63: considering regulations about technical infrastructure and setting location standards through and around them | 0 | |
| | | | A116: proposing areas for usage after disaster | 1 | |
| | P41: fostering social inclusion and equity in housing opportunities | 1 | A117: ensuring small and efficient affordable housing for urban poor | 0 | ➢ ensuring housing with low density for groups with upper income level<br>➢ ensuring housing with moderate and high density near industrial districts for groups with moderate income level<br>➢ ensuring residential areas for people living in areas which will be emptied for urban renewal<br>➢ ensuring housing opportunities to support employment and directing existing trends |
| | | | A118: ensuring alternative types of forms and functions in residential districts for people with different pleasures | 1 | |
| | | | A119: ensuring housing units for people who lost their houses after disasters and urban renewal projects | 1 | |

As seen in Table 28, Uşak Environment Plan has considered all policies in the checklist except "ensuring accessibility of urban green spaces". At least one of the actions from each policy is considered in this plan except the policy of "promoting eco-labeled, organic, ethical and fair trade products". There is no BUT statement in the evaluation of this plan.

### 4.3.4. Afyonkarahisar Environment Plan (1/100000)

The Afyonkarahisar Environment Plan is made by a unit of Afyonkarahisar Governorship called “Emergency Management and Information Processing Center” (ADUYBİM) for the planning period until 2025. It is approved with the decision of Provincial Assembly, No. 247, in 6.8.2008 and the decision of Afyonkarahisar Municipality Assembly, No. 376, in 1.9.2008.

The main aims of the plan are ensuring preservation and usage balance of the historical, cultural and natural values of the city, directing its sustainable development within these values, forming planning strategies about economic, social and physical developments appropriate to the sectored development goals and country development plans, preserving and improving the socio-cultural identity of the city and ensuring social, economic, cultural and spatial sustainability of sectored developments.

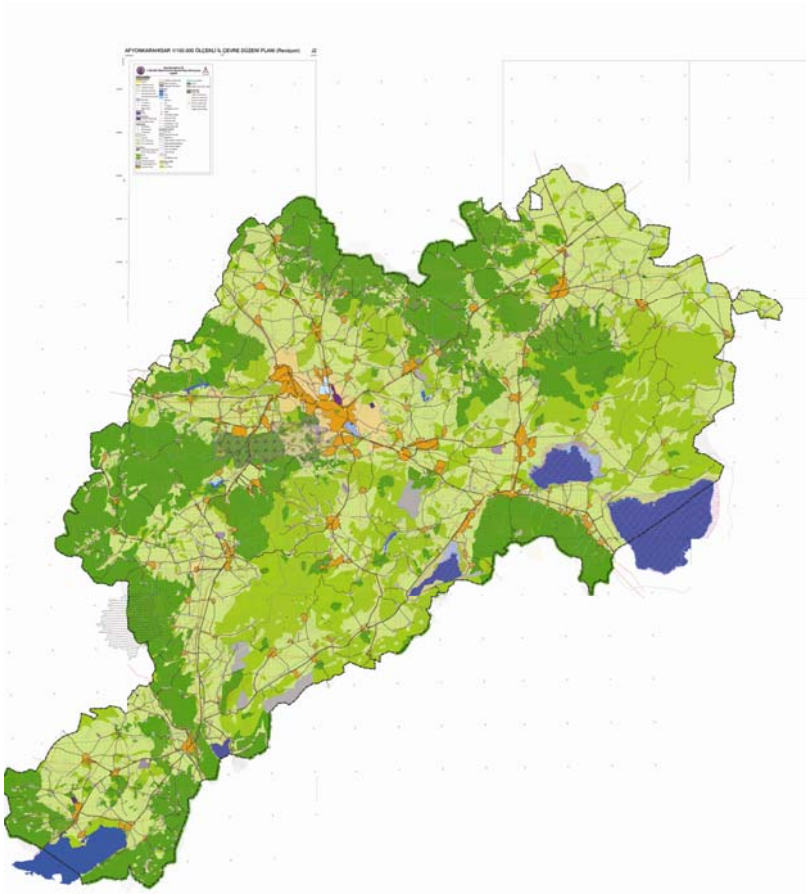

Figure 10. Afyonkarahisar Environment Plan
(Source: Ministry of Environment and Forestry)

Table 29. Evaluation of Afyonkarahisar Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| policy areas | POLICIES | policy scores | URBAN PLANNING ACTIONS FOR SUSTAINABILITY | action scores | GOALS AND OBJECTIVES OF AFYONKARAHİSAR ENVIRONMENT PLAN REGARDING EACH POLICY AND ITS ACTIONS |
|---|---|---|---|---|---|
| natural resources | P1: safeguarding natural areas | 1 | A1: preventing construction on natural areas | 1 | ➢ ensuring preservation and usage balance of cultural, historical and natural values and sustainable development of the city<br>➢ improving existing forests and increasing forest areas<br>➢ preserving pastures, improving their qualities and ensuring their preservation and usage balance<br>➢ preserving sites, conservation areas with natural characteristics and ecologically important areas<br>➢ preventing urbanism on cultural and natural entities<br>➢ ensuring social, spatial, cultural and economic development while preserving environment<br>➢ preserving natural, historical, cultural and economic values while improving them and increasing their added-values<br>➢ increasing quality of life in rural settlements while preserving nature and supporting social, cultural and economic developments<br>➢ ensuring wholeness of ecology and ecosystems in areas which have special laws in planning authority<br>➢ considering legal requirements in officially registered areas and sites<br>➢ supporting studies on determining new sites and legal conservation areas |
| | | | A2: continuing existing legal restrictions and site decisions for sites with special characteristics and proposing new legal restrictions if needed | 1 | |
| | P2: mitigation of impacts of harmful activities to natural areas | 1 | A3: locating possibly harmful activities far from natural areas | 1 | ➢ preventing possible environmental problems<br>➢ preventing tourism facilities which cause noise more than 80 decibel and agricultural and industrial facilities and buildings which cause bad smell<br>➢ locating industrial districts in appropriate spaces and avoiding location of industrial facilities and depots in urban and rural residential and development areas<br>➢ accepting the approved previous planning decisions about location of industrial facilities in and out of settlements and avoiding additional decisions and plan revisions such as increasing densities or changing type of industries which might have negative impacts on environment |
| | | | A4: setting standards for possibly harmful activities | 1 | |

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Table 29. (cont.) Evaluation of Afyonkarahisar Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| natural resources | P3: preserving flora and fauna and promoting biodiversity | 1 | A5: protecting sensitive sites from extraction | 1 | ➢ preserving absolute agricultural lands and production sites of water products<br>➢ preserving ecologically important sites and areas rich in flora and fauna such as wetlands and lakes<br>➢ preserving habitats and production sites of birds and wild animals which become extinct<br>➢ proposing game animals preservation and production sites in which game animals and wildlife is preserved and hunting is allowed with special hunting plans |
| | | | A6: proposing environmentally sensitive recreational areas which do not make any changes in nature | 1 | |
| | | | A7: determining wildlife conservation areas | 1 | |
| | P4: conserving water resources | 1 | A8: determining conservation zones in and around wetlands, river basins, valleys and groundwater resources | 1 | ➢ preventing pollution in ground and underground water resources<br>➢ preserving water basins and reserve areas of potable water and irrigation water<br>➢ proposing conservation zones around geothermal resources and determining graded restrictions in each zone<br>➢ considering legal requirements in basins and ground and underground water resources<br>➢ preventing storage of possibly harmful materials such as waste and fertilizers, preventing storage of greenhouse wastes to prevent decomposition of them, ensuring high quality sewer systems in settlements, and preventing establishments which do not transfer their waste out of the conservation zones in safe conditions in geothermal areas |
| | | | A9: improving connections of water systems to existing water resources | 0 | |
| | P5: improving water quality | 1 | A10: improving existing infrastructure systems for potable water | 0 | ➢ preserving water basins and reserve areas of potable water and irrigation water<br>➢ preventing pollution in ground and underground water resources<br>➢ considering legal requirements in basins and ground and underground water resources<br>➢ preventing storage of possibly harmful materials such as waste and fertilizers, preventing storage of greenhouse wastes to prevent decomposition of them, ensuring high quality sewer systems in settlements, and preventing establishments which do not transfer their waste out of the conservation zones in safe conditions in geothermal areas |
| | | | A11: ensuring an infrastructure system of potable water for new settlements and the settlements with a lack of potable water | 0 | |
| | | | A12: taking mitigation measures for activities which possibly cause water pollution | 1 | |

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Table 29. (cont.) Evaluation of Afyonkarahisar Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| natural resources | P6: using water more efficiently | 1 | A13: improving existing water purification facilities | 0 | ➢ ensuring balanced usage of water<br>➢ avoiding giving licenses to industrial establishments without infrastructure and purification facilities<br>➢ proposing purification facilities in all industrial establishments and improving the existing purification facilities and maintaining their efficient use<br>➢ preventing usage of buildings without facilities such as technical infrastructure and purification facilities which prevents environmental pollution |
| | | | A14: proposing new water purification facilities | 1 | |
| | | | A15: using underground water | 0 | |
| | P7: preserving ecologically productive land | 1 | A16: locating possibly harmful activities far from ecologically productive land | 1 | ➢ preserving absolute agricultural lands and production sites of water products<br>➢ considering legal requirements in agricultural land and conservation areas<br>➢ accepting the approved previous planning decisions about location of industrial facilities in and out of settlements and avoiding additional decisions and plan revisions such as increasing densities or changing type of industries which might have negative impacts on environment<br>➢ preventing storage of possibly harmful materials such as waste and fertilizers, preventing storage of greenhouse wastes to prevent decomposition of them, ensuring high quality sewer systems in settlements, and preventing establishments which do not transfer their waste out of the conservation zones in safe conditions in geothermal areas |
| | | | A17: setting standards for the manner, location and sort of agricultural activities to prevent erosion and not to harm productive land | 0 | |
| | | | A18: setting standards for possibly harmful activities in agricultural soil | 1 | |
| | P8: improving soil quality | 0 | A19: identifying and treating contaminated land | 0 | No policy / action |
| | | | A20: taking mitigation measures for activities which possibly cause soil pollution | 0 | |
| | P9: using soil more efficiently | 0 | A21: proposing agricultural activities in lands with productive soil | 0 | No policy / action |
| | P10: preserving and improving air quality | 1 | A22: taking mitigation measures for activities which are possibly harmful to air qualityto prevent air pollution | 0 | ➢ preventing possible environmental problems |
| | | | A23: considering wind and drafts/air flows in planning decisions | 0 | |

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Table 29. (cont.) Evaluation of Afyonkarahisar Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| cultural heritage | P11: ensuring appropriate conservation, renovation and use/reuse of urban cultural and historic heritage | 1 | A24: continuing existing legal restrictions and site decisions and proposing new conservation zones in areas of cultural and historic interest if needed | 1 | ➢ ensuring preservation and usage balance of cultural, historical and natural values and sustainable development of the city<br>➢ preventing urbanism on cultural and natural entities<br>➢ ensuring social, spatial, cultural and economic development while preserving environment<br>➢ preserving natural, historical, cultural and economic values while improving them and increasing their added-values<br>➢ increasing quality of life in rural settlements while preserving nature and supporting social, cultural and economic developments<br>➢ considering legal requirements in officially registered areas and sites<br>➢ proposing authorities to ask responsible institutions for advices about sites<br>➢ clearance of existing constructions on archeological sites and proposing barter when appropriate |
| | | | A25: increasing accessibility of buildings and areas of cultural and historic interest | 0 | |
| | | | A26: maintaining cultural and historic tourism with some standards not to damage heritages and sites | 0 | |
| | | | A27: ensuring areas for cultural facilities in and around urban cultural and historic heritages with some standards not to damage them | 0 | |
| | P12: increasing consciousness about cultural heritage and urban identity | 1 | A28: preparing symbolic and structural projects | 0 | ➢ preserving and improving the socio-cultural identity of the city<br>➢ preventing construction plans which might damage historical identity in historical conservation areas and their surroundings<br>➢ increasing quality of life in rural settlements while preserving nature and supporting social, cultural and economic developments<br>➢ proposing huge urban green spaces and fair areas for picnicking and having rest including restaurants, cafes, bakeries, teahouses, buffets, swimming pools, sport areas for tennis and mini golf, marketplaces and socio-cultural buildings for exhibitions and concerts |
| | | | A29: creating cultural and historical public spaces and landmarks | 1 | |
| | | | A30: proposing activity areas for presentation of cities and settlements | 0 | |
| economic activity areas | P13: supporting economic activity in agriculture sector | 1 | A31: preventing construction on agricultural lands | 1 | ➢ preserving the wholeness of agricultural lands and ensuring enough size for economic operations and avoiding division of land into small lots<br>➢ preserving pastures, improving their qualities and ensuring their preservation and usage balance<br>➢ preserving absolute agricultural lands and production sites of water products<br>➢ considering legal requirements in agricultural land and conservation areas<br>➢ allowing the usage of local marginal agricultural land between agricultural conservation areas with aims other than agriculture and considering legal requirements of the Ministry of Agriculture and Rural Affairs in this matter |
| | | | A32: proposing appropriate types of agricultural production due to the characteristics of local soil, climate and other natural conditions | 0 | |
| | | | A33: using productive soil as food fields for agricultural activities | 0 | |
| | | | A34: improving pastures and ensuring their access to support animal feeders in rural settlements | 1 | |
| | | | A35: proposing sites for agricultural cooperatives | 0 | |

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Table 29. (cont.) Evaluation of Afyonkarahisar Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| economic activity areas | P14: developing industrial developments integrated with agriculture | 0 | A36: managing transportation connections between agricultural lands and industrial developments | 0 | No policy / action |
| | P15: increasing awareness and supporting the usage of new technologies in agriculture sector | 0 | A37: proposing educational centers for new techniques and technologies in agricultural production | 0 | No policy / action |
| | | | A38: managing transportation connections between agricultural lands and university or techno parks | 0 | |
| | | | A39: developing eco-villages and farms in which tourism and agricultural activities are taken place together | 0 | |
| | P16: promoting eco-labeled, organic, ethical and fair trade products | 0 | A40: proposing organic farms in appropriate locations | 0 | No policy / action |
| | P17: supporting economic activity in ecologically sensitive industrial development | 1 | A41: providing adequate area for ecologically sensitive industrial development | 1 | ➢ ensuring the planned development of industry and preventing possible environmental problems<br>➢ preventing establishments using explosives in small industrial sites<br>➢ locating industrial districts in appropriate spaces and avoiding location of industrial facilities and depots in urban and rural residential and development areas<br>➢ preventing usage of buildings without facilities such as technical infrastructure and purification facilities which prevents environmental pollution<br>➢ accepting the approved previous planning decisions about location of industrial facilities in and out of settlements and avoiding additional decisions and plan revisions such as increasing densities or changing type of industries which might have negative impacts on environment<br>➢ preventing storage of possibly harmful materials such as waste and fertilizers, preventing storage of greenhouse wastes to prevent decomposition of them, ensuring high quality sewer systems in settlements, and preventing establishments which do not transfer their waste out of the conservation zones in safe conditions in geothermal areas |
| | | | A42: managing the relationship of ecologically sensitive industrial development to public transport to ensure accessibility | 0 | |
| | | | A43: setting standards for warehouses and depots in relation with ecologically sensitive industrial districts | 1 | |
| | | | A44: ensuring product and labor mobility with integrated alternative modes of transport | 0 | |
| | | | A45: setting design standards for durability and reparability of new developments | 0 | |
| | | | A46: converting existing industrial districts to ecologically sensitive industrial districts | 0 | |

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Table 29. (cont.) Evaluation of Afyonkarahisar Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| economic activity areas | P18: supporting ecologically sensitive industrial development with new technologies | 1 | A47: planning areas for techno parks and technology development districts and relating them to industrial developments | 1 | ➢ proposing techno parks and social facilities in organized industrial districts<br>➢ proposing unions for common facilities such as purification and depots to prevent resource extravagance and to use new technologies in environmental protection |
| | P19: ensuring environmentally sensitive tourism and recreation | 1 | A48: locating areas of natural sports, botanical gardens, zoological gardens, festival areas, fairs, etc. which make small changes in nature | 1 | ➢ supporting thermal tourism sector strategic plans, sectored decisions and implementation strategies<br>➢ proposing a priority for preparing the lower scale plans in tourism areas<br>➢ proposing huge urban green spaces and fair areas for picnicking and having rest including restaurants, cafes, bakeries, teahouses, buffets, swimming pools, sport areas for tennis and mini golf, marketplaces and socio-cultural buildings for exhibitions and concerts<br>➢ proposing game animals preservation and production sites in which game animals and wildlife is preserved and hunting is allowed with special hunting plans<br>➢ preserving habitats and production sites of birds and wild animals which become extinct |
| | | | A6: proposing environmentally sensitive recreational areas which do not make any changes in nature | 1 | |
| | | | A26: maintaining cultural and historic tourism with some standards not to damage heritages and sites | 0 | |
| | | | A49: encouraging alternative and ecologic tourism including tour routes connecting small touristic settlements | 1 | |
| | | | A50: avoiding harmful types of tourism | 0 | |
| | P20: supporting local economic activity | 1 | A51: proposing local markets and bazaars for selling local products | 1 | ➢ maintaining distribution of working spaces and increasing the activities in secondary centers to ensure balanced increase of population density in urban spaces<br>➢ increasing quality of life in rural settlements while preserving nature and supporting social, cultural and economic developments<br>➢ accelerating economic development to ensure balance and coordination between sectors<br>➢ supporting the development of service sector<br>➢ proposing huge urban green spaces and fair areas for picnicking and having rest including restaurants, cafes, bakeries, teahouses, buffets, swimming pools, sport areas for tennis and mini golf, marketplaces and socio-cultural buildings for exhibitions and concerts |
| | | | A30: proposing activity areas for presentation of cities and settlements | 0 | |
| | | | A52: ensuring provision of all immediate needs locally | 1 | |

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Table 29. (cont.) Evaluation of Afyonkarahisar Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| settlement location and form | P21: avoiding urban sprawl and promoting compact settlements | 1 | A53: preference for medium rise, high density developments | 0 | ➢ maintaining the balance between urban and rural populations<br>➢ proposing responsible institutions to take precautions about environmental problems caused by uncontrolled developments constructed before this plan<br>➢ maintaining distribution of working spaces and increasing the activities in secondary centers to ensure balanced increase of population density in urban spaces |
| | | | A54: reusing derelict, rebundant and vacant areas | 0 | |
| | | | A55: regenerating disadvantaged areas | 0 | |
| | | | A56: renewal of inner city areas if necessary | 0 | |
| | | | A57: concentrating facilities in inner cities | 0 | |
| | | | A58: controlling and avoiding incremental developments | 0 | |
| | P22: selecting appropriate location for new settlements | 1 | A59: considering climatic conditions while locating settlements | 0 | ➢ considering legal requirements while using areas such as agricultural lands, forests, geologically objectionable lands, pastures, forestation areas and resource conservation areas<br>➢ locating industrial districts in appropriate spaces and avoiding location of industrial facilities and depots in urban and rural residential and development areas<br>➢ preventing construction in geologically objectionable lands in urban and rural settlements and proposing requirements and evaluation reports of location appropriateness when location of development areas in these areas is necessary<br>➢ accepting the approved previous planning decisions about location of industrial facilities in and out of settlements and avoiding additional decisions and plan revisions such as increasing densities or changing type of industries which might have negative impacts on environment<br>➢ ensuring transfer of industrial establishments and nonresidential working areas bigger than 20 decares from city center to alternative spaces out of settlements<br>➢ preventing location of industrial establishments out of the planned industrial districts<br>➢ proposing authorities to ask responsible institutions for advices about location in air corridor line of airways<br>➢ considering legal requirements while selecting location on and around the national power transfer lines and natural gas and fuel oil pipe lines |
| | | | A60: considering physical conditions while locating settlements | 1 | |
| | | | A61: locating residential areas far from dangerous sites | 1 | |
| | | | A62: locating facilities which may harm human health far from settlements and especially residential areas | 1 | |
| | | | A63: considering regulations about technical infrastructure and setting location standards through and around them | 1 | |

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Table 29. (cont.) Evaluation of Afyonkarahisar Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| urban infrastructure and services | P23: ensuring infrastructure facilities | 1 | A64: improving existing infrastructure systems | 0 | ➢ proposing lower scale plans to consider the legal requirements and public interest while ensuring necessary technical and social infrastructure areas for population in urban settlements<br>➢ proposing a priority for ensuring infrastructure facilities in conservation areas<br>➢ preventing usage of buildings without facilities such as technical infrastructure and purification facilities which prevents environmental pollution<br>➢ preventing storage of possibly harmful materials such as waste and fertilizers, preventing storage of greenhouse wastes to prevent decomposition of them, ensuring high quality sewer systems in settlements, and preventing establishments which do not transfer their waste out of the conservation zones in safe conditions in geothermal areas<br>➢ considering legal requirements while selecting location on and around the national power transfer lines and natural gas and fuel oil pipe lines |
| | | | A65: ensuring infrastructure facilities for new developments | 1 | |
| | | | A66: avoiding development in areas without infrastructure | 1 | |
| | | | A63: considering regulations about technical infrastructure and setting location standards through and around them | 1 | |
| | P24: managing transportation connections to support economic activity | 0 | A67: managing the transportation connections with airports | 0 | No policy / action |
| | | | A68: managing the transportation connections with existing harbors | nr | |
| | | | A69: ensuring integrated land-use | 0 | |
| | P25: reducing travel demand in new developments | 0 | A70: ensuring the mixed use of buildings and developments with a good balance of jobs, housing and services | 0 | No policy / action |
| | | | A53: preference for medium rise, high density developments | 0 | |
| | | | A71: reducing the distances between residences, employment and services | 0 | |
| | P26: reducing the necessity for private motorized transport | 0 | A72: promoting attractive alternative modes of transportation accessible to all | 0 | No policy / action |

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Table 29. (cont.) Evaluation of Afyonkarahisar Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| urban infrastructure and services | P27: improving and giving priority to public transport | 0 | A73: improving the quality of existing public transportation services | 0 | No policy / action |
| | | | A74: designing new and integrated public transportation services for new developments | 0 | |
| | P28: improving and giving priority to walking and cycling | 0 | A75: designing new and safe walking and cycling paths | 0 | No policy / action |
| | | | A76: integrating walking and cycling paths to public transport | 0 | |
| | | | A77: improving conditions for pedestrians | 0 | |
| | P29: minimizing impacts of highways to settlements | 0 | A78: locating through traffic far from city centers to reduce transit traffic volumes in the city | 0 | No policy / action |
| | | | A79: planning buffer zones along two sides of main transportation arteries | 0 | |
| | P30: ensuring equitable access to public services and facilities | 1 | A80: ensuring adequate number of major services in all settlements | 1 | ➢ proposing lower scale plans to consider the legal requirements and public interest while ensuring necessary technical and social infrastructure areas for population in urban settlements |
| | | | A81: locating public services within walking distance of residents | 0 | |
| | | | A82: managing the relationship of major services to public transport | 0 | |
| | | | A83: using special areas as public spaces to ensure accessibility to all citizens | 0 | |
| | P31: fostering social inclusion and equity in public services and facilities | 0 | A84: improving conditions of pavements for disabled people in wheelchairs | 0 | No policy / action |
| | | | A85: ensuring public transportation especially for the parts of city in which urban poor lives | 0 | |
| | | | A86: ensuring alternative types of activities in public spaces for people from different genders, ages and income groups | 0 | |
| | | | A87: ensuring alternative types of religious buildings, areas and services for people from different religions | 0 | |

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Table 29. (cont.) Evaluation of Afyonkarahisar Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| urban infrastructure and services | P32: encouraging waste reduction, re-use, recycling and recovery | 1 | A88: proposing waste disposal facilities in new settlements | 1 | ➢ preventing usage of buildings without facilities such as technical infrastructure and purification facilities which prevents environmental pollution<br>➢ proposing lower scale plans to consider the legal requirements and public interest while ensuring necessary technical and social infrastructure areas for population in urban settlements<br>➢ proposing purification facilities in all industrial establishments and improving the existing purification facilities and maintaining their efficient use<br>➢ avoiding giving licenses to industrial establishments without infrastructure and purification facilities<br>➢ proposing a waste management plan to regulate existing wild solid waste disposals<br>➢ giving priority to common purification facilities<br>➢ proposing unions for common facilities such as purification and depots to prevent resource extravagance and to use new technologies in environmental protection<br>➢ ensuring the healthy connections of wastewater in all buildings and facilities and considering legal requirements in areas without wastewater systems<br>➢ preventing storage of possibly harmful materials such as waste and fertilizers, preventing storage of greenhouse wastes to prevent decomposition of them, ensuring high quality sewer systems in settlements, and preventing establishments which do not transfer their waste out of the conservation zones in safe conditions in geothermal areas<br>➢ proposing lower scale plans to consider public interest while ensuring recycling facilities<br>➢ locating industrial districts in appropriate spaces and avoiding location of industrial facilities and depots in urban and rural residential and development areas |
| | | | A89: improving existing waste disposal facilities | 1 | |
| | | | A90: proposing waste recycling and recovery facilities in new settlements | 1 | |
| | | | A91: improving existing waste recycling and recovery facilities | 0 | |
| | | | A62: locating facilities which may harm human health far from settlements and especially residential areas | 1 | |

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Table 29. (cont.) Evaluation of Afyonkarahisar Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| urban infrastructure and services | P33: minimizing impact and costs of waste disposal | 1 | A92: setting standards for waste management in industrial developments | 1 | ➢ avoiding giving licenses to industrial establishments without infrastructure and purification facilities<br>➢ preventing storage of possibly harmful materials such as waste and fertilizers, preventing storage of greenhouse wastes to prevent decomposition of them, ensuring high quality sewer systems in settlements, and preventing establishments which do not transfer their waste out of the conservation zones in safe conditions in geothermal areas<br>➢ proposing unions for common facilities such as purification and depots to prevent resource extravagance and to use new technologies in environmental protection<br>➢ proposing responsible institutions to take precautions in industries not to cause environmental problems<br>➢ locating possibly harmful industrial establishments in organized industrial districts and forcing them to take precautions to prevent environmental pollution |
| | | | A93: ensuring responsible disposal for hazardous waste | 1 | |
| | | | A94: proposing a common waste disposal unit for several neighborhood settlements in optimal location | 1 | |
| | P34: providing balanced and efficient usage of energy resources | 0 | A95: setting design standards for energy efficiency in new settlements and buildings | 0 | No policy / action |
| | | | A96: using alternative energy resources instead of nonrenewable energy resources in existing buildings and settlements | 0 | |
| | | | A97: using local and renewable energy | 0 | |
| | P35: enhancing urban green space | 1 | A98: protecting existing green space in urban settlements | 1 | ➢ proposing huge urban green spaces and fair areas for picnicking and having rest including restaurants, cafes, bakeries, teahouses, buffets, swimming pools, sport areas for tennis and mini golf, marketplaces and socio-cultural buildings for exhibitions and concerts<br>➢ proposing lower scale plans to consider legal requirements and public interest while ensuring green spaces<br>➢ improving existing forests and increasing forest areas |
| | | | A99: increasing the quality of existing green spaces | 1 | |
| | | | A100: ensuring adequate green spaces for all neighborhoods | 1 | |
| | | | A101: integrating green space structures through the creation of green corridors | 0 | |
| | | | A102: proposing family gardens | 0 | |
| | P36: ensuring accessibility of urban green spaces | 0 | A103: connecting pedestrian and cycling paths to urban green spaces | 0 | No policy / action |
| | | | A104: locating new green spaces within walking distance of residents | 0 | |

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Table 29. (cont.) Evaluation of Afyonkarahisar Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| urban infrastructure and services | P37: integrating health considerations in planning strategies | 1 | A105: ensuring areas for health facilities | 0 | ➢ supporting thermal tourism sector strategic plans, sectored decisions and implementation strategies<br>➢ locating industrial districts in appropriate spaces and avoiding location of industrial facilities and depots in urban and rural residential and development areas<br>➢ locating possibly harmful industrial establishments in organized industrial districts and forcing them to take precautions to prevent environmental pollution<br>➢ ensuring the healthy connections of wastewater in all buildings and facilities and considering legal requirements in areas without wastewater systems<br>➢ preventing storage of possibly harmful materials such as waste and fertilizers, preventing storage of greenhouse wastes to prevent decomposition of them, ensuring high quality sewer systems in settlements, and preventing establishments which do not transfer their waste out of the conservation zones in safe conditions in geothermal areas |
| | | | A106: improving existing health centers | 0 | |
| | | | A62: locating facilities which may harm human health far from settlements and especially residential areas | 1 | |
| | | | A107: proposing facilities and areas for health tourism | 1 | |
| | P38 : reducing effects of pollution to health | 1 | A108: setting local pollution limits | 1 | ➢ preventing usage of buildings without facilities which prevents environmental pollution such as technical infrastructure and purification facilities<br>➢ locating industrial districts in appropriate spaces and avoiding location of industrial facilities and depots in urban and rural residential and development areas<br>➢ accepting the approved previous planning decisions about location of industrial facilities in and out of settlements and avoiding additional decisions and plan revisions such as increasing densities or changing type of industries which might have negative impacts on environment<br>➢ ensuring transfer of industrial establishments and nonresidential working areas bigger than 20 decares from city center to alternative spaces out of settlements<br>➢ proposing responsible institutions to take precautions in industries not to cause environmental problems<br>➢ locating possibly harmful industrial establishments in organized industrial districts and forcing them to take precautions to prevent environmental pollution<br>➢ preventing tourism facilities which cause noise more than 80 decibel and agricultural and industrial facilities and buildings which cause bad smell |
| | | | A79: planning buffer zones along two sides of main transportation arteries | 0 | |

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Table 29. (cont.) Evaluation of Afyonkarahisar Environment Plan in terms of Policies and Urban Planning Actions for Sustainability (Source: Author)

| | | | | | |
|---|---|---|---|---|---|
| urban infrastructure and services | P39: ensuring educational facilities | 1 | A109: improving existing educational centers | 0 | ➢ proposing techno parks and social facilities in organized industrial districts<br>➢ proposing university areas |
| | | | A110: ensuring new educational centers in developing residential areas | 1 | |
| | | | A111: ensuring educational centers aimed at employment | 0 | |
| | | | A112: ensuring educational centers for local organizations and public education centers | 0 | |
| residential areas | P40: ensuring safety and security in residential areas | 1 | A45: setting design standards for durability and reparability of new developments | 0 | ➢ preventing establishments using explosives in small industrial sites<br>➢ preventing construction in geologically objectionable lands in urban and rural settlements and proposing requirements and evaluation reports of location appropriateness when location of development areas in these areas is necessary<br>➢ locating industrial districts in appropriate spaces and avoiding location of industrial facilities and depots in urban and rural residential and development areas |
| | | | A113: securing good quality and socially integrated housing and living conditions | 0 | |
| | | | A114: avoiding urban pattern which includes narrow streets and cul-de-sacs | 0 | |
| | | | A61: locating residential areas far from dangerous sites | 1 | |
| | | | A62: locating facilities which may harm human health far from settlements and especially residential areas | 1 | |
| | | | A115: ensuring adequate permeable soil in residential areas to prevent flood | 0 | |
| | | | A63: considering regulations about technical infrastructure and setting location standards through and around them | 1 | |
| | | | A116: proposing areas for usage after disaster | 0 | |
| | P41: fostering social inclusion and equity in housing opportunities | 1 | A117: ensuring small and efficient affordable housing for urban poor | 0 | ➢ clearance of existing constructions on archeological sites and proposing barter when appropriate |
| | | | A118: ensuring alternative types of forms and functions in residential districts for people with different pleasures | 0 | |
| | | | A119: ensuring housing units for people who lost their houses after disasters and urban renewal projects | 1 | |

In a general evaluation of the Afyonkarahisar Environment Plan (Table 29), it is seen that 27 of the total 41 policies are considered. Also, in 2 of these 27 policies (P10 and P27) the planning actions have not been considered. The policy areas in which all policies are considered are cultural heritage, settlement location and form, and residential areas; but the action scores in these policy areas are weak.

## 4.4. Scoring and Comparison of the Four Environment Plans in Aegean Region

Four environment plans of the eight cities of the Aegean Region (Manisa-Kütahya-İzmir Environment Plan – MKİ, Aydın-Denizli-Muğla Environment Plan – AMD, Uşak Environment Plan – Uşak, and Afyonkarahisar Environment Plan – Afyon) are compared in a checklist including both policy scores and action scores (Table 30). The scores in columns are compared with each other

- to compare scores of plans with scores of other plans to find out if the levels of considering sustainability issues are similar in all plans,
- to find out if the plans proposes actions supporting policies,
- to compare policies with each other to find the most and the least considered policies and actions in plans of the case study and
- to compare considerations on different policy areas.

There are six policy areas, 41 policies and 119 actions in the proposed checklist. There are 12 repetitions in actions. The reason of using repetitions is that some actions are supporting several policies and may be included in different policy areas. For example, A26 (maintaining cultural and historic tourism with some standards not to damage heritages and sites) is supporting both the policy of 'ensuring appropriate conservation, renovation and use/reuse of urban cultural and historic heritage' (P11) in policy area of 'cultural heritage' and the policy of 'ensuring environmentally sensitive tourism and recreation' (P19) in policy area of 'economic activity areas'. Also, there may be repetition of actions in the same policy area. It is seen in the policy area of 'urban infrastructure and services'. A62 (locating facilities which may harm human health far from settlements and especially residential areas) is used twice in this policy

area, because it is supporting two different policies (P32 and P37). In the whole checklist, seven actions (A6, A26, A30, A45, A53, A61 and A79) are used twice, one action (A63) is used three times and one action (A62) is used four times. The score of only one of the repeated actions are taken in the calculation of totals and percentages and in the comparisons.

Table 30. Comparison of the four plans
(Source: Author)

| policy areas | POLICIES | MKİ | AMD | Uşak | Afyon | URBAN PLANNING ACTIONS FOR SUSTAINABILITY | MKİ | AMD | Uşak | Afyon |
|---|---|---|---|---|---|---|---|---|---|---|
| natural resources | P1: safeguarding natural areas | 1 | 1 | 1 | 1 | A1: preventing construction on natural areas | 1 | 1 | 1 | 1 |
| | | | | | | A2: continuing existing legal restrictions and site decisions for sites with special characteristics and proposing new legal restrictions if needed | 1 | 1 | 1 | 1 |
| | P2: mitigation of impacts of harmful activities to natural areas | 1 | 1 | 1 | 1 | A3: locating possibly harmful activities far from natural areas | 1 | 1 | 1 | 1 |
| | | | | | | A4: setting standards for possibly harmful activities | 1 | 1 | 1 | 1 |
| | P3: preserving flora and fauna and promoting biodiversity | 1 | 1 | 1 | 1 | A5: protecting sensitive sites from extraction | 1 | 1 | 1 | 1 |
| | | | | | | A6: proposing environmentally sensitive recreational areas which do not make any changes in nature | 1 | 1 | 1 | 1 |
| | | | | | | A7: determining wildlife conservation areas | 1 | 1 | 1 | 1 |
| | P4: conserving water resources | 1 | 1 | 1 | 1 | A8: determining conservation zones in and around wetlands, river basins, valleys and groundwater resources | 1 | 1 | 1 | 1 |
| | | | | | | A9: improving connections of water systems to existing water resources | 1 | 1 | 1 | 0 |
| | P5: improving water quality | 1 | 1 | 1 | 1 | A10: improving existing infrastructure systems for potable water | 0 | 0 | 1 | 0 |
| | | | | | | A11: ensuring an infrastructure system of potable water for new settlements and the settlements with a lack of potable water | 1 | 0 | 0 | 0 |
| | | | | | | A12: taking mitigation measures for activities which possibly cause water pollution | 1 | 1 | 1 | 1 |
| | P6: using water more efficiently | 1 | 1 | 1 | 1 | A13: improving existing water purification facilities | 0 | 0 | 1 | 0 |
| | | | | | | A14: proposing new water purification facilities | 1 | 1 | 1 | 1 |
| | | | | | | A15: using underground water | 0 | 1 | 1 | 0 |
| | P7: preserving ecologically productive land | 1 | 1 | 1 | 1 | A16: locating possibly harmful activities far from ecologically productive land | 1 | 1 | 1 | 1 |
| | | | | | | A17: setting standards for the manner, location and sort of agricultural activities to prevent erosion and not to harm productive land | 0 | 1 | 1 | 0 |
| | | | | | | A18: setting standards for possibly harmful activities in agricultural soil | 1 | 1 | 1 | 1 |

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Table 30. (cont.) Comparison of the four plans
(Source: Author)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| natural resources | P8: improving soil quality | 1 | 1 | 1 | 0 | A19: identifying and treating contaminated land | 1 | 1 | 0 | 0 |
| | | | | | | A20: taking mitigation measures for activities which possibly cause soil pollution | 1 | 1 | 1 | 0 |
| | P9: using soil more efficiently | 1 | 1 | 1 | 0 | A21: proposing agricultural activities in lands with productive soil | 1 | 1 | 1 | 0 |
| | P10: preserving and improving air quality | 1 | 1 | 1 | 1 | A22: taking mitigation measures for activities which are possibly harmful to air quality to prevent air pollution | 1 | 1 | 1 | 0 |
| | | | | | | A23: considering wind and drafts/air flows in planning decisions | 0 | 0 | 1 | 0 |
| cultural heritage | P11: ensuring appropriate conservation, renovation and use/reuse of urban cultural and historic heritage | 1 | 1 | 1 | 1 | A24: continuing existing legal restrictions and site decisions and proposing new conservation zones in areas of cultural and historic interest if needed | 1 | 1 | 1 | 1 |
| | | | | | | A25: increasing accessibility of buildings and areas of cultural and historic interest | 0 | 0 | 0 | 0 |
| | | | | | | A26: maintaining cultural and historic tourism with some standards not to damage heritages and sites | 1 | 1 | 1 | 0 |
| | | | | | | A27: ensuring areas for cultural facilities in and around urban cultural and historic heritages with some standards not to damage them | 1 | 1 | 1 | 0 |
| | P12: increasing consciousness about cultural heritage and urban identity | 1 | 1 | 1 | 1 | A28: preparing symbolic and structural projects | 0 | 0 | 0 | 0 |
| | | | | | | A29: creating cultural and historical public spaces and landmarks | 1 | 1 | 1 | 1 |
| | | | | | | A30: proposing activity areas for presentation of cities and settlements | 1 | 1 | 1 | 0 |
| economic activity areas | P13: supporting economic activity in agriculture sector | 1 | 1 | 1 | 1 | A31: preventing construction on agricultural lands | 1 | 1 | 1 | 1 |
| | | | | | | A32: proposing appropriate types of agricultural production due to the characteristics of local soil, climate and other natural conditions | 0 | 1 | 1 | 0 |
| | | | | | | A33: using productive soil as food fields for agricultural activities | 1 | 1 | 1 | 0 |
| | | | | | | A34: improving pastures and ensuring their access to support animal feeders in rural settlements | 1 | 0 | 1 | 1 |
| | | | | | | A35: proposing sites for agricultural cooperatives | 0 | 0 | 1 | 0 |
| | P14: developing industrial developments integrated with agriculture | 1 | 1 | 1 | 0 | A36: managing transportation connections between agricultural lands and industrial developments | 0 | 1 | 1 | 0 |

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Table 30. (cont.) Comparison of the four plans
(Source: Author)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| economic activity areas | P15: increasing awareness and supporting the usage of new technologies in agriculture sector | 1 | 0 | 1 | 0 | A37: proposing educational centers for new techniques and technologies in agricultural production | 0 | 0 | 1 | 0 |
| | | | | | | A38: managing transportation connections between agricultural lands and university or techno parks | 0 | 0 | 0 | 0 |
| | | | | | | A39: developing eco-villages and farms in which tourism and agricultural activities are taken place together | 0 | 0 | 1 | 0 |
| | P16: promoting eco-labeled, organic, ethical and fair trade products | 1 | 1 | 1 | 0 | A40: proposing organic farms in appropriate locations | 1 | 0 | 0 | 0 |
| | P17: supporting economic activity in ecologically sensitive industrial development | 1 | 0 | 1 | 1 | A41: providing adequate area for ecologically sensitive industrial development | 1 | 0 | 1 | 1 |
| | | | | | | A42: managing the relationship of ecologically sensitive industrial development to public transport to ensure accessibility | 0 | 0 | 1 | 0 |
| | | | | | | A43: setting standards for warehouses and depots in relation with ecologically sensitive industrial districts | 1 | 1 | 1 | 1 |
| | | | | | | A44: ensuring product and labor mobility with integrated alternative modes of transport | 0 | 0 | 1 | 0 |
| | | | | | | A45: setting design standards for durability and reparability of new developments | 0 | 0 | 0 | 0 |
| | | | | | | A46: converting existing industrial districts to ecologically sensitive industrial districts | 1 | 0 | 1 | 0 |
| | P18: supporting ecologically sensitive industrial development with new technologies | 1 | 1 | 1 | 1 | A47: planning areas for techno parks and technology development districts and relating them to industrial developments | 1 | 1 | 1 | 1 |
| | P19: ensuring environmentally sensitive tourism and recreation | 1 | 1 | 1 | 1 | A48: locating areas of natural sports, botanical gardens, zoological gardens, festival areas, fairs, etc. which make small changes in nature | 1 | 1 | 1 | 1 |
| | | | | | | A6: proposing environmentally sensitive recreational areas which do not make any changes in nature | 1 | 1 | 1 | 1 |
| | | | | | | A26: maintaining cultural and historic tourism with some standards not to damage heritages and sites | 1 | 1 | 1 | 0 |
| | | | | | | A49: encouraging alternative and ecologic tourism including tour routes connecting small touristic settlements | 0 | 1 | 0 | 1 |
| | | | | | | A50: avoiding harmful types of tourism | 0 | 0 | 0 | 0 |

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Table 30. (cont.) Comparison of the four plans
(Source: Author)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| economic activity areas | P20: supporting local economic activity | 1 | 1 | 1 | 1 | A51: proposing local markets and bazaars for selling local products | 1 | 1 | 1 | 1 |
| | | | | | | A30: proposing activity areas for presentation of cities and settlements | 1 | 1 | 1 | 0 |
| | | | | | | A52: ensuring provision of all immediate needs locally | 1 | 0 | 1 | 1 |
| settlement location and form | P21: avoiding urban sprawl and promoting compact settlements | 1 | 1 | 1 | 1 | A53: preference for medium rise, high density developments | 0 | 0 | 0 | 0 |
| | | | | | | A54: reusing derelict, rebundant and vacant areas | 0 | 1 | 0 | 0 |
| | | | | | | A55: regenerating disadvantaged areas | 1 | 1 | 0 | 0 |
| | | | | | | A56: renewal of inner city areas if necessary | 1 | 1 | 0 | 0 |
| | | | | | | A57: concentrating facilities in inner cities | 0 | 1 | 0 | 0 |
| | | | | | | A58: controlling and avoiding incremental developments | 1 | 1 | 1 | 0 |
| | P22: selecting appropriate location for new settlements | 1 | 1 | 1 | 1 | A59: considering climatic conditions while locating settlements | 0 | 0 | 1 | 0 |
| | | | | | | A60: considering physical conditions while locating settlements | 1 | 1 | 1 | 1 |
| | | | | | | A61: locating residential areas far from dangerous sites | 1 | 1 | 1 | 1 |
| | | | | | | A62: locating facilities which may harm human health far from settlements and especially residential areas | 1 | 1 | 1 | 1 |
| | | | | | | A63: considering regulations about technical infrastructure and setting location standards through and around them | 1 | 0 | 0 | 1 |
| urban infrastructure and services | P23: ensuring infrastructure facilities | 1 | 1 | 1 | 1 | A64: improving existing infrastructure systems | 1 | 1 | 1 | 0 |
| | | | | | | A65: ensuring infrastructure facilities for new developments | 1 | 1 | 1 | 1 |
| | | | | | | A66: avoiding development in areas without infrastructure | 1 | 0 | 1 | 1 |
| | | | | | | A63: considering regulations about technical infrastructure and setting location standards through and around them | 1 | 0 | 0 | 1 |
| | P24: managing transportation connections to support economic activity | 1 | 1 | 1 | 0 | A67: managing the transportation connections with airports | 1 | 0 | 1 | 0 |
| | | | | | | A68: managing the transportation connections with existing harbors | 1 | 1 | nr | nr |
| | | | | | | A69: ensuring integrated land-use | 0 | 0 | 0 | 0 |
| | P25: reducing travel demand in new developments | 0 | 0 | 1 | 0 | A70: ensuring the mixed use of buildings and developments with a good balance of jobs, housing and services | 0 | 0 | 0 | 0 |
| | | | | | | A53: preference for medium rise, high density developments | 0 | 0 | 0 | 0 |
| | | | | | | A71: reducing the distances between residences, employment and services | 1 | 0 | 1 | 0 |

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Table 30. (cont.) Comparison of the four plans
(Source: Author)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| urban infrastructure and services | P26: reducing the necessity for private motorized transport | 1 | 1 | 1 | 0 | A72: promoting attractive alternative modes of transportation accessible to all | 1 | 1 | 1 | 0 |
| | P27: improving and giving priority to public transport | 1 | 1 | 1 | 0 | A73: improving the quality of existing public transportation services | 1 | 0 | 1 | 0 |
| | | | | | | A74: designing new and integrated public transportation services for new developments | 1 | 1 | 1 | 0 |
| | P28: improving and giving priority to walking and cycling | 0 | 0 | 1 | 0 | A75: designing new and safe walking and cycling paths | 0 | 0 | 1 | 0 |
| | | | | | | A76: integrating walking and cycling paths to public transport | 0 | 0 | 1 | 0 |
| | | | | | | A77: improving conditions for pedestrians | 0 | 0 | 0 | 0 |
| | P29: minimizing impacts of highways to settlements | 0 | 0 | 1 | 0 | A78: locating through traffic far from city centers to reduce transit traffic volumes in the city | 0 | 0 | 1 | 0 |
| | | | | | | A79: planning buffer zones along two sides of main transportation arteries | 0 | 0 | 1 | 0 |
| | P30: ensuring equitable access to public services and facilities | 1 | 1 | 1 | 1 | A80: ensuring adequate number of major services in all settlements | 1 | 0 | 1 | 1 |
| | | | | | | A81: locating public services within walking distance of residents | 1 | 0 | 0 | 0 |
| | | | | | | A82: managing the relationship of major services to public transport | 0 | 0 | 1 | 0 |
| | | | | | | A83: using special areas as public spaces to ensure accessibility to all citizens | 0 | 1 | 1 | 0 |
| | P31: fostering social inclusion and equity in public services and facilities | 0 | 1 | 1 | 0 | A84: improving conditions of pavements for disabled people in wheelchairs | 0 | 0 | 1 | 0 |
| | | | | | | A85: ensuring public transportation especially for the parts of city in which urban poor lives | 0 | 0 | 0 | 0 |
| | | | | | | A86: ensuring alternative types of activities in public spaces for people from different genders, ages and income groups | 0 | 0 | 1 | 0 |
| | | | | | | A87: ensuring alternative types of religious buildings, areas and services for people from different religions | 0 | 0 | 0 | 0 |
| | P32: encouraging waste reduction, re-use, recycling and recovery | 1 | 1 | 1 | 1 | A88: proposing waste disposal facilities in new settlements | 1 | 1 | 1 | 1 |
| | | | | | | A89: improving existing waste disposal facilities | 1 | 0 | 1 | 1 |
| | | | | | | A90: proposing waste recycling and recovery facilities in new settlements | 1 | 1 | 1 | 1 |
| | | | | | | A91: improving existing waste recycling and recovery facilities | 1 | 0 | 1 | 0 |
| | | | | | | A62: locating facilities which may harm human health far from settlements and especially residential areas | 1 | 1 | 1 | 1 |

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Table 30. (cont.) Comparison of the four plans
(Source: Author)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| urban infrastructure and services | P33: minimizing impact and costs of waste disposal | 1 | 1 | 1 | 1 | A92: setting standards for waste management in industrial developments | 1 | 1 | 1 | 1 |
| | | | | | | A93: ensuring responsible disposal for hazardous waste | 1 | 1 | 1 | 1 |
| | | | | | | A94: proposing a common waste disposal unit for several neighborhood settlements in optimal location | 1 | 0 | 0 | 1 |
| | P34: providing balanced and efficient usage of energy resources | 1 | 1 | 1 | 0 | A95: setting design standards for energy efficiency in new settlements and buildings | 1 | 1 | 1 | 0 |
| | | | | | | A96: using alternative energy resources instead of nonrenewable energy resources in existing buildings and settlements | 1 | 1 | 1 | 0 |
| | | | | | | A97: using local and renewable energy | 1 | 1 | 1 | 0 |
| | P35: enhancing urban green space | 1 | 1 | 1 | 1 | A98: protecting existing green space in urban settlements | 1 | 1 | 1 | 1 |
| | | | | | | A99: increasing the quality of existing green spaces | 1 | 0 | 0 | 1 |
| | | | | | | A100: ensuring adequate green spaces for all neighborhoods | 1 | 1 | 1 | 1 |
| | | | | | | A101: integrating green space structures through the creation of green corridors | 1 | 0 | 0 | 0 |
| | | | | | | A102: proposing family gardens | 0 | 0 | 0 | 0 |
| | P36: ensuring accessibility of urban green spaces | 0 | 0 | 0 | 0 | A103: connecting pedestrian and cycling paths to urban green spaces | 0 | 0 | 0 | 0 |
| | | | | | | A104: locating new green spaces within walking distance of residents | 0 | 0 | 0 | 0 |
| | P37: integrating health considerations in planning strategies | 1 | 1 | 1 | 1 | A105: ensuring areas for health facilities | 1 | 0 | 1 | 0 |
| | | | | | | A106: improving existing health centers | 0 | 0 | 1 | 0 |
| | | | | | | A62: locating facilities which may harm human health far from settlements and especially residential areas | 1 | 1 | 1 | 1 |
| | | | | | | A107: proposing facilities and areas for health tourism | 1 | 1 | 1 | 1 |
| | P38 : reducing effects of pollution to health | 1 | 1 | 1 | 1 | A108: setting local pollution limits | 0 | 0 | 0 | 1 |
| | | | | | | A79: planning buffer zones along two sides of main transportation arteries | 0 | 0 | 1 | 0 |
| | P39: ensuring educational facilities | 1 | 1 | 1 | 1 | A109: improving existing educational centers | 0 | 0 | 1 | 0 |
| | | | | | | A110: ensuring new educational centers in developing residential areas | 1 | 1 | 1 | 1 |
| | | | | | | A111: ensuring educational centers aimed at employment | 0 | 0 | 1 | 0 |
| | | | | | | A112: ensuring educational centers for local organizations and public education centers | 0 | 0 | 1 | 0 |

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Table 30. (cont.) Comparison of the four plans
(Source: Author)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| residential areas | P40: ensuring safety and security in residential areas | 1 | 1 | 1 | 1 | A45: setting design standards for durability and reparability of new developments | 0 | 0 | 0 | 0 |
| | | | | | | A113: securing good quality and socially integrated housing and living conditions | 0 | 0 | 0 | 0 |
| | | | | | | A114: avoiding urban pattern which includes narrow streets and cul-de-sacs | 0 | 0 | 0 | 0 |
| | | | | | | A61: locating residential areas far from dangerous sites | 1 | 1 | 1 | 1 |
| | | | | | | A62: locating facilities which may harm human health far from settlements and especially residential areas | 1 | 1 | 1 | 1 |
| | | | | | | A115: ensuring adequate permeable soil in residential areas to prevent flood | 0 | 0 | 0 | 0 |
| | | | | | | A63: considering regulations about technical infrastructure and setting location standards through and around them | 1 | 0 | 0 | 1 |
| | | | | | | A116: proposing areas for usage after disaster | 0 | 0 | 1 | 0 |
| | P41: fostering social inclusion and equity in housing opportunities | 0 | 0 | 1 | 1 | A117: ensuring small and efficient affordable housing for urban poor | 0 | 0 | 0 | 0 |
| | | | | | | A118: ensuring alternative types of forms and functions in residential districts for people with different pleasures | 0 | 0 | 1 | 0 |
| | | | | | | A119: ensuring housing units for people who lost their houses after disasters and urban renewal projects | 0 | 0 | 1 | 1 |

Results show that:

- The 25 of the 41 policies are found to be considered in all four plans.
- The 31 of the 119 actions are also found in reports of all four plans.
- The situation in which all plans considered both policies and its all actions are seen in only P1, P2, P3 and P18 and their actions. The three of these policies are in ‘natural resources’ policy area.
- There is no situation in which four plans have “1” points from policy score and they have “0” points from all actions supporting this policy, so it means that there is at least one plan considering at least one action of the policy having “1” point. The situation that a policy having “1” point and all its actions having “0” points is seen in the evaluation of plans separately.

- There is only one policy which is not considered in any of four plans and having "0" point in this policy score. It is "ensuring accessibility of urban green spaces" (P36). All plans considered "enhancing urban green spaces" (P35), but they did not care about its accessibility.
- There are 18 actions in which all four plans have "0" points. These are A25, A28, A38, A45, A50, A53, A69, A70, A77, A85, A87, A102, A103, A104, A113, A114, A115 and A117. Most of these actions are in the policy areas of 'urban infrastructure and services' and 'residential areas'. The other policy areas have at most two actions having "0" point from all plans.

The scores on policies and actions of the four plans are also handled in the groups of policy areas with calculation of sub-totals (Table 31) and calculation of the average scores (Table 32). When the plans are compared with the sub-totals of their scores on policies due to the six policy areas, it is seen that:

- There are only two policy areas in which all plans considered all policies. These are 'cultural heritage' and 'settlement location and form'.
- All policies in the 'natural resources' policy area are considered by all plans except Afyonkarahisar Environment Plan.
- In policy areas of 'economic activity areas' and 'residential areas', there are two plans having the possible maximum scores in policies, whereas in policy area of 'urban infrastructure and services', there are no plans considering all policies.
- When the sub-totals of action scores are compared in policy area groups the repetitions in the policy area of 'urban infrastructure and services' are subtracted from the sub-total. In other words, the action repeated in this policy area is scored only once.
- The sub-totals of action scores show that there are no policy areas in which all plans considered all actions.
- The four plans' consideration of policies is more than their consideration of actions in all policy areas.
- The minimum average policy score of four plans is 72%, whereas the minimum average action score of four plans is 32%.
- The most considered policy area in terms of its actions is 'natural resources' with the 76% of the average action score.
- The only action which is not relevant in plans is the action coded A68 and called 'managing the transportation connections with existing harbors'. It is not

relevant in Uşak and Afyonkarahisar Environment Plans because there are no harbors in these plans' boundaries. The percentages of the action scores are calculated with the subtraction of the 'not relevant' ('nr') actions. In other words, the percentage of action scores in policy areas of 'urban infrastructure and services' in plans of Uşak and Afyonkarahisar are calculated by subtracting 1 from the possible maximum score (52-1=51), because Uşak considered 36 actions from 51 actions, Afyonkarahisar considered 17 actions from 51 actions, whereas Manisa-Kütahya-İzmir considered 30 actions from 52 actions and Aydın-Muğla-Denizli considered 18 actions from 52 actions.

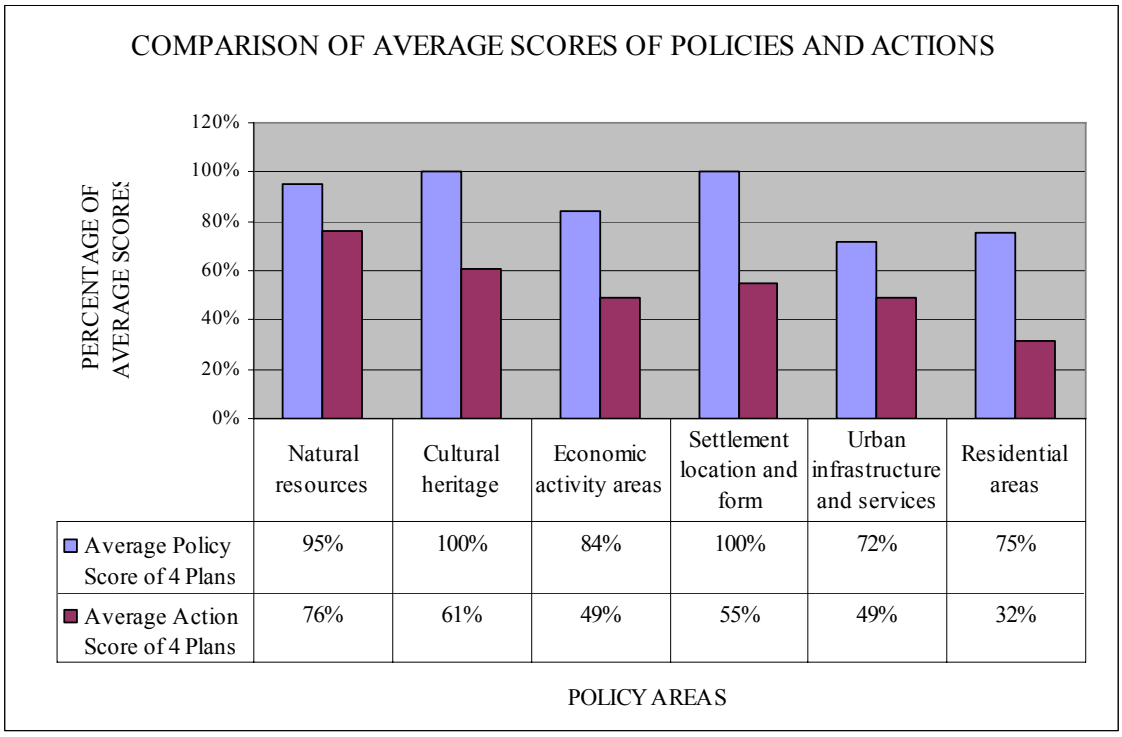
Table 31. Sub-totals of policy and action scores of the four plans in policy area groups (Source: Author)

| | POLICY SCORES | | | | | ACTION SCORES | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| POLICY AREAS | Possible max score | MKİ | AMD | Uşak | Afyon | Amount of Actions | repetition in policy area | Possible max score | MKİ | AMD | Uşak | Afyon |
| Natural resources | 10 | 10 | 10 | 10 | 8 | 23 | 0 | 23 | 18 | 19 | 21 | 12 |
| Cultural heritage | 2 | 2 | 2 | 2 | 2 | 7 | 0 | 7 | 5 | 5 | 5 | 2 |
| Economic activity areas | 8 | 8 | 6 | 8 | 5 | 25 | 0 | 25 | 14 | 12 | 15 | 8 |
| Settlement location and form | 2 | 2 | 2 | 2 | 2 | 11 | 0 | 11 | 7 | 8 | 5 | 4 |
| Urban infrastructure and services | 17 | 12 | 13 | 16 | 8 | 54 | 2 | 52 | 30 | 18 | 36 | 17 |
| Residential areas | 2 | 1 | 1 | 2 | 2 | 11 | 0 | 11 | 3 | 2 | 5 | 4 |

Table 32. Percentages of sub-totals of policy and action scores of the four plans and their average scores in policy area groups (Source: Author)

| | POLICY SCORES (%) | | | | | ACTION SCORES (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| POLICY AREAS | MKİ | AMD | Uşak | Afyon | Average Score of 4 plans | MKİ | AMD | Uşak | Afyon | Average Score of 4 plans |
| Natural resources | 100% | 100% | 100% | 80% | 95% | 78% | 83% | 91% | 52% | 76% |
| Cultural heritage | 100% | 100% | 100% | 100% | 100% | 71% | 71% | 71% | 29% | 61% |
| Economic activity areas | 100% | 75% | 100% | 63% | 84% | 56% | 48% | 60% | 32% | 49% |
| Settlement location and form | 100% | 100% | 100% | 100% | 100% | 64% | 73% | 45% | 36% | 55% |
| Urban infrastructure and services | 71% | 76% | 94% | 47% | 72% | 58% | 35% | 71% | 33% | 49% |
| Residential areas | 50% | 50% | 100% | 100% | 75% | 27% | 18% | 45% | 36% | 32% |

The average policy scores of four plans and the average action scores of four plans are shown in Figure 11. The comparison of these averages shows that the biggest difference between them is seen in the policy area of 'settlement location and form' and the smallest difference between them is seen in the policy area of 'natural resources'. The more there are differences between average scores of policies and actions, the more there is a lack of support in policies.




| | Natural resources | Cultural heritage | Economic activity areas | Settlement location and form | Urban infrastructure and services | Residential areas |
|---|---|---|---|---|---|---|
| Average Policy Score of 4 Plans | 95% | 100% | 84% | 100% | 72% | 75% |
| Average Action Score of 4 Plans | 76% | 61% | 49% | 55% | 49% | 32% |

Figure 11. Comparison of Average Scores of Policies and Actions
(Source: Author)

When the four plans are compared in terms of policy scores in policy area groups, it is seen that Uşak Environment Plan has the best scores with consideration of all policies (100%) in five policy areas (Figure 12). Although this plan does not have full consideration of policies in the policy area of 'urban infrastructure and services', it has the best score (94%) between four plans, so it matters this policy area more than other plans. Manisa-Kütahya-İzmir Environment Plan comes in second with full consideration (100%) of policies in four policy areas, whereas the other two plans have full consideration of policies in only three of the policy areas.

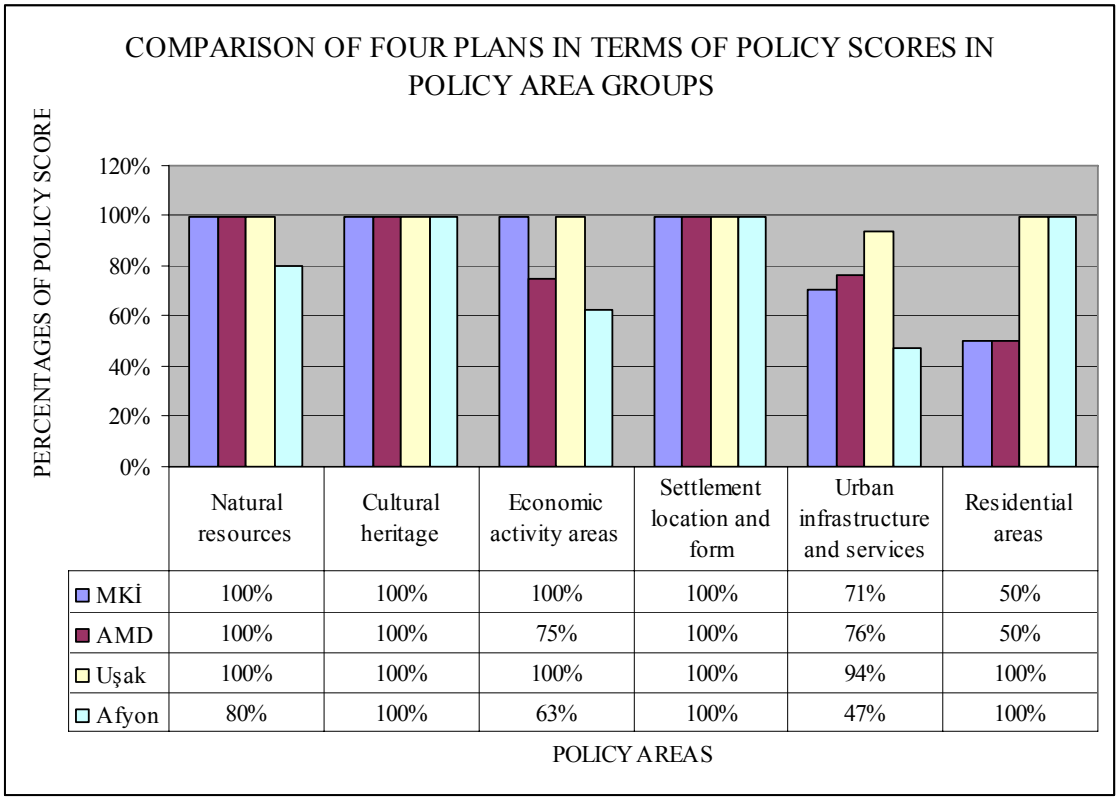



Figure 12. Comparison of Four Plans in terms of Policy Scores in Policy Area Groups (Source: Author)

When the action scores in policy area groups are evaluated in the comparison of four plans (Figure 13), it is seen that Uşak Environment Plan has the best scores in four policy areas: 'natural resources', 'economic activity areas', urban infrastructure and services' and 'residential areas' and Aydın-Muğla-Denizli Environment Plan has the best scores in policy area of 'settlement location and form'. As for policy area of 'cultural heritage', Afyonkarahisar Environment Plan has the worst score of 29% while the scores of other three plans are equal and 71%.

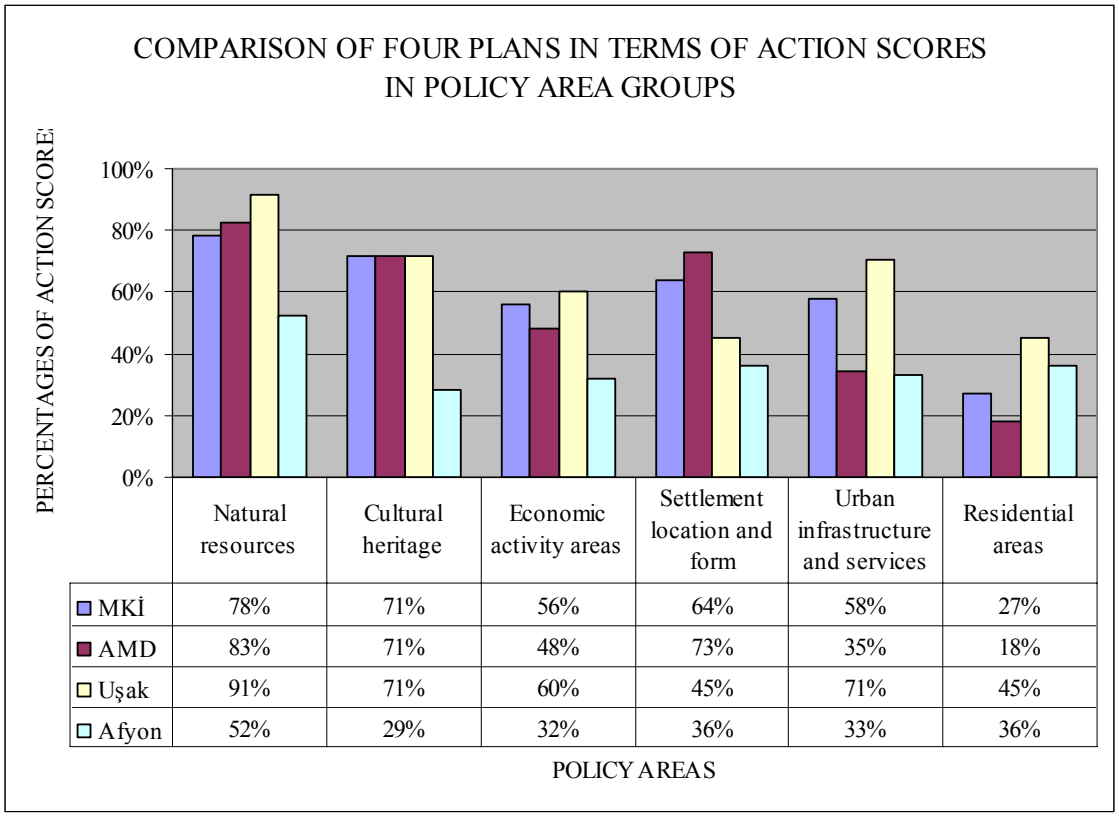



Figure 13. Comparison of Four Plans in terms of Action Scores in Policy Area Groups (Source: Author)

In addition to the evaluations of sub-totals in policy area groups, the general totals are also calculated (Table 33). The repetitions here are also counted once and the not relevant actions are also subtracted. According to the general scores the plan considering policies most is Uşak Environment Plan with 98%, Manisa-Kütahya-İzmir Environment Plan is following it with 85%, Aydın-Muğla-Denizli Environment Plan is the third with 83%, and the plan considering policies least is Afyonkarahisar Environment Plan with 66%. The order of plans does not change in general action scores, but the percentages of consideration is decreased to 69% in Uşak Environment Plan, 58% in Manisa-Kütahya-İzmir Environment Plan, 50% in Aydın-Muğla-Denizli Environment Plan and 35% in Afyonkarahisar Environment Plan. The average of the policy scores of four environment plans in Aegean Region is 83% and the average of the action scores of them is 53%.

Table 33. General Totals of Policy and Action Scores of Four Plans
(Source: Author)

| | POLICY SCORES | | | | | ACTION SCORES | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Possible max score | MKİ | AMD | Uşak | Afyon | Possible max score | MKİ | AMD | Uşak | Afyon |
| TOTAL | 41 | 35 | 34 | 40 | 27 | 129 | 77 | 64 | 87 | 47 |
| REPETITION | 0 | 0 | 0 | 0 | 0 | 10 | 8 | 5 | 6 | 6 |
| GENERAL SCORES | 41 | 35 | 34 | 40 | 27 | 119 | 69 | 59 | 81 | 41 |
| GENERAL SCORES (%) | 100% | 85% | 83% | 98% | 66% | 100% | 58% | 50% | 69% | 35% |

The general policy scores are more than the general action scores in all four plans as seen in Figure 14. The differences between the policy scores and action scores are not same in four plans, but very similar to each other. The biggest difference is in Aydın-Muğla-Denizli Environment Plan and the smallest difference between them is in the Manisa-Kütahya-İzmir Environment Plan, but all these differences mean that the policies are not supported with actions in the checklist in plans.

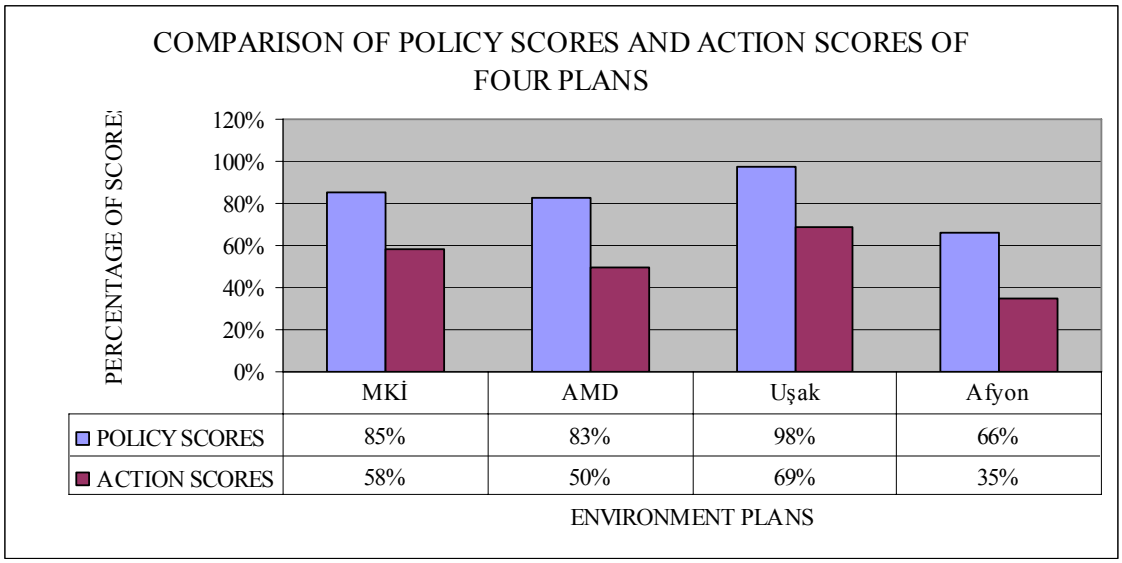



Figure 14. Comparison of Policy Scores and Action Scores of Four Plans
(Source: Author)

In addition to these scoring of plans due to the items in the checklist, there are some contradictory situations, goals or objectives of the plans. These are included in the evaluation of all policies in each plan in the BUT statements. The contradictory statements are mostly seen in Manisa-Kütahya-İzmir Environment Plan. The first one is in the policy "ensuring environmentally sensitive tourism and recreation" (P19) as encouraging golf investments. The plan promotes environmentally sensitive, so it has

“1” point from the policy, but it also provides golf tourism which harms the environment. Another contradiction is about urban sprawl, because the plan suggests the usage of urban fringes to provide development area and supports urban sprawl with industrial districts and mass housing projects in İzmir. These objectives are completely inappropriate to the policies “avoiding urban sprawl and promoting compact settlements” (P21) and “reducing travel demand in new developments” (P25). The action A71 (reducing the distances between residences, employment and services) in the policy P25 has “1” point, but it is found not to be enough for “1” point of the policy P25, so P25 is given “0” points. The last BUT statement in the plan is seen in the P26 (reducing the necessity for private motorized transport), because it proposes highways. Aydın-Muğla-Denizli Environment Plan has also contradictory statements in policies P19 (ensuring environmentally sensitive tourism and recreation) and P21 (avoiding urban sprawl and promoting compact settlements). These statements are about maintaining secondary housing. In addition to them, P19 is opposed with the objectives in which existing rapid tourism is maintained and golf tourism is proposed. On the other hand, no contradictions are found in the Uşak Environment Plan and Afyonkarahisar Environment Plan.

# CHAPTER 5

# CONCLUSION

'**Sustainability**' is a widely used term and a universal principle common in different fields such as urban planning, environmental sciences, economics, etc. When the term is used with the concept of development, it refers to a development that causes to continue in a state of having equal opportunities in meeting human needs between generations and geographic locations; and that balances the environmental, social and economic aspects. The most accepted definition of the term '**sustainable development**' is formed in Brundtland Report (1987) as "the development that meets the needs of present without compromising the ability of future generations to meet their own needs". It has been used in many international declarations and summits since its emergence. It is usually considered in terms of environmental, social and economic aspects. The strong relation between urbanization and sustainable development gave birth to the concept of '**sustainable urban development**'. It refers to urban development which human needs are met equally and efficiently in and ensures the maintenance of this situation and environment for current and future generations living in the urban boundaries. The concrete spatial reflection of this concept is the '**sustainable city**'. The main aims of sustainable urban development are improving the quality of life, protecting values and maintaining resources. The content of the concept includes the form of the city, the environmental quality and adequate services for citizens, equity, security, health, employment, transportation, etc. The ideas on **achieving sustainable urban development** are various; however, there are common points in this matter. These are changes in understandings and trends in growth of cities and economics, integration between visions of local and global, and the holistic perception of the environmental, social and economic aspects. **Urban planning** is an important tool of achieving urban sustainability which is also an important aim of urban

planning. The ways how should urban planning support sustainable urban development are defined in literature. They include decisions on compact and mixed land-use, protection of special sites, technical and social services, specific issues such as energy and waste management, mobility and transport, air quality, housing, cultural heritage, tourism, land use and planning, redevelopment and regeneration, and social cohesion, etc. Urban planning promotes sustainable development in whatever approaches such as land-use planning, comprehensive planning, strategic planning, smart growth, precautionary planning, communicative planning are considered. It is possible to say that there are many similarities between goals of sustainable urban development and goals of urban planning and that achieving sustainability in cities depends on the urban plans. This point gives urban planners a responsibility to prepare plans effective on creating sustainable cities.

38 researches conducted between 1994 and 2009 are analyzed due to their contents and methods. The studies are grouped into three categories due to their contents: studies evaluating only urban structure, studies evaluating planning studies and studies evaluating both urban structure and planning studies. Nine of the 21 studies evaluating planning studies are evaluating plan documents, while others are evaluating either planning process or both plan documents and planning process. All these 38 studies used four categories of different methods and techniques; general evaluation, list, questionnaire / interview and others (dashboard of sustainability, SWOT analysis, GIS, spidergram analysis, ecological footprint analysis, multi-criterion framework with multi-dimensional indicators, a specific meta-analytical method called rough set analysis, PROPOLIS, onsite observation / field visit), while some of them used two or more methods. 25 studies used a list to analyze the sustainability. All studies using a list are used as guides for preparing a checklist for this thesis. The checklist was prepared also with the help of examination of general aims and contents of the sustainability and urban planning concepts and reviews of several plan reports in different scales. The proposed checklist is used in the evaluation of the plans in the case study.

The case study of this thesis includes comparative evaluation of four environment plans in eight cities of Aegean Region: Manisa – Kütahya – İzmir Environment Plan, Aydın – Muğla – Denizli Environment Plan, Uşak Environment Plan and Afyonkarahisar Environment Plan. The first two of them are approved by the Ministry of Environment and Forestry and the other two of them are approved by the Provincial Administrations and municipalities. They are evaluated with a checklist

including six policy areas, 41 policies and 119 urban planning actions supporting these policies. The plans are scored with "0" if they do not consider policies and actions, with "1" if they consider them, and with "nr" if the policy or action is not relevant with the plan.

The evaluation of these plans shows that:

- The plan which considers sustainability policies and actions most is Uşak Environment Plan (98% in policy scores and 69% in action scores).
- Manisa-Kütahya-İzmir Environment Plan comes in second with full consideration (100%) of policies in four policy areas, whereas the other two plans have full consideration of policies in only three of the policy areas.
- The policy area most considered in all plans is 'natural resources' in terms of both policies and actions. All policies in this policy area are considered by all plans except Afyonkarahisar Environment Plan. Also the average action score of four plans is 76% which is the highest score in all policy areas.
- Full consideration of policies (100%) in all plans is seen in the policy areas of 'cultural heritage' and 'settlement location and form', but the action considerations in these policy areas are low.
- The consideration of policies is more than the consideration of actions (25 of the 41 policies and 31 of the 119 actions are found to be considered in all four plans).
- There is at least one plan considering at least one action of the policy which is considered, but the policies are not supported with actions enough in all plans.
- The comparison of average policy scores of four plans and average action scores of four plans show that the biggest difference between them is seen in the policy area of 'settlement location and form' and the smallest difference between them is seen in the policy area of 'natural resources'.
- There is only one policy ("ensuring accessibility of urban green spaces") which is not considered in any of four plans and having "0" point in this policy score. All plans consider "enhancing urban green spaces" (P35), but they do not care about its accessibility.
- Most of the actions (12 of 18) in which all four plans have "0" points are in the policy areas of 'urban infrastructure and services' and 'residential areas'.
- There are only two policy areas ('cultural heritage' and 'settlement location and form') in which all plans considered all policies.

- There are no plans considering all policies in policy area of ‘urban infrastructure and services’, but Uşak Environment Plan matters policies in the policy area of ‘urban infrastructure and services’ more than other plans.
- There are two plans (Manisa-Kütahya-İzmir Environment Plan and Uşak Environment Plan) considering all policies in policy area of ‘economic activity areas’ and having maximum scores in this policy area.
- There are two plans (Uşak Environment Plan and Afyonkarahisar Environment Plan) considering all policies in policy area of ‘residential areas’ and having maximum scores in this policy area.
- Uşak Environment Plan has the best scores in four policy areas: ‘natural resources’, ‘economic activity areas’, urban infrastructure and services’ and ‘residential areas’; Aydın-Muğla-Denizli Environment Plan has the best scores in policy area of ‘settlement location and form’; and Afyonkarahisar Environment Plan has the worst score of 29% while the scores of other three plans are equal (71%) in the policy area of ‘cultural heritage’.
- The order of plans in general action scores is Uşak Environment Plan (the percentage of consideration: 69%), Manisa-Kütahya-İzmir Environment Plan (58%), Aydın-Muğla-Denizli Environment Plan (50%) and Afyonkarahisar Environment Plan (35%).
- There are some contradictory situations, goals or objectives of the plans included in the BUT statements in Manisa-Kütahya-İzmir Environment Plan and Aydın-Muğla-Denizli Environment Plan.
- The average of the policy scores of four environment plans in Aegean Region is 83% while the average of the action scores of them is 53%.

This thesis claims that action scores in these results are not enough to create sustainable environments despite better policy scores. Plans aimed sustainability should at least consider all policies in the checklist; however, policy scores about 70 percents are seen in two of the six policy areas. The planning authorities responsible in the preparation of these plans should have been considered urban infrastructure and services and residential areas more. Also, a comprehensive approach in consideration including all aspects of sustainability in plans might improve the results.

Sustainability consideration in urban planning practices is studied in various researches; however, there are several points under debate:

- No certain sustainability limits (such as more than this score is sustainable and lowers are unsustainable) for plans can be found in previous researches in the reviewed literature. The results show ranks or general statements. This thesis is also concluded as ranking the consideration of sustainability issues in plans; however, plans are not labeled as sustainable or unsustainable.
- Urban planning is not the only tool in managing urban sustainability; there are several other factors affecting urban development. The planning processes and the changing dynamics in urban structures are also important factors. While exploring the sustainability issues in urban plans, it does not mean that the plans taking care of all sustainability issues will create sustainable cities. Other factors may affect the success of the plans.
- Even if urban planning was the only tool in managing urban sustainability, full implementation of urban plans will be necessary to manage urban sustainability. The evaluation of urban structure after the projection years of the urban plans will be meaningful if there is full implementation. If the decisions of the plan are completely supported with necessary plan implementation tools but they are not implemented in urban structure, the plans should not be blamed for unsustainable urban environments.
- All sustainability policies may have economic, social and environmental dimensions. The costs and benefits of the goals and objectives of plans should be considered in terms of these dimensions while evaluating the plans. The contrary statements should not be skipped, because the balance of these dimensions is one of the main aims of sustainability.
- Some planning actions for sustainability might be more important than others due to different approaches. In terms of the checklist in this thesis, there might be various weights of actions and these weights might change due to the policies. These weights should be determined in an objective approach.
- The plans prepared with the aim of creating sustainable environments should have boundaries considering geographical features rather than political boundaries of provinces.

The further studies might include evaluation of plan drawings using different methods such as Geographic Information Systems. The comparison of the results of sustainability measurement in plan drawings with the findings of this thesis might also be useful to show the plan reports which are not in compliance with the drawings, if

exists. The planning processes are important for sustainability as much as plan documents, so the processes might be evaluated in the further studies. Also, the scoring might be done with weights in items in the checklist by using various statistical tools. It will bring up the consideration of obligatory and optional policies and actions. The items might also be scored with various degrees of consideration in addition to the 'included in the plan' and 'not included in the plan' used in this thesis. In addition, further studies using this thesis as a guide should consider the local conditions and characteristics of their cases while forming their lists and the possible irrelevant actions should be cancelled too. The checklist proposed in this thesis might be used in the evaluation of other plans from different regions and countries with some small changes. Finally, the plan evaluation method in this thesis might be used in the planning practices as control mechanisms. The sustainability measurement in plans should be included in the legal processes and regulations as seen in other countries. The evaluations might be used to categorize the plans in terms of sustainability consideration such as high degree, medium degree and low degree, and then the success of plans might be awarded.

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