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Research Article

# Analysis of Land Cover/Use Change According to Geographical Regions in Türkiye

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## Abstract

Differences in climate, rainfall, geographical structure, and human impact play a decisive role in land cover/use. For this reason, land cover/use and changes in different regions can happen differently. In this respect, our country has various land cover and land use. This study examined the changes in the use of land/cover in seven geographical regions: Marmara, Black Sea, Aegean, Mediterranean, Central Anatolia, Eastern Anatolia, and Southeastern Anatolia in our country. In the study, regional changes were identified and interpreted by using Corine land cover/use data and the ArcGIS program for 1990, 2000, 2006, 2012, and 2018. The data obtained indicates that artificial regions in all regions of our country are increasing in class areas. The pressure of the increase in artificial regions class and other land cover/use on the forest and seminatural areas class has attracted attention. Forest and seminatural field classes have been reduced in all regions. Since each of the land cover/usage classes is of special importance for our country, evaluating the changes in the regional characteristics is emphasized.
**Keywords:** CORINE, Geographical Regions, Land Cover/Use, Türkiye

## Türkiye'de Coğrafi Bölgelere göre Arazi Örtüsü/Kullanımı Değişiminin İncelenmesi

## Öz

İklim, yağış miktarı, coğrafi yapı ve insan etkisi gibi farklılıklar arazi örtüsü/kullanımı üzerinde belirleyici bir rol oynamaktadır. Bu nedenle arazi örtüsü/kullanımı ve meydana gelen değişimler farklı bölgelerde farklı şekillerde kendini gösterebilmektedir. Bu açıdan ülkemiz arazi örtüsü ve arazi kullanımında geniş bir çeşitliliğe sahiptir. Bu çalışmada; Marmara, Karadeniz, Ege, Akdeniz, Orta Anadolu, Doğu Anadolu ve Güneydoğu Anadolu olmak üzere ülkemizdeki yedi coğrafi bölgede arazi/örtüsü kullanımında meydana gelen değişimler incelemiştir. Çalışmada 1990, 2000, 2006, 2012, 2018 yıllarına ait CORINE arazi örtüsü/kullanımı verileri ve ArcGIS programı kullanılarak bölgesel değişimler belirlenerek ve yorumlanmıştır. Elde edilen veriler; ülkemizin tüm bölgelerinde yapay bölgeler sınıf alanlarının arttığını göstermektedir. Yapay bölgeler sınıfı ve diğer arazi örtüsü/kullanımı sınıf alanlarındaki artışın orman ve yarı doğal alanlar sınıfı üzerindeki baskısı dikkat çekmiştir. Orman ve yarı doğal alanlar sınıfına ait alanlar tüm bölgelerde azalmıştır. Arazi örtüsü/kullanımı sınıflarının her biri ülkemiz açısından ayrı öneme sahip olduğundan meydana gelen değişimler bölgesel özelliklerde dikkate alınarak değerlendirilmesinin önemine değinilmiştir.
**Anahtar Kelimeler:** CORINE, Coğrafi Bölgeler, Arazi Örtüsü/Kullanımı, Türkiye

## Introduction

Land cover/use change (LC/LU) is a global issue that has an essential role in the sustainable management of natural resources (Roy et al., 2014; Olorunfemi et al., 2022). Land cover/use change is a crucial factor that can affect soil and water resources, biodiversity, and the balance of ecosystems. Sudden and rapid changes can negatively impact food security, human health, and global climate change (Falcucci et al., 2007; Padonou et al., 2017; Perović, 2018; Göncüler and Köylü, 2024). For this reason, changes in land cover/use need to be identified and monitored.

Because it was not technically possible to follow the land cover/use changes that occurred in the past quickly and up-to-date, therefore the rapid and uncontrolled change could not be prevented (Kara

and Karatepe, 2012). Nowadays, with the development of remote sensing and GIS methods, determining the land cover/use and monitoring the changes regularly is relatively fast, easy, and economical (Ateşoğlu, 2016). CORINE is land cover/use data produced by computer-aided visual interpretation from satellite images according to the land cover classification determined by the European Environment Agency. It allows changes in land cover/use to be easily defined and monitored regularly (Anonymous, 2024a).

The first CORINE land cover/use dataset was produced in 1990. CORINE data is updated every 6 year. CORINE data for the years 2000, 2006, 2012 and 2018 were produced. The CORINE LU/LC classification consists of 5 basic classes at the first level, namely artificial regions, agricultural areas, forest and semi-natural areas, wetlands and water bodies. These classes are divided into 15 sub-classes at the second level and 44 sub-classes at the third level (Anonymous, 2024a; Anonymous, 2024b). CORINE data is an important source used in the world in analyzing land cover/use changes at regular intervals.

Decisions regarding planning and management of land cover and land use are often taken at the local or regional level (Polat and Yalçın, 2020). There is a lot of research on land cover and land use change at the provincial level in Türkiye (Türker, 2021; Demir, 2022; Karaoğlu and Erdel, 2022; Çelik and Yakar, 2023; Küçük,2024). While these studies provide important results for specific provinces,conducting such analyses on a larger, regional scale could allow for a more extensive evaluation.

Geographical regions are large areas that show a general integrity regarding natural and human (socio-economic) characteristics (Özçağlar, 2003). Türkiye has seven geographical regions: Marmara, Aegean, Mediterranean, Central Anatolia, Black Sea, Eastern Anatolia, and Southeastern Anatolia. This study aims to reveal the changes in land cover/use in Türkiye regionally. The aim of the study is to create a perspective for regional planning that can be done regarding sustainable use of land and water resources.

**Materials and Methods**

CORINE data and the ArcGIS program were used to investigate land cover/use in the regions. CORINE (Coordination of Information on the Environment) is land cover/use data produced from satellite images according to the classification determined by the European Environment Agency. The minimum mapping scale in the data is 1:100,000, the width of the classes showing linear features is minimum 100 m, and the minimum area size of the relevant class is 25 ha. Level 1 classification consists of 5 basic classes: artificial regions, agricultural areas, forest and semi-natural areas, wetlands and water bodies (Anonymous, 2024a). In the first step, CORINE land cover/use classification data for 1990, 2000, 2006, 2012, and 2018 were downloaded in vector format from the Copernicus website (Anonymous, 2024b). Afterwards, the country and province border data were downloaded from the Türkiye Ministry of National Defence Directorate General for Mapping website (Anonymous, 2024c). After the download process, CORINE data, the Türkiye border map, and the "clip" command in the ArcGIS program were used to create Türkiye land cover/use data, and the necessary projection transformation was made. A map of Türkiye's regions was created using provincial border data (Figure 1). Land cover/use data obtained for Türkiye were clipped according to the boundaries of the geographical areas of our country. Using the "dissolve" command in ArcGIS, CORINE level 1 land cover/use data for each of the geographical regions in Türkiye were obtained. The data obtained are given in the study with tables and maps. 28-year change of land/cover use in seven geographical regions of Marmara, Black Sea, Aegean, Mediterranean, Central Anatolia, Eastern Anatolia, and Southeastern Anatolia was examined and interpreted.

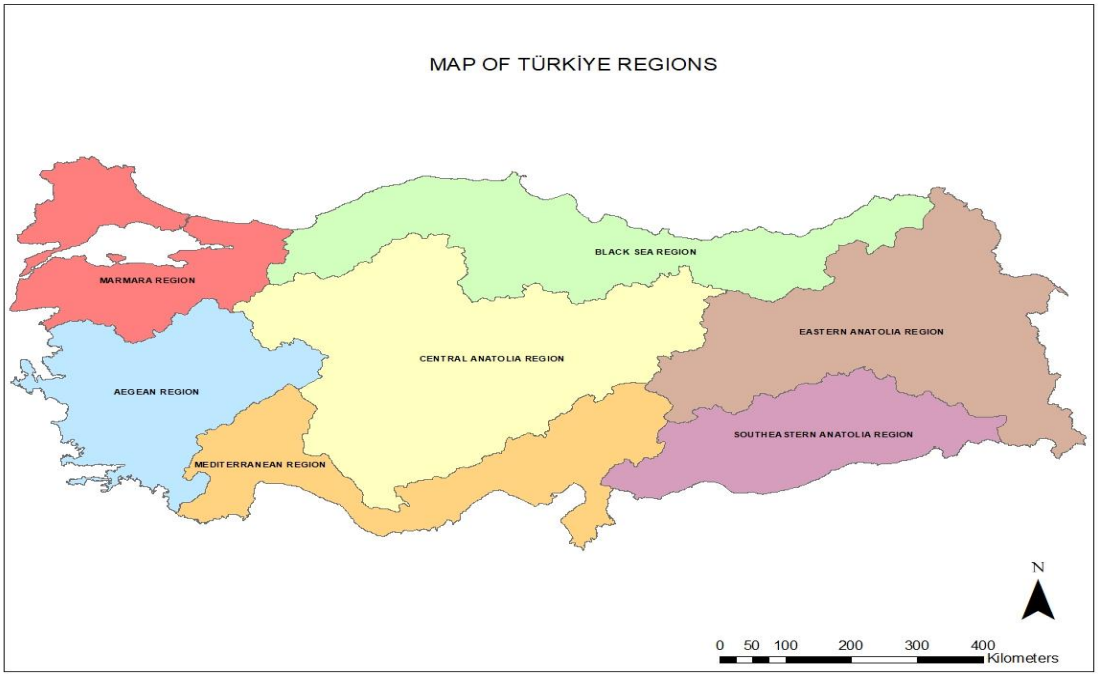


Figure 1. Geographical regions map of Türkiye

## Results and Discussion

### Land Cover/Use Change in the Marmara Region

The Marmara region is the most developed region of Türkiye in every aspect. Although the Marmara Region is small in terms of surface area compared to other regions, it is a region where approximately one-fourth of the population of Türkiye lives. Due to the constant migration to the region, the population density is well above the Turkish average. It is the region with the highest rate of urbanization in Türkiye due to its high population density and high immigration (Anonymous, 2024d). It is observed that artificial surface areas in the Marmara region increased between 1990 and 2018, reaching 151 145.69 hectares, while its ratio in the region increased from 2.66% to 4.75% (Table 1). Agricultural areas have increased by 65 302.42 hectares in the 28-years. While the ratio of agricultural lands at the regional level was 49.69% in 1990, this ratio increased to 50.59% in 2018. There was no significant change in the proportion of agricultural land between 2006 and 2018. Forest and seminatural areas have decreased continuously over the 28-years. When comparing the years 1990 and 2018, it was determined that there was a loss of 234 826.49 hectares of land in forest and seminatural areas, decreasing by 3.25%. Wetlands are the CORINE class that has the least area and changes in the Marmara region. It is observed that there is a continuous increase in the class of water bodies. The proportion of water bodies increased from 1.33% (in 1990) to 1.59% (in 2018). According to the data obtained in the Marmara region, it was concluded that there was a significant increase in artificial areas, agricultural areas, and water bodies, whereas forest and seminatural areas decreased, and there was no substantial change in wetlands in the specified 28-year period (Figure 2).

Table 1. Analysis of land cover/use change in the Marmara region

| | **Artificial Surfaces** | | **Agricultural Areas** | | **Forest and Seminatural areas** | | **Wetlands** | | **Water bodies** | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **ha** | **%** | **ha** | **%** | **ha** | **%** | **ha** | **%** | **ha** | **%** |
| **1990** | 191 849.24 | 2.66 | 3 587 274.59 | 49.69 | 3 327 514.43 | 46.09 | 16 890.34 | 0.23 | 96 318.07 | 1.33 |
| **2000** | 272 417.44 | 3.77 | 3 523 871.16 | 48.81 | 3 305 077.21 | 45.78 | 16 758.43 | 0.23 | 101 722.43 | 1.41 |
| **2006** | 297 017.53 | 4.11 | 3 653 593.36 | 50.60 | 3 149 199.52 | 43.62 | 16 848.41 | 0.23 | 103 187.85 | 1.43 |
| **2012** | 317 555.84 | 4.40 | 3 666 017.41 | 50.78 | 3 107 084.53 | 43.04 | 17 170.34 | 0.24 | 112 018.54 | 1.55 |
| **2018** | 342 994.93 | 4.75 | 3 652 577.01 | 50.59 | 3 092 687.94 | 42.84 | 17 091.11 | 0.24 | 114 495.69 | 1.59 |

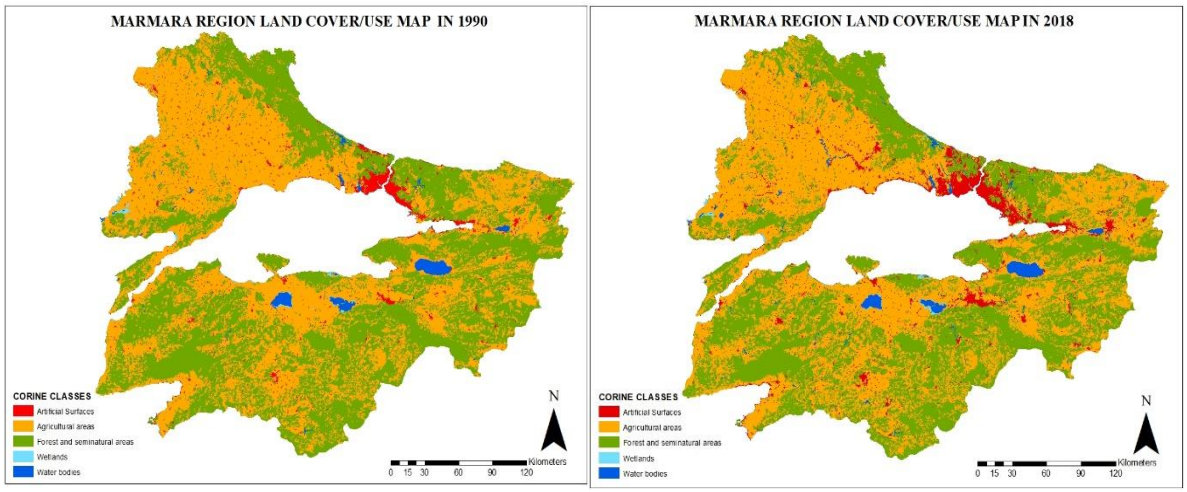


Figure 2. Land cover/use maps of the Marmara region between 1990 and 2018

**Land Cover/Use Change in the Aegean Region**

When the change in land cover/use is examined, it is seen that the artificial area rate in the Aegean region, which was 1.74% in 1990, increased to 2.75% in 2018. It was determined that agricultural areas decreased between 1990-2000, increased between 2000-2012, and again reduced between 2012-2018 (Table 2). When the agricultural areas between 1990 and 2018 were compared, it was found that the agricultural areas increased by 78 086.23 ha. Forest and seminatural areas decreased by 1.99%. This decrease shows that 177 774.88 ha of forest and seminatural areas were converted to other land cover classes. There has also been a continuous decrease in the wetland class. When wetlands in 1990 and 2018 are compared, it is seen that there is a decrease of 11 873.06 ha. There has been an increase in the water bodies area, and the water bodies area, which was 66 881.46 ha in 1990, increased to 87 543.33 ha in 2018 (Figure 3).

Table 2. Analysis of land cover/use change in the Aegean region

| | Artificial Surfaces | | Agricultural Areas | | Forest and Seminatural areas | | Wetlands | | Water bodies | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ha | % | ha | % | ha | % | ha | % | ha | % |
| **1990** | 155 069.17 | 1.74 | 3 800 190.99 | 42.55 | 4 866 060.93 | 54.48 | 43 443.83 | 0.49 | 66 881.46 | 0.75 |
| **2000** | 203 056.15 | 2.27 | 3 767 501.23 | 42.18 | 4 848 608.56 | 54.29 | 40 043.01 | 0.45 | 72 437.40 | 0.81 |
| **2006** | 218 649.68 | 2.45 | 3 871 415.59 | 43.34 | 4 726 903.91 | 52.92 | 32 469.62 | 0.36 | 82 207.57 | 0.92 |
| **2012** | 232 400.12 | 2.60 | 3 883 179.90 | 43.48 | 4 696 861.79 | 52.59 | 32 286.15 | 0.36 | 86 918.40 | 0.97 |
| **2018** | 245 969.00 | 2.75 | 3 878 277.22 | 43.42 | 4 688 286.05 | 52.49 | 31 570.77 | 0.35 | 87 543.33 | 0.98 |

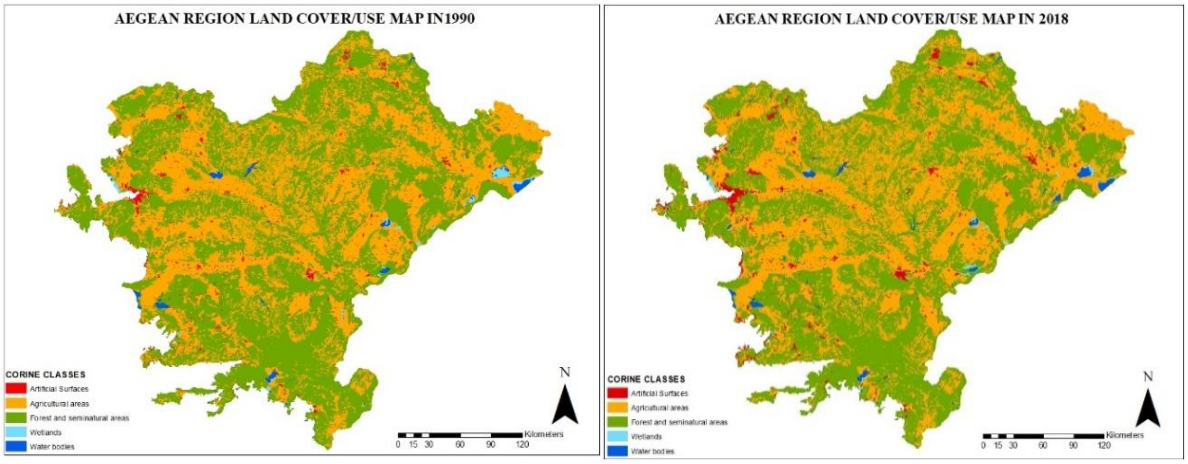


Figure 3. Land cover/use maps of the Aegean region between 1990 and 2018

**Land Cover/Use Change in the Black Sea Region**

Although there was a decrease in the artificial area class area in the Black Sea region in 2006, it is observed that artificial areas increased in general. The ratio of artificial region area increased from 0.86% to 1.13% in 28 year period (Table 3). Agricultural land classes decreased between 1990-2000, then increased, and decreased again in 2018. When comparing the rates of 1990 and 2018, the agricultural land rate, which was 34.90% in 1990, increased to 36.41% in 2018. Accordingly, agricultural land has increased compared to 1990. It is seen that forest and seminatural areas are experiencing a constant decrease in the Black Sea region as in other regions. When the wetland class ratio was examined, it was determined that there was no change in 28 years(Figure 4). There has been an increase in the class of water bodies.

Table 3. Analysis of land cover/use change in the Black Sea region

| | **Artificial Surfaces** | | **Agricultural Areas** | | **Forest and seminatural areas** | | **Wetlands** | | **Water bodies** | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **ha** | **%** | **ha** | **%** | **ha** | **%** | **ha** | **%** | **ha** | **%** |
| **1990** | 101472.05 | 0.86 | 4095017.06 | 34.90 | 7473160.54 | 63.69 | 11152.09 | 0.10 | 52063.02 | 0.44 |
| **2000** | 117662.58 | 1.00 | 4076552.00 | 34.74 | 7468028.88 | 63.65 | 11070.45 | 0.09 | 59550.84 | 0.51 |
| **2006** | 108770.90 | 0.93 | 4236923.31 | 36.11 | 7315785.81 | 62.35 | 11597.33 | 0.10 | 59787.68 | 0.51 |
| **2012** | 126212.81 | 1.08 | 4279049.28 | 36.47 | 7248763.92 | 61.78 | 12036.59 | 0.10 | 66808.62 | 0.57 |
| **2018** | 132485.79 | 1.13 | 4271427.17 | 36.41 | 7239729.66 | 61.70 | 12036.59 | 0.10 | 77192.01 | 0.66 |

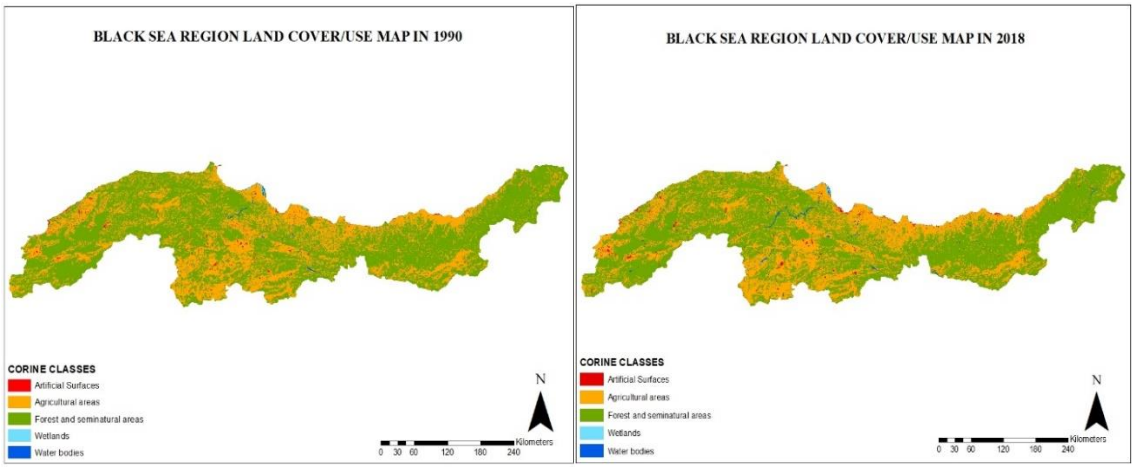


Figure 4. Land cover/use maps of the Black Sea region between 1990 and 2018

**Land Cover/Use Change in the Mediterranean Region**

As in other regions, there has been an increase in artificial areas in the Mediterranean Region over time. The artificial areas have approximately doubled in 28 years. Although there was an increase of 22 452.26 ha in agricultural lands in the Mediterranean region between 2000 and 2006, there was a general decrease in agricultural lands (Table 4). It has been determined that there is a continuous decrease in forest and seminatural areas. When the forest and seminatural area was examined in 2018, it was seen that there was a decrease of 79 849.80 ha compared to 1990. It has been determined that there is a continuous increase in the wetlands and water bodies class areas in the Mediterranean region (Figure 5).

Table 4. Analysis of land cover use/change in the Mediterranean region

| | Artificial Surfaces | | Agricultural Areas | | Forest and seminatural areas | | Wetlands | | Water bodies | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ha | % | ha | % | ha | % | ha | % | ha | % |
| **1990** | 99 232.00 | 1.10 | 3 217 261.00 | 35.80 | 5 515 424.70 | 61.38 | 18 914.52 | 0.21 | 135 117.28 | 1.50 |
| **2000** | 133 535.49 | 1.49 | 3 173 997.74 | 35.32 | 5 506 085.89 | 61.27 | 22 248.56 | 0.25 | 150 082.05 | 1.67 |
| **2006** | 154 422.28 | 1.72 | 3 19 6450.10 | 35.57 | 5 456 059.10 | 60.72 | 28 028.16 | 0.31 | 150 992.18 | 1.68 |
| **2012** | 178 297.72 | 1.98 | 3 177 435.70 | 35.36 | 5 444 166.54 | 60.59 | 29 865.90 | 0.33 | 156 219.43 | 1.74 |
| **2018** | 192 088.41 | 2.14 | 3 168 008.45 | 35.25 | 5 435 574.90 | 60.49 | 29 722.27 | 0.33 | 160 591.24 | 1.79 |

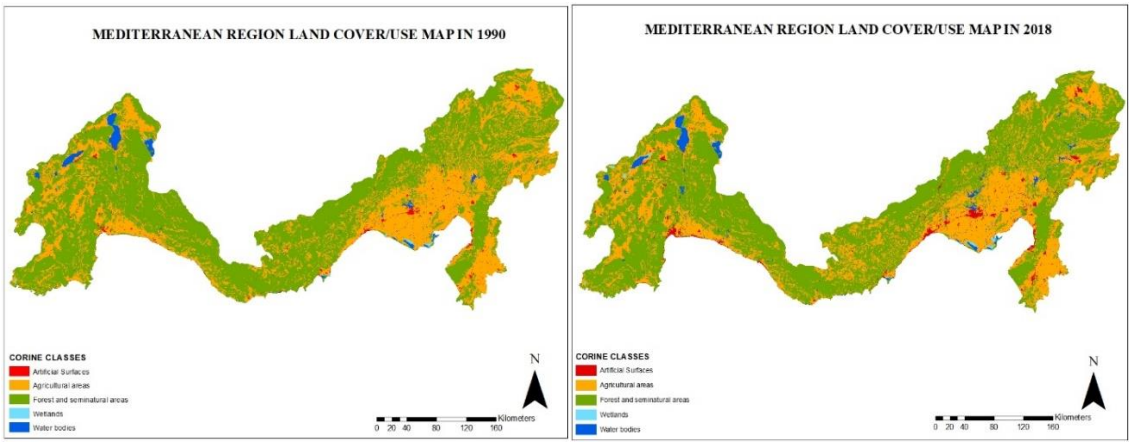

Figure 5. Land cover/use maps of the Mediterranean region between 1990 and 2018

**Land Cover/Use Change in the Central Anatolia Region**

An increase in artificial areas was also observed in the Central Anatolia region. It has been determined that 125 105.51 ha of land has been converted into an artificial area. Agricultural areas decreased between 1990-2006, increased between 2006-2012, and then decreased again. When the years 1990-2018 are examined, it can be said that agricultural areas decreased by 16 802.43 ha(Table 5). There has been a continuous decrease in the forest and seminatural areas of the Central Anatolia region. When evaluated in general, the wetland class rate has increased in the Central Anatolia region. This increase is mainly between the years 2000-2006. The water bodies area, which was 267 701.40 ha in 1990, increased to 290 703.74 ha in 2018(Figure 6).

Table 5. Analysis of land cover/use change in the Central Anatolia region

| | Artificial Surfaces | | Agricultural Areas | | Forest and Seminatural areas | | Wetlands | | Water bodies | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ha | % | ha | % | ha | % | ha | % | ha | % |
| **1990** | 246 962.81 | 1.31 | 10 278 778.60 | 54.70 | 7 889 891.97 | 41.99 | 108 640.86 | 0.58 | 267 701.40 | 1.42 |
| **2000** | 298 053.29 | 1.59 | 10 249 293.71 | 54.54 | 7 883 194.73 | 41.95 | 97 427.15 | 0.52 | 264 006.75 | 1.40 |
| **2006** | 314 349.81 | 1.67 | 10 209 138.13 | 54.33 | 7 741 596.96 | 41.20 | 255 240.87 | 1.36 | 271 649.87 | 1.45 |
| **2012** | 347 345.98 | 1.85 | 10 281 515.97 | 54.71 | 7 624 163.36 | 40.57 | 252 989.66 | 1.35 | 285 960.66 | 1.52 |
| **2018** | 372 068.32 | 1.98 | 10 261 976.17 | 54.61 | 7 611 914.20 | 40.51 | 255 313.21 | 1.36 | 290 703.74 | 1.55 |

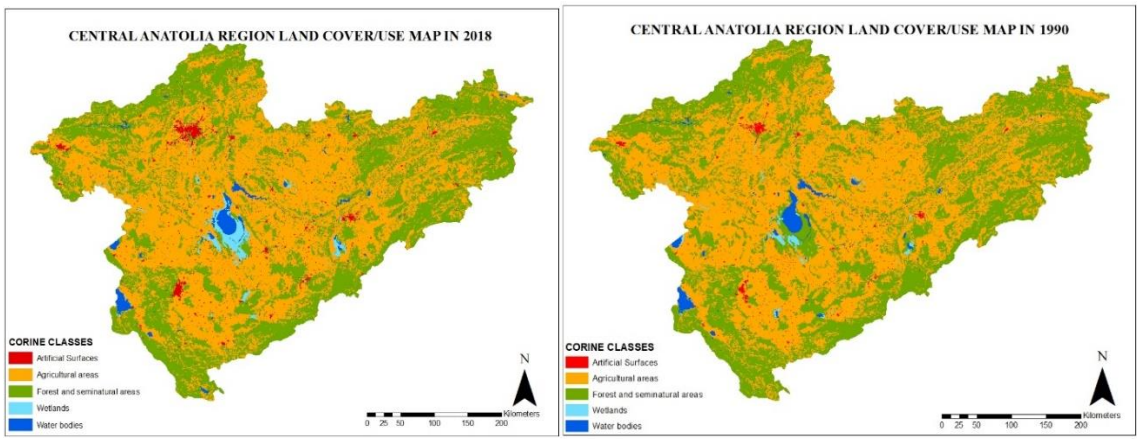


Figure 6. Land cover/use maps of the Central Anatolia region in 1990 and 2018

**Land Cover/Use Change in the Eastern Anatolia Region**

When the Eastern Anatolia region is examined, the artificial surface area in this region has increased over the years. While 29.75% of the Eastern Anatolia region consisted of agricultural areas in 1990, this rate increased to 31.87% in 2018. Forest and seminatural areas have continuously decreased. The forest and seminatural areas class area was 10 026 956.96 ha in 1990, declined to 9 626 270.36 ha in 2018. In short, 400 686.60 ha of the forest and seminatural areas class has transformed into other land cover classes(Table 6). While the rate of the wetland class in Eastern Anatolia was 0.36% in 1990, this rate increased to 0.43% in 2018. Similarly, the rate of the water bodies class risen from 3.62% in 1990 to 3.75% in 2018(Figure 7).

Table 6. Analysis of land cover/use change in the Eastern Anatolia region

| | **Artificial Surfaces** | | **Agricultural Areas** | | **Forest and Seminatural areas** | | **Wetlands** | | **Water bodies** | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **ha** | **%** | **ha** | **%** | **ha** | **%** | **ha** | **%** | **ha** | **%** |
| **1990** | 96 739.46 | 0.63 | 4 544 566.37 | 29.75 | 10 026 956.96 | 65.64 | 54 402.07 | 0.36 | 552 194.46 | 3.62 |
| **2000** | 105 764.64 | 0.69 | 4 538 231.63 | 29.71 | 10 021 057.37 | 65.60 | 54 372.25 | 0.36 | 555 433.94 | 3.64 |
| **2006** | 109 278.40 | 0.72 | 4 834 752.98 | 31.65 | 9 699 334.09 | 63.50 | 72 527.10 | 0.47 | 558 971.14 | 3.66 |
| **2012** | 133 438.83 | 0.87 | 4 868 894.49 | 31.87 | 9 637 407.20 | 63.09 | 66 186.22 | 0.43 | 569 158.24 | 3.73 |
| **2018** | 141 493.36 | 0.93 | 4 867 863.52 | 31.87 | 9 626 270.36 | 63.02 | 66 021.72 | 0.43 | 573 436.04 | 3.75 |

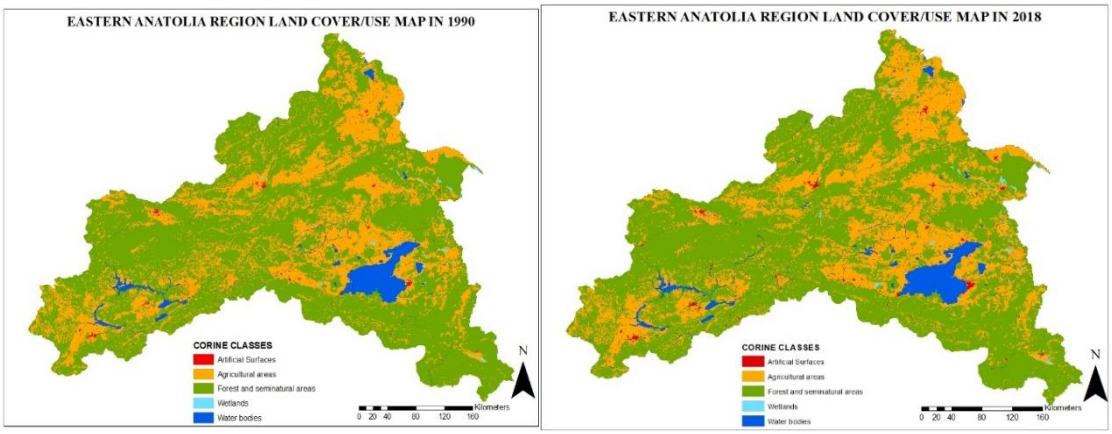


Figure 7. Land cover/use maps of the Eastern Anatolia region between 1990 and 2018

**Land Cover/Use Change in the Southeast Region**

In the Southeastern Anatolia Region, as in other regions, artificial areas have increased(Table 7). In 1990, artificial areas, which were 67 423.67 ha, approximately doubled and spread over an area of 133 071.55 ha. Agricultural areas decreased between 1990-2000, increased between 2000-2006, and then decreased again between 2006-2018. When comparing the years 1990-2018, agricultural areas have risen by 36 401.34 ha. Forest and seminatural areas have continuously decreased; 176 474.58 hectares of forest and seminatural areas were lost by being converted to other classes compared to 1990. There was no change in the wetland ratio between 1990 and 2006, and the wetland ratio increased to 0.07% in 2012. According to the results obtained, there is a continuous increase in the ratio of water bodies (Figure 8).

Table 7. Analysis of land cover/use change in the Southeastern Anatolia region

| | Artificial Surfaces | | Agricultural Areas | | Forest and Seminatural areas | | Wetlands | | Water bodies | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ha | % | ha | % | ha | % | ha | % | ha | % |
| **1990** | 67 423.67 | 0.87 | 4 210 472.34 | 54.38 | 3 405 759.75 | 43.99 | 3 914.79 | 0.05 | 5 5034.90 | 0.71 |
| **2000** | 84 594.77 | 1.09 | 4 156 686.13 | 53.69 | 3 383 881.84 | 43.70 | 3 646.46 | 0.05 | 11 3796.25 | 1.47 |
| **2006** | 92 180.25 | 1.19 | 4 262 221.77 | 55.05 | 3 259 920.69 | 42.10 | 4 019.80 | 0.05 | 12 4272.58 | 1.61 |
| **2012** | 116 494.35 | 1.50 | 4 249 458.53 | 54.88 | 3 245 255.45 | 41.91 | 5 094.99 | 0.07 | 12 6363.43 | 1.63 |
| **2018** | 133 071.55 | 1.72 | 4 246 873.68 | 54.85 | 3 229 285.17 | 41.71 | 5 142.15 | 0.07 | 12 8294.20 | 1.66 |

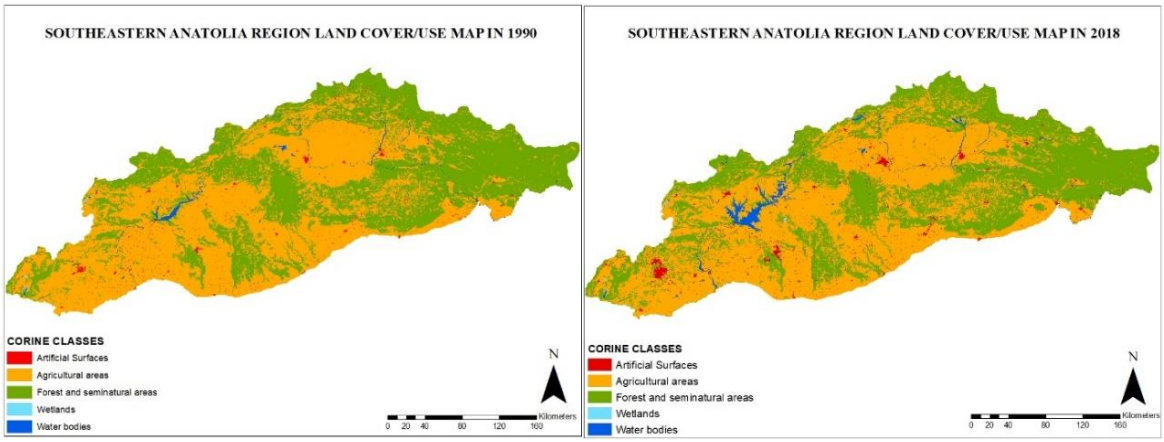


Figure 8. Land cover/use maps of the Southeastern Anatolia region in 1990 and 2018

**Artificial Surfaces**

The changes that have occurred in artificial regions in the 28 years are given in Figure 9. Artificial surfaces have increased in all geographical regions of Türkiye. The increase in the areas covered by artificial regions will increase the pressure on other land cover/use classes. It is thought that the unplanned and rapid spread in artificial surfaces may negatively affect the natural areas and agricultural areas around the city.

When the studies in the literature about land cover/use at the provincial level are examined, it is seen that similar results are obtained with land cover/use change at the regional level (Bayar and Karabacak, 2020; Polat and Yalçın, 2020; Türker, 2021; Demir, 2022; Karaoğlu and Erdel, 2022; Çelik and Yakar, 2023; Çoban and Uzun, 2023; Küçük, 2024). The studies emphasize similar trends, including the expansion of artificial surfaces, the decrease in agricultural and forested areas, and the impacts on wetlands and water bodies. Therefore, it is important to plan the developments in artificial surfaces, determine the spreading characteristics and directions of cities, and constantly monitor the changes that occur.

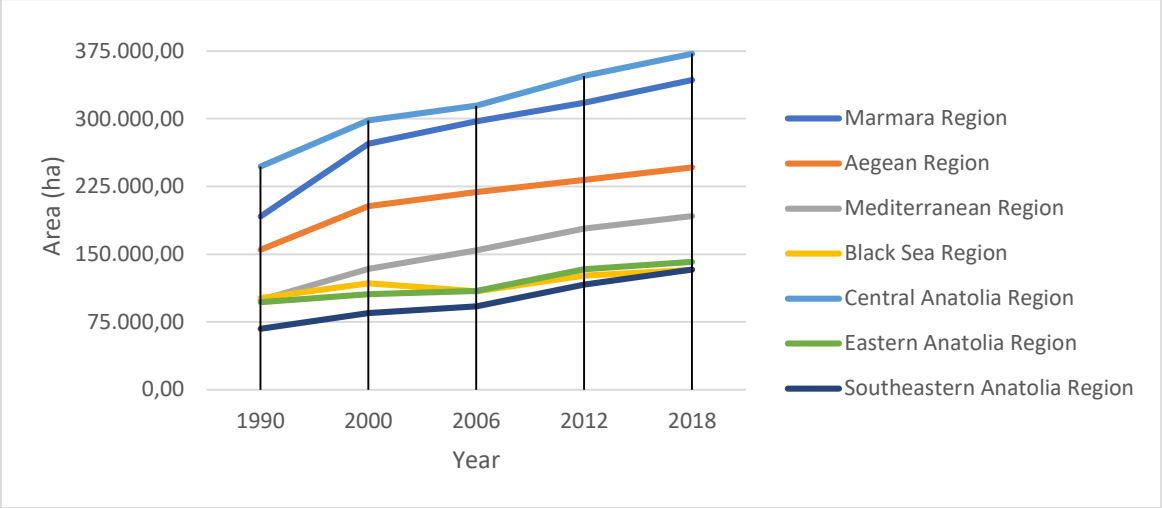


Figure 9. Artificial surfaces (1990-2018)

## Conclusions

Planning for sustainable management of land and water resources allows for more efficient and long-term correct use of existing resources. Therefore, it is essential to evaluate changes in land cover/use over the years, to predict possible changes, and to monitor and control the changes that occur. Studies on land cover/use create a forecast for the future by revealing the current situation in land cover/use changes.

When the data from 1990 to 2018 were examined, it was determined that the highest increase in artificial surfaces occurred in the Marmara Region. The highest increase in agricultural areas was found in the Eastern Anatolia Region, while the highest decrease in agricultural areas was observed in the Mediterranean Region. The region with the greatest decrease in forest and semi-natural areas was identified as the Eastern Anatolia Region. Central Anatolia was found to have the highest increase in wetlands, whereas the Aegean Region experienced the greatest decrease. The highest increase in water bodies occurred in the Southeastern Anatolia Region.

The data obtained show that artificial surface class areas have increased in all regions. The pressure of the increase in artificial zones and other land cover/use class areas on the forest and seminatural areas class has attracted attention. Areas belonging to the forest and seminatural areas class have decreased in all regions. The sustainable management of our forests and their protection for the future are important issues. Türkiye forest ecosystems attract attention not only at the national level but also at the global level due to their rich biological diversity.

It is undeniable that artificial zone areas, which are increasing worldwide, are also increasingly spreading in our country. However, each land cover/use class is of different importance to our country, and it is crucial to determine the changes in land cover/use classes, carry out planning studies, and provide a forecast for the future. When the land cover class increases and puts pressure on other land cover classes or a land cover/use class continuously decreases, it is necessary to be evaluated.

Since geographical regions are large areas that show integrity regarding natural and human characteristics, determining the current status of land cover/use and regionally changes will create a broad perspective on the region. It is thought that examining land cover/use changes regionally can contribute to regional planning studies to ensure the continuity of land and water resources.

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## Authors' Contributions

Authors declare that they have contributed equally to the article.

## Conflicts of Interest Statement

The authors declare that there is no conflict of interest.

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