

MASS TOURISM AND WATER CONSUMPTION: CASE OF TURKEY

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Abstract

Tourism is one of the growing sectors of the Turkish economy which gained considerable significance in terms of its share in national income as well as its role in balance of payments after 1980s. It is encouraged as “industry with no chimneys” and increasing the number of tourists and therefore the revenues becomes the priority in this sector. Though necessary legislation supplying important incentives to tourism sector has been enacted, the environmental problems due to mass tourism activities receive little consideration.

One of those environmental problems Turkey faces is water scarcity. Due to economic and population growth and changing water consumption habits this problem is expected to be more severe in the near future. An additional pressure is coming from foreign tourists who have reached nearly half of Turkey’s population in numbers. In Turkey tourism is concentrated along the Aegean and Mediterranean coasts during the months May through October. This is the period when water scarcity is significant, especially in those regions.

In this study the adverse effects of tourism on water resources in the Turkish economy are investigated. The results of the analysis could be utilized to develop sustainable tourism policies which will help to use water resources of Turkey by paying attention to ecological balance.

1. Introduction

After the Second World War, the importance of mass tourism which depends on maximizing the number of tourists has significantly increased all over the world. According to World Tourism Organization (UNWTO, 2012) figures, the international tourist arrivals increased from 25 million in 1950 to 277 million in 1980, and to 980 million in 2011. 53.4% of this mobility in 2011 is from developed economies, while the rest is from developing economies. Tourism exports account for 6% of world’s exports of goods and services and nearly one third of world’s exports of commercial services. The worldwide contribution of tourism to world GDP is around 5%, where the share ranges between 2% for developed economies and up to 10% for developing countries. As evidenced from these figures, tourism is one of the crucial sectors of the world economy

and more so for developing economies. Even though its economic importance in terms of generating income, foreign exchange receipts and employment has been often stressed, its burden on the environment is emphasized rarely.

Tourism is one of the growing sectors of the Turkish economy which has gained considerable significance in terms of its share in national income as well as its role in balance of payments after 1980s. It is encouraged as “the industry with no chimneys” and necessary legislation supplying important incentives to tourism sector has been enacted. Natural resources are utilized at the service of tourism industry and considered as free. Therefore, as one of the fastest growing tourism markets in the world and by hosting more than thirty one million tourists in 2011, Turkey is face to face with destructive effects of mass tourism.

One of those environmental problems Turkey faces is water scarcity. In fact Turkey is considered to be among the countries having water shortage; that is annual amount of usable water per person is about 1519 cubic meters. Due to economic and population growth and changing water consumption habits this number is expected to fall much more in the near future by placing Turkey among water poor countries. From this perspective an additional pressure comes from foreign tourists who have reached to more than 30 million in numbers. In Turkey tourism is concentrated along the Aegean and Mediterranean coasts during the months May through October. This is the period where water scarcity is significant, especially in those regions. If the unplanned construction that leads to overpopulation in those regions is also considered, the magnitude of the problem can be understood better. It is reported that in general tourists consume more water than residents. In addition to that tourist facilities maintain the largest part of their water demand from the wells that they drill due to increasing water costs. This over-extraction of water in the coastal areas leads to disruption of ground water balance creating further ecological problems. Excessive amounts of water consumption also increase the amount of waste water being pumped to the sea with or without treatment which creates other problems.

After reviewing the general characteristics of the tourism sector and its effects on environment in Turkey in section 2, section 3 identifies the problems related to water consumption in Turkish tourism industry. In section 4 we present a case study for the use

of water in an “all inclusive” type of a hotel group sited in Belek, Antalya which is golf center for Turkey. As usual section 5 concludes the study.

2. Turkish Tourism Sector and the Environment

The dominant trend in tourism activity is finding the cheapest alternatives from the perspective of travelers. This trend makes Turkey an attractive alternative; by 2012 thirty three million tourists are expected to visit Turkey, which puts Turkey among the top ten tourist attracting countries all over the world (Ministry of Culture and Tourism, 2012). When we look at the development of the tourism industry in Turkey, we figure out that governments always perceive mass tourism as a costless way to promote economic activity. For this purpose, growth of the sector is supported by different means. One of the milestones in Turkish tourism industry is the Tourism Encouragement Law of 1953 which included tax rebates for domestic and foreign investors besides other incentives. Until 1980s governments prepared the necessary conditions for the development of the sector. During this period the main target of the tourism policy was to increase foreign exchange revenues, create new jobs and supply holiday opportunities for Turkish residents.

From the beginning World Bank points out to tourism sector as one of the areas of specialization for Turkey which has to be developed. In line with the neo-liberal policies adopted during post-1980 period, we observe liberalization period in tourism industry. The most important development in this period was the enactment of Tourism Encouragement Law No. 2634 in 1982. By this law, incentives take different forms such as tariff exemptions, discounts in tourism investments and investment credits. In this way tourism has become the fourth sector that has been supported after mining, health and education (Bulut, 2000).

From Table 1 it is seen that number of tourist arrivals and tourism revenues increase enormously from 1970 to 2010. Share of the sector in GDP increased from 0.5% in 1970 to 4.2% in 2006. This rapid increase in the capacity and volume was sustained by ongoing investments in the sector. Inspection of Table 1 reveals that tourism sector's share in total investments has increased from 2.1% in 1970 to 5.7% in 2008. This rapid

growth of the sector was also supported by the increased government investment in infrastructure which enabled the construction of large tourism complexes.

Table 1. Indicators of tourism sector

	1970	1980	1990	2000	2010
Tourist arrivals (1000 person)	724	1288	5389	10412	28511
Tourism revenue (Million \$)	51	326	2705	7636	15577
Revenue per tourist (\$)	70.4	253.1	501.9	733.4	546.4
Tourism Revenue/Exports (%)	8.8	11.2	24.9	27.5	18.3
Tourism Revenue/GNP (%)	0.5	0.6	2.1	3.8	4.2*
Tourism Investments/Total Investments (%)	2.1	0.5	3.8	4.0	5.7*
Number of beds	28354	56044	173227	325168	567470**

Note: *2006 value, ** 2008 value

Source: Ministry of Culture and Tourism, TURSAB, Ünlüönen and Tayfun (2009)

Table 2 indicates this rapid growth of the sector as well. From the table it is observed that in the recent four decades the highest growth in the number of tourists, tourism revenue and physical capacity was realized in 1980s. In this decade while the number of tourist arrivals increased by 318%, tourism revenues increased by 730% leading to an increase in tourism revenue per tourist by 98%. At the same time capacity of the sector was increased by 209%, escalating the number of beds to more than 170,000 in 1990. Even though the pace of increase slowed down, similar developments occurred in 1990s. In this decade, tourism revenue grew more than the number of tourists increasing the revenue per tourist by 46%. In 2000, annual expenditures per tourist reached on average 733\$.

Besides this rapid growth in the supply side of the sector during 1990s, we also observed changes on the demand side. In 1990s important changes in the tourism market occurred due to increased competition from other Mediterranean countries (WWFN, 2001). Intense competition among identical tourist destinations in terms of price, rather than product differentiation and quality, and increasing the supply of almost identical tourist destinations increased the dependency of destination countries on the international tour operators (Tosun, 2001). Thus, the dominant trend in tourism industry became

competing through price. As one country becomes fashionable in terms of its cheapness, it can easily fall out of fashion in the following years due to emergence of cheaper alternatives. In the Turkish case traditional sea-sand-sun oriented demand structure reached a saturation level.

Table 2. Growth rates of basic tourism indicators

Growth Rates (%)	1970-1980	1980-1990	1990-2000	2000-2010
Tourist arrivals	77.9	318.4	93.2	173.8
Tourism revenue	539.2	729.8	182.3	104.0
Revenue per tourist	259.3	98.3	46.1	-25.5
Number of beds	97.7	209.1	87.7	74.5*

Note: *2000-2008

Source: Ministry of Culture and Tourism, TURSAB, Ünlüönen and Tayfun (2009)

This change in the tourism market and increased competition has taken its toll on Turkish tourism as well. At the same time, due to falling demand in European market caused by global crisis, the establishments waive their average profit rates and decrease their prices in order to maintain a certain level of occupancy. From Table 2 it can be observed that in the last decade the increase in the number of tourists was more than the increase in the tourism revenue. Therefore, revenue per tourist decreased by 26% between 2000 and 2010, bringing the average expenditure per tourist to 546 \$ in 2010. Competing through prices caused the profile of visitors coming to Turkey to change after 2000. According to TURSAB (2009), in this period the share of low-income international tourists visiting Turkey has increased while the share of middle-income tourists has decreased and the share of high-income tourists remained stable. This change in the profile lowered not only the revenue per tourist, but also the foreign exchange earnings of the tourism sector. The inverse relationship between total number of tourists visiting Turkey and their per capita expenditures can be observed from Figure 1 by concentrating on post-2000 period. Table 1 demonstrates that the share of tourism revenues in total exports increased from 9% in 1970 to 28% in 2000 parallel to the rapid growth in the

sector as explained above. However, this share decreased to 18% in 2010 parallel to the changes in the market structure.

Figure 1. Relationship between number of tourists and their per capita expenditures



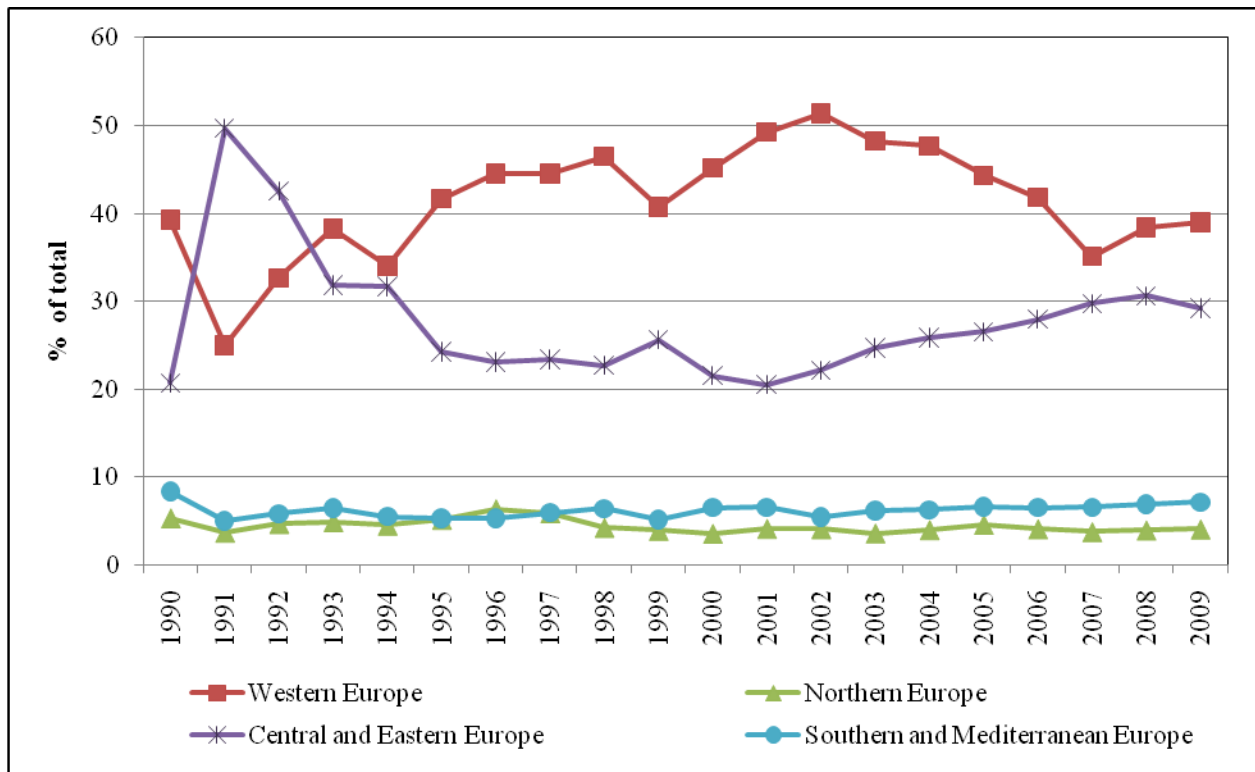
Source: TURAD and Ministry of Culture and Tourism

Turkey is a center of attraction mainly for her neighbors. In Figures 2 and 3 shares of visitors from Europe and other destinations for the period 1990-2009 are presented. When Figure 2 is investigated, majority of visitors come from the European countries; around 41% of visitors come from the Western Europe and 28% come from the Central and Eastern Europe. Overall, European tourists constitute 74% of total visitors in 1990, 77% in 2000 and 79% in 2009. However, the composition of European visitors has changed after 2002; while the share of the Western European visitors declined the share of the Central and Eastern European tourists increased. This change in the composition of international tourists is also compatible with the change in the income profile explained above.

Figure 3 shows the percentage of visitors coming to Turkey from non-European countries. From the figure it is observed that other than Europe, tourists mainly come from North America, Middle East and Southeast Asia. As period average tourists from these origins constitute more than 10% of the total and their numbers are more volatile. For example, the number of visitors from North America dropped in 1991 due to Gulf

War, and fell in 2001 once again this time related to 9/11 attacks and did not recover since then. Therefore, the inherent nature of the sector is such that number of visitors from particular destinations could be rather volatile and affected by economic, social and political events at home country as well as the destination country. Number of visitors is highly dependent on natural disasters, armed conflicts, wars and economic turmoil in general. For example, after Marmara earthquake in Turkey where approximately 50,000 people died, tourist arrivals decreased by 23% from 9.7 million in 1998 to 7.5 million in 1999.

Figure 2. Share of tourists from Europe

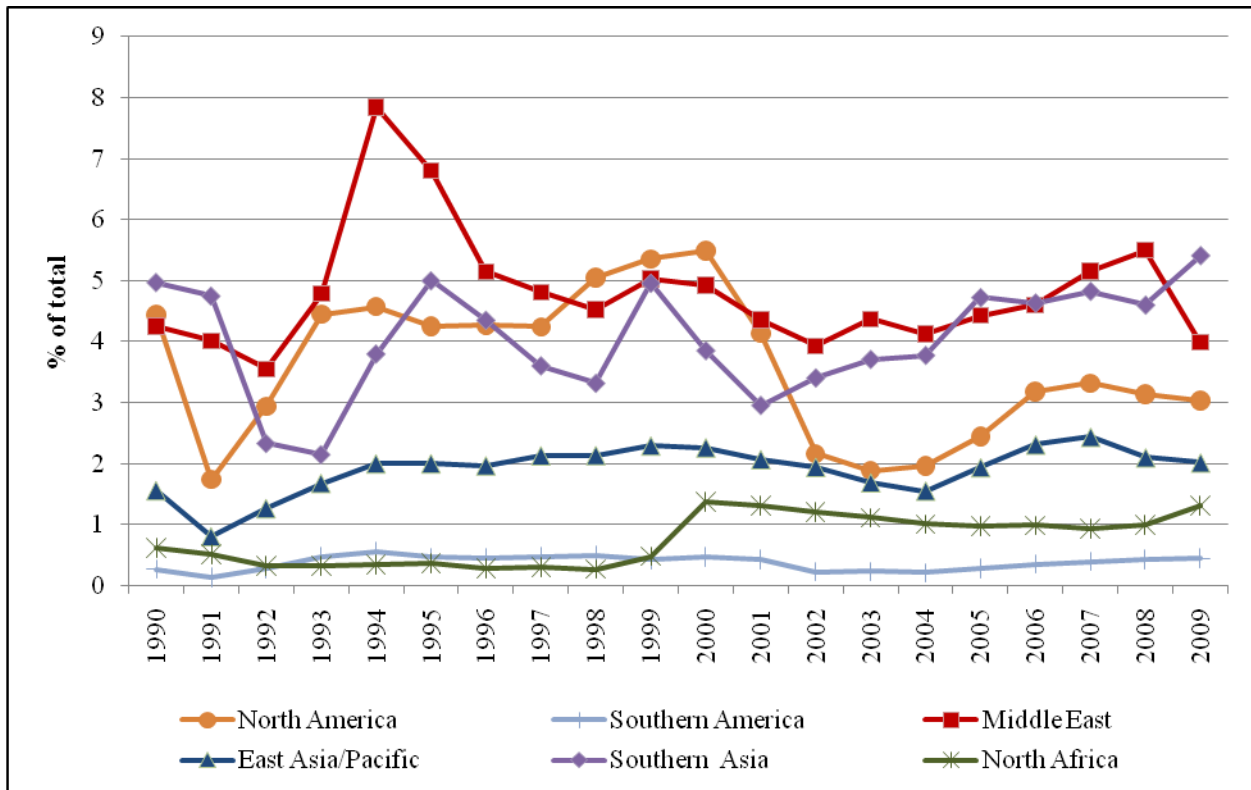


Source: TURKSTAT

As discussed above, throughout the years since it has been the priority to increase the number of tourists and tourism revenues, the environmental problems due to mass tourism activities received minimum consideration. Furthermore, the laws and regulations supporting the development of the tourism industry paid no attention to the environment. Although Fifth Five Year Development Plan (1985-1989) evaluated the

tourism policy in line with protecting the ecological balance and keeping the environment in tact for the first time, still the priority was mass tourism. Tourism sector's potential for degrading the natural environment was taken into consideration only by the end of 1990s.

Figure 3. Share of tourists from different destinations



Source: TURKSTAT

Turkey approved the Global Ethical Principles Report on Tourism in 1999 which aims to decrease the negative impacts of tourism on the society and environment and thus ties the responsible and sustainable development of world tourism to a number of principles (SPO, 2007). Therefore, in the Eighth Five Year Development Plan (2001-2005) for the first time the terms ecotourism and sustainable tourism were mentioned. In the latest annual program (SPO, 2012) the primary objective is defined as “establishing a structure that encompasses the dynamics created by globalization; trying to improve service quality in addition to attracting higher number of tourists; targeting higher income groups by diversifying marketing channels; protecting and assuring sustainability of the natural capital; and bringing forth the golf, thermal, convention, cruise, health tourism

and ecotourism in line with the comparative competitive advantage of Turkey”. But these different aspects of tourism are conflicting.

In Turkey tourism is concentrated along the Aegean and Mediterranean coasts from May through October and this leads to strong environmental pressures. Tourism Encouragement Law of 1982 can be considered as the beginning of noticeable degradation of coastal areas since Treasury lands have been allocated to investors for 49–99 years as part of the incentives (Burak et al.,2004).

Considering the dependency relationship between tourism and environment, development of the mass tourism exploiting the nature has to end at some point. Therefore, it is important to develop sustainable tourism policies and encourage courses of ecotourism. In the “Tourism Strategy of Turkey-2023” by Ministry of Culture and Tourism, spreading ecotourism activities throughout the ecotourism regions was mentioned. However, there are problems with this policy. From an international perspective ecotourism still constitutes a very small portion of the market. In 2005 ecotourists constituted only 5% of the international travelers and their expenditure share in total tourism revenues was 7% (SPO, 2007).

3. Problems Related to Water Consumption in Turkish Tourism Industry

3.1. Water Resources and Water Consumption Patterns in Turkey

The demand for water resources has been accelerating all over the world. Especially, population growth, climate change, changing structure of agricultural and industrial production, improved living standards and increase in tourism activities cause water-based problems to accelerate among countries.

Water, like for all other nations, is a vital natural resource for Turkey. Due to increasing population, socio-economic development, pollution and pressures about international political conflicts the water problem of Turkey has been growing.

The potential water resources of Turkey are 112 billion m³ per year. Of this, 87.5% is surface water and 12.5% is groundwater. 44 billion m³ of this potential is used (DSİ 2010 Faaliyet Raporu). There are differences in both water potentials and distribution of precipitation according to seasons in the water basins. Thus, there is water insufficiency linked to the basins and seasons.

According to DSİ data, 15% of this amount is allocated to domestic use, 11% is used in industry and 74% is used in agriculture. These percentages are 11%, 59% and 30%, respectively, for developed countries and 8%, 10% and 80% for developing countries.

In Turkey while per capita daily water consumption was 98 liters in 1980, it increased to 192 liters in 1990. At present that figure is 200 liters on average (DSİ 2010 Faaliyet Raporu). Some studies estimate that number as 270 liters/day (DSİ İçme ve Kullanma Suyu Tahmini, Devlet Su İşleri Genel Müdürlüğü, Ankara 2010).

The sufficiency of water resources in a country is evaluated by the amount of annual fresh water consumed: countries which consume less than 1000 m³ of water per capita annually are regarded as water-poor countries while those countries which consume 1000-2000 m³ are regarded as water-deficient countries and those countries which consume 8000-10000 m³ are regarded as water-rich countries (DSİ 2010 Faaliyet Raporu).

In Turkey annual per capita usable water potential is around 1519 m³ which classifies Turkey among water-deficient countries. It is forecasted by TURKSTAT that the population of the country will reach 100 million by 2030. Using this estimate, it could be argued that consumable amount of water would fall to 1000 m³ in 2030 which will put Turkey among water-poor countries (DSİ 2010 Faaliyet Raporu). Therefore, it is clear that considering the present growth rate of the economy together with the changes in water consumption habits will exert pressure on water resources in the future. To satisfy the increasing water demand in agriculture, industry and drinking water an effective future planning is necessary.

Pollution of surface and groundwater sources of Turkey as a water deficient country creates additional problems. If solutions are not developed, problems that will be encountered in the next 25-30 years will be unrecoverable.

3.2. Water Consumption in Turkish Tourism Industry

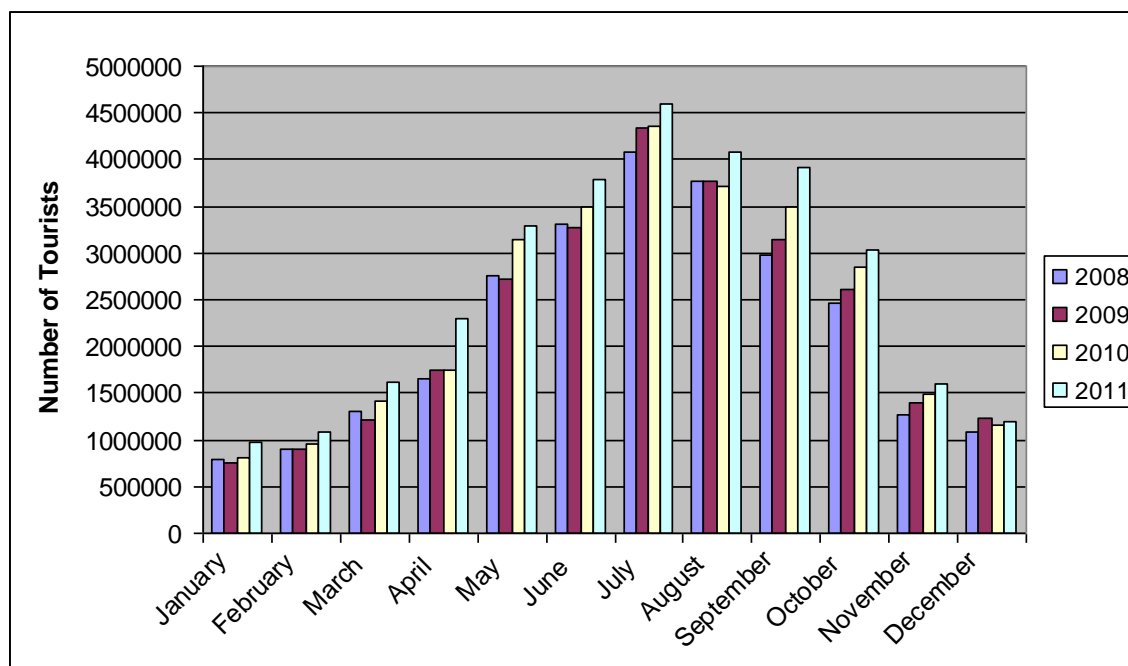
World Tourism Organization reports that for sustainable tourism water is vital. Therefore, especially in tourism sector water management and effective use of water is very important. On the one hand, decrease in water resources and resulting scarcity due to

climate change and on the other hand excessive use of water in tourism sector place water scarcity among essential problems.

In arid and semi-arid regions water-related problems are more intensive. Especially in Mediterranean countries which are densely populated, water scarcity is one of the serious problems. For example in Spain because of hot weather conditions and because tourists in general consume more water than residents, per capita water consumption is more than 440 liters/day.

Turkey is one of the notable countries in tourism in Mediterranean and Europe. There are a lot of national and international tourist centers in Aegean and Mediterranean shores, like Bodrum, Çeşme, Marmaris and Antalya. Turkey, whose population is more than 73 million, attracts about half of her population as tourists each year. The duration of those visits are 8-9 days on average (Table 3) and they generally take place during summer (Figure 4). Therefore, the tourism activities clearly exert extra pressure on water resources of the country.

Figure 4. Monthly distributions of tourists visiting Turkey



Source: Ministry of Culture and Tourism

Table 3. Average length of stay (in days)

Germany	10
Russian Federation	7
UK	7
Netherlands	9
France	8
Austria	10
Belgium	8
Israel	4
Sweden	8
USA	5
Denmark	8
Ukraine	8
Italy	5
Switzerland	9
Iran	5
Poland	7
Norway	6
Japan	6
Finland	6
Spain	4

Source: TURKSTAT and authors' calculations

In tourism sector, in hotels, swimming pools, golf areas and for personal consumption water is used excessively. Additionally, “all inclusive” system further increases water consumption. This scheme produces large amounts of waste water besides creating problems in water supply which ends up in scarcity. Especially hotels in tourism regions involve in deep water drilling to get water. However, this leads to a decline in water tables and salinization. For example in Antalya while per capita water consumption is 250 liters, in tourism regions this amount exceeds 600 liters. In high income countries this amounts to more than 800 liters.

Bodrum is one of the most favorite tourism centers. Since 1970s, the development of tourism without planning has caused many environmental, social and infrastructural problems in the area. Due to domestic and international tourism activities the increasing numbers of hotels, holiday villages, second houses (summer houses) exert pressure on physical and social infrastructure. During peak periods, available resources can not meet the demand. For example, the population of the region quintuples during peak periods compared to winter population of the region. Due to increases in population severe problems in finding water for use and clean water to drink appear during May-September for tourism and during June-August for summer houses. An important portion of the clean water is obtained from groundwater sources. However, due to excessive drilling the quality of water deteriorates day by day and salty water moves toward inner parts.

3.2.1. Water Use and Golf Tourism

In the world golf tourism grows three times faster than the mass tourism (on average 10-12 % yearly). Spending of an average golf tourist is about three times more than the spending of an average tourist. It is estimated that the revenue from golf tourism is around 100 billion dollars in 2010. This amount corresponds to 11% of tourism revenues in the world.

Due to the increasing incentives and investments in tourism and efforts of Golf Federation, starting in 2000, there have been significant improvements in golf sector in Turkey. By improving its golf courses to meet international standards and adding many new ones, Turkey has positioned itself as one of the most popular golf destinations in Europe. As of 2010 there are 22 golf courses, 41 golf clubs and about 1500 golf players. Golf as a sector has many direct and indirect linkages and creates employment. Therefore, it is an important sector. According to tourism statistics, golf establishments were, in 2010, the facilities having the highest rates of foreign occupancy with 51% (Ministry of Culture and Tourism).

In 2010 around 125000 golf tourists visited the country. A tourist who visits Turkey for golf purposes spends about four times more than a normal tourist. In Portugal and Spain which have similar climatic conditions like Turkey, golf tourism has a share around 10% of total tourism revenues (5 billion euros in Spain and 2.8 billion euros in

Portugal). However, Turkey has fewer golf courses. After Portugal and Spain, Turkey ranks third on the list of future golf hot spots. The numbers of golf courses are 55 in Portugal and 52 in Spain. Tourism revenues per golf course are 16.5 million dollars for Spain, 15 million dollars for Portugal and 2 million dollars for Turkey. Currently the golf tourism market in Turkey generates more than 125 million Euros annually and is continuing to rise at rapid pace as Turkey, especially Belek, invest in more and more championship quality golf courses. More than 10 courses have been planned already. In line with “Turkish Tourism Strategy 2023”, “100 golf courses in 4 years” project is developed which aimed at generating returns of one billion dollars per year. For building of new courses, regions are determined in such a way that there will be one or two courses in different parts of the country ignoring the clusters. Additionally in İstanbul, Dalaman, Bodrum, North Antalya, Manavgat-Oymapınar, Alanya and Tarsus it is planned to have golf clusters.

Golf investments are long-term investments and they are expensive. For a golf course with 18 holes, a minimum of 750000 m² land is required. That land should have a gentle slope and sufficient water reserves and should be at a maximum of 60 kilometers away from the hotels. The most important concern about golf courses is their water consumption at massive amounts. The average water consumption for a golf course changes in between 60-225000 m³ depending on the type of grass (Kasap and Faiz, 2008). Annual water consumption in golf courses is 125-175000 m³ in İstanbul and 175-230000 m³ in Belek. Total water consumption of all golf courses is about 4 million m³. In irrigation waste water collected from rain and stream water is used. As it is mentioned above annual amount of water consumed is 44 billion m³ in Turkey. Therefore, water used in golf courses is 1 in 11000.

Another line of criticism about golf investments is that golf courses are built in forest areas. However, by law it is compulsory that the investor should pay up to three times of the forestation and three years maintenance of land used in investment to General Directorate of Forestry.

To play golf, tourists mainly from Germany, the U.K. and Sweden come to Turkey. In deciding about traveling to Turkey, they mainly rely on a friend’s advice In short visits, tourists stay 4-7 days and spend on average 200-250 dollars per day. Longer

visits take 7-14 days and on average 350 dollars per day are spent. A golf tourist's expenditure composition is as follows: 26% for golf, 21% for transportation, 20% for accommodation 18% for food and 15% for other purposes. It is argued that in countries like Portugal and Turkey where golf services are directed to tourism, the prices of games are high. However, the packages including accommodation, game prices and transportation offer attracting, decent prices. The most important point for the golf tourists is the quality of accommodation services and golf courses. Even though they are slightly below the world standards, especially weather conditions, security and cost of playing is satisfactory. Additionally, shopping and entertainment opportunities, beautiful coasts, alternative sport activities and ancient places are additional advantages for Turkey to attract golf players from all over the world. This places Turkey at an important position in European golf market.

About two-thirds of the golf games take place in low season (November-April). During 2004-2009 period occupancy rates in hotels engaged in golf tourism was the highest in August, September and October. Players generally prefer to play golf in their home countries during summer whereas they prefer Turkey due to her temperate climate.

It is aimed to increase the golf courses in Turkey and especially in Belek and other places in the Mediterranean region. The argument is that a golf tourist spends three to five times more than a tourist coming to Turkey through "all-inclusive" package tours. Also profits from a golf course in Turkey are on average three million euros per year. While the abandoned, waste disposal areas are being used as golf courses in order to rehabilitate such areas in developed countries, the first class forest areas are being devoted to golf courses in Turkey in order to attract tourists.

4. Case Study: Belek, Antalya

Belek takes place in Antalya province with local population varying between 750 and 10,000 in low and high season, respectively. It is one of the important tourism centers in Turkey with coast line extending to 15 km and hosting more than fifty four-star and five-star hotels. Belek can be named as the golf center of Turkey as the region has perfect climate conditions for playing golf throughout the year including winter time. Records show over 300 days of sunshine annually for the region.

Antalya-Belek, the winner of the “Best Golf Destination of Europe” award in 2008, is golf center of Turkey. In 2009 110000 golfers came to Belek 437000 games are played and 130,230,000 euros are spent. This amount is about 1.8% of total tourism revenue (Batı Akdeniz Kalkınma Ajansı, 2011). Knowing that the first golf course in Belek, National Golf Club, was opened in 1994, the developments within less than 20 years are important. In Turkey the number of golf courses is 22 concentrated in Antalya-Belek.

Golfers prefer to play in different courses in a region. Therefore, clustering is important in golf and Antalya-Belek with 17 golf courses is a good example. Having these golf courses parallel to the shores in Belek, places Turkey among privileged countries. This region is advantageous due to its climatic conditions, proximity to international airport (30 kilometers), high quality hotels in the region and designed golf courses. The ideal time of year to visit Belek is during the months between September and March. Otherwise during the summer time the weather is too hot for golf and the courses need a colossal amount of watering (Trow; 1999). The increase in the number of games played in this region is very significant. In 2010 483000 games were played which indicated a 10% increase compared to 2009. Direct flights from Europe to Belek will lead to further growth of the sector.

In order to serve tourists as golf center, in Belek vast areas of grass kept green and fresh throughout the year, by rivers of fresh water and tons of chemical fertilizers. It is assumed that for irrigation of the golf areas 30 liters of water is used per square meter per day. Besides huge amount of water consumption another problem with golf courses is the leakage of chemicals -used for insects and weeds- to the soil and ground water sources. In addition to that cutting trees and other vegetation to produce vast amounts of grass areas lead to loss of biodiversity and destruction of ecosystem's balance. The maintenance of the lawn (i.e. cutting, irrigation) requires energy. Golf courses which necessitate vast amounts of land area are generally tried to be constructed in the most beautiful regions. This tendency increases the environmental problems mentioned above.

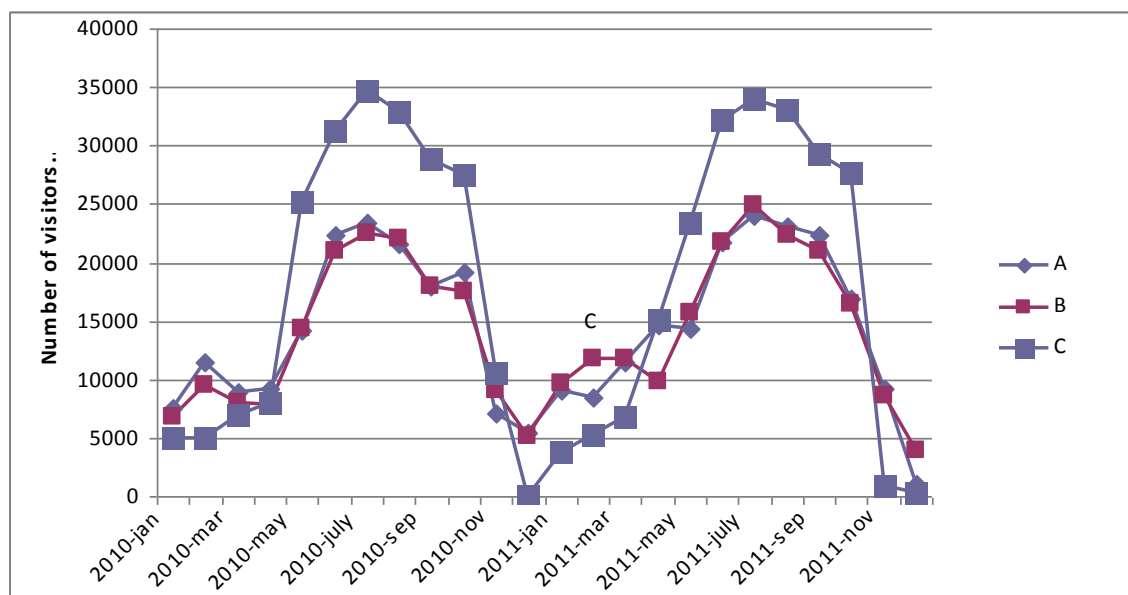
In Belek in order to investigate the water consumption patterns of foreign tourists we use a hotel complex, including three hotel units serving mainly to foreigners who visit

the area. The tourists staying in the hotels may also make use of the golf courses depending on the package that they bought.

In the literature one meets with different numbers in terms of water consumption per person in hotels including the meals. This number varies in the range 300-850 liters per person. Especially in the hotels working under “all inclusive” system water consumption is much more due to heavy and frequent dish washing. On the other hand water is being used for the gardens and the pools. It is assumed that every person swimming in the pools come out with half a liter per day. Antakyalı et al. (2008) found that in the İberotel Sarıgerme Park Hotel kitchen and laundry together constituted the largest water use, followed by swimming pools and guest rooms. The authors found considerably higher water use per guest in low occupancy periods. In the early summer months water use per guest exceeds 1000 liter per guest per day. This number decreases to 400 liter per guest when the occupancy rates are high.

In our case study, the five-star hotels in Belek region (Hotels A, B and C) are observed to have the highest occupancy rates during July in both 2010 and 2011 as shown in Figure 5.

Figure 5. Number of visitors in Hotels A, B and C in the tourism complex (2010-2011)



When we analyze Figures 6 and 7 in terms of per capita water use of these hotels, our findings match with that of Antakyalı et al (2008). The per capita water consumption increases during low season and decreases during high season on average as shown in Figure 6 and separately for Hotels A and B as shown in Figure 7. Per capita water consumption varies in between 500 liters and 2400 liters. The maximum number we found is nearly 2.5 times more than that of Antakyalı et al.

Figure 6. Average water use for the tourism complex (2010-2011)

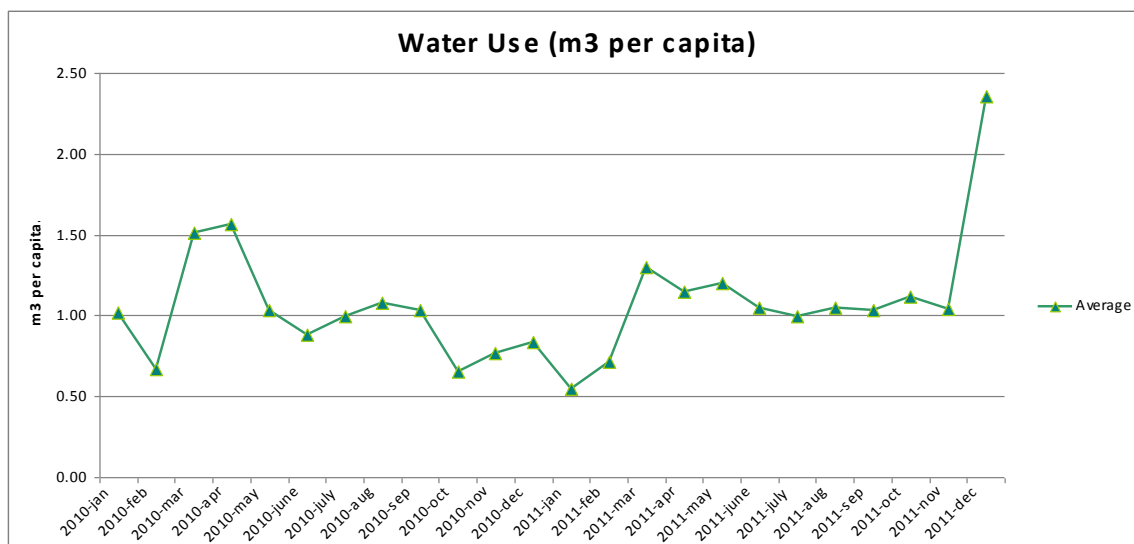
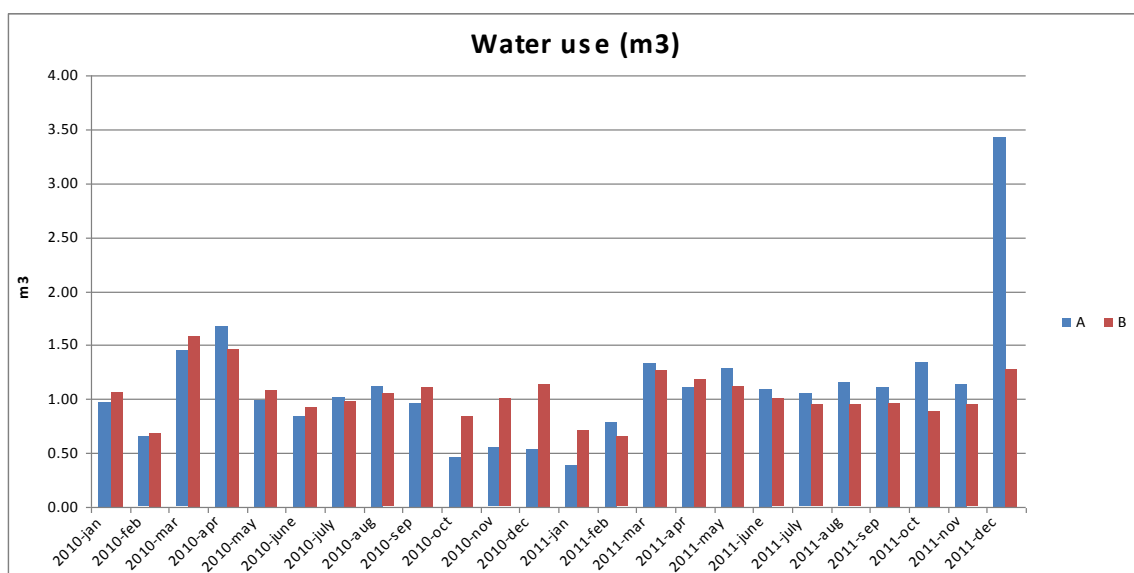


Figure 7. Water use for Hotels A and B in the tourism complex (2010-2011)



5. Conclusion

International tourism is the largest and most rapidly expanding industry in the world. Tourism activities are oriented more and more toward countries with pristine nature. Therefore, with its relatively undisturbed natural areas Turkey has a high potential for attracting tourists. As one of the fastest growing tourism markets Turkey expects to host nearly thirty-five million tourists in 2012. This number amounting to nearly half of her population, places Turkey face to face with the destructive impacts of mass tourism. As the priority in mass tourism activities is to maximize the number of tourists and so the revenues, the negative impacts of such a policy on the environment are not taken into account seriously. Therefore, laws and regulations encouraging the development of tourism sector are also disregarding the environment.

In Turkey the negative impacts of uncontrolled development of the tourism sector during 1980s began to be felt on the environment afterwards. Due to the absence of planning this development led to unbalanced spatial concentration leading to various environmental problems: along the coasts, especially in Mediterranean and Aegean regions uncontrolled hotel and holiday resort constructions violating relevant laws; environmental pollution in terms of sewage systems and yacht tourism; increasing discomforts of congestion, traffic, noise on the local people; negative impacts on natural beauties which are unique and fragile to a large extent like Pamukkale and Capadoccia.

Tourism sector generally overuse water resources in relation to hotels, swimming pools, golf courses and individual consumption. These kinds of water use besides producing large amounts of waste water also lead to problems with water supply systems and water scarcity. For example in Antalya while per capita water consumption is 250 liters per day, in tourism regions this amount exceeds 600 liters. Our case study points out to much more water usage per capita in five star hotel complex. Similar to the previous studies we found water use per capita to increase during off-season.

In Gössling et al (2012) among 54 countries included in their study –the world's most important tourism countries and a sample of highly tourism-dependent islands– ranking from highest to lowest numbers, Turkey ranks 25th in terms of total share of tourism in domestic water by having a value of 3.97%, and 20th in terms of international tourism's share of domestic water by having a value of 1.43%. It is expected in the future

that there will be growth in water-intense tourism activities like golf which will increase the pressure on the water resources. In Turkey, golf centers like Belek and in the coming years may be some other golf centers will exert more pressure on the water sources of the country.

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