EDITORS
PROF. DR. RAUL D.S.G. CAMPILHO
PROF. K. THAMIZHMARAN

12TH INTERNATIONAL ISTANBUL SCIENTIFIC RESEARCH CONGRESS ON LIFE, ENGINEERING, AND APPLIED SCIENCES PROCEEDINGS BOOK

ISBN: 978-975-00544-0-2

BZT
ACADEMY

AFGHANISTAN, ALGERIA, AZERBAIJAN, BANGLADESH, CHINA, CZECH REPUBLIC, ETHIOPIA, INDIA, LAOS, MALAYSIA, MOROCCO, NAMIBIA, NIGERIA, NORTH MACEDONIA, PAKISTAN, PHILIPPINES, PORTUGAL, POLAND, RUSSIA, SPAIN, TÜRKIYE, UZBEKISTAN, VIETNAM, TURKISH REPUBLIC OF NORTHERN CYPRUS, SUDAN.

ISBN: 978-975-00544-0-2

AFGHANISTAN, ALGERIA, AZERBAIJAN,
BANGLADESH, CHINA, CZECH REPUBLIC, ETHIOPIA,
INDIA, LAOS, MALAYSIA, MOROCCO, NAMIBIA,
NIGERIA, NORTH MACEDONIA, PAKISTAN,
PHILIPPINES, PORTUGAL, POLAND, RUSSIA, SPAIN,
TÜRKIYE, UZBEKISTAN, VIETNAM, TURKISH REPUBLIC
OF NORTHERN CYPRUS, SUDAN.

12TH INTERNATIONAL ISTANBUL SCIENTIFIC RESEARCH CONGRESS ON LIFE, ENGINEERING, AND APPLIED SCIENCES PROCEEDINGS BOOK

JANUART 21-23, 2023

(ONLINE & FACE TO FACE PARTICIPATION)

ISBN: 978-975-00544-0-2

EDITORS

PROF. DR. RAUL D.S.G. CAMPILHO

PROF. K. THAMIZHMARAN

BZT AKADEMİ YAYINEVİ®

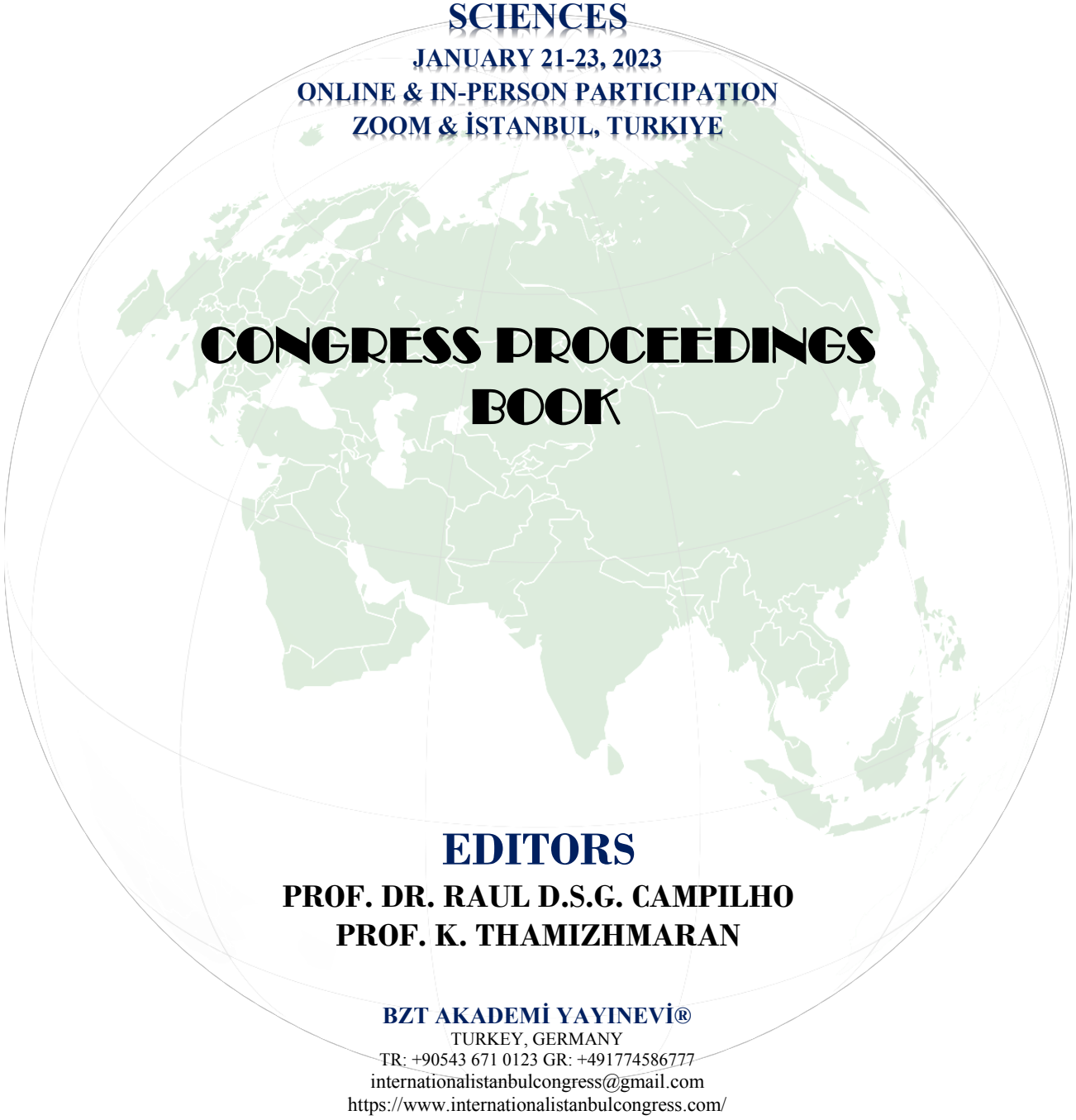
BZT ACADEMY PUBLISHING HOUSE 2021©

TURKEY, GERMANY

TR: +90543 671 0123 GR: +491774586777

12th INTERNATIONAL İSTANBUL SCIENTIFIC RESEARCH CONGRESS ON LIFE, ENGINEERING, AND APPLIED SCIENCES

JANUARY 21-23, 2023
ONLINE & IN-PERSON PARTICIPATION
ZOOM & İSTANBUL, TURKIYE



CONGRESS PROCEEDINGS BOOK

EDITORS

PROF. DR. RAUL D.S.G. CAMPILHO
PROF. K. THAMIZHMARAN

BZT AKADEMİ YAYINEVİ®
TURKEY, GERMANY
TR: +90543 671 0123 GR: +491774586777
internationalistanbulcongress@gmail.com
https://www.internationalistanbulcongress.com/

BZT AKADEMİ YAYINEVİ®
BZT ACADEMY PUBLISHING HOUSE
Publishing Date: 30.01.2023
ISBN: 978-975-00544-0-2

CONGRESS ID

CONGRESS NAME

12th INTERNATIONAL İSTANBUL CONGRESS ON LIFE, ENGINEERING, AND APPLIED SCIENCES

DATE AND VENUE

JANUARY 21-23, 2023

ONLINE & IN-PERSON PARTICIPATION (İSTANBUL, TÜRKİYE)

(FROM 25 DIFFERENT COUNTRIES)

ORGANIZERS & PARTICIPANT INSTITUTIONS

BZT Academy, Türkiye

Azerbaijan National Academy of Sciences, Azerbaijan

Qatar University, Qatar

Tetova University, North Macedonia

Mindano University, Philippines

Duisburg Essen University, Germany

Presidents of Organization Committee

Prof. M. SEENIVASAN

Prof. Dr. Raul D.S.G. CAMPILHO

President of Scientific Committee

Prof. K. THAMIZHMARAN

Prof. Dr. Raul D.S.G. CAMPILHO

President of Coordinators' / General Coordinator

Dr. Baha Ahmet YILMAZ

ACCEPTED PAPERS

47 Turkish Participants

64 Foreign Participants

%57.7 Foreign Participant Rate

%42.3 Turkish Participant Rate

REFUSED PAPERS

3 Foreign Participants

EVALUATION PROCESS

All Submissions Have Passed a Double-Blind Referee Evaluation Process

All Responsibility for the Works Belongs to the Author

BİLİM & ORGANİZASYON KURULU

FEN, MATEMATİK, MÜHENDİSLİK & UYGULAMALI BİLİMLER

Prof. Dr. Neslihan DOGAN-SAGLAMTIMUR

Nigde Omer Halisdemir University, Turkey

Prof. Tin-Yam CHAN

National Taiwan Ocean University, Taiwan

Prof. Mohammed BETTACH

Chouaib Doukkali University, Morocco

Assoc. Prof. Dr. Nur Jale ECE

Mersin University, Turkey.

Assoc. Prof. Dr. İkbal ERBAŞ

Akdeniz University, Turkey.

Dr. Enis Nadia Md YUSOF

University Sains Malaysia, Malaysia

Dr. Nik NORLIATI FITRI MD NOR

University Sains Malaysia, Malaysia

Dr. Abdulgaffar MUHAMMAD

National Open University of Nigeria, Nigeria

More information: www.bztacademy.com | +90 543 671 0123

BZT
ACADEMY

BİLİM & ORGANİZASYON KURULU

FEN, MATEMATİK, MÜHENDİSLİK & UYGULAMALI BİLİMLER

Dr. Amirah HURZAID

University Sains Malaysia, Malaysia

Dr. Yassine ENNACIRI

Chouaib Doukkali University, Morocco

Dr. Özerk YAVUZ

Haliç University, Turkey

Didem Yavuz VELİPASAOĞLU

Izmir Democracy University, Turkey

Dr. Mustafa Alper DÖNMEZ

Konya Technical University, Turkey

Dr. Khurshid ALAM

Sultan Qaboos University, Qatar

Dr.K.P.Sanal Kumar

R.V. Government Arts College, India

Dr.Mohammad Arif Kamal

Aligarh Muslim University, India

More information: www.bztacademy.com | +90 543 671 0123

BİLİM & ORGANİZASYON KURULU

FEN, MATEMATİK, MÜHENDİSLİK & UYGULAMALI BİLİMLER

Dr. K. Thamizhmaran

Government College of Engineering, India

DR. P. SIVASAKTHIVELAN

Annamalai University, India

Dr. Hatice Banu KESKİNKAYA

Necmettin Erbakan University, Türkiye

Dr. Rahile ÖZTÜRK

Selçuk University, Türkiye

Dr. Dhaval SAHIJA

Softweb Solutions Inc; Dallas, USA

More information: www.bztacademy.com | +90 543 671 0123

BZT
ACADEMY

SCIENTIFIC & ORGANIZATION COMMITTEES

LIFE, MATHEMATICS, ENGINEERING & APPLIED SCIENCES

Prof. Dr. Neslihan DOGAN-SAGLAMTIMUR

Nigde Omer Halisdemir University, Turkey

Prof. Tin-Yam CHAN

National Taiwan Ocean University, Taiwan

Prof. Mohammed BETTACH

Chouaib Doukkali University, Morocco

Assoc. Prof. Dr. Nur Jale ECE

Mersin University, Turkey.

Assoc. Prof. Dr. İkbal ERBAŞ

Akdeniz University, Turkey.

Dr. Enis Nadia Md YUSOF

Dr. Enis Nadia Md YUSOF, University Sains Malaysia, Malaysia

Dr. Nik NORLIATI FITRI MD NOR

University Sains Malaysia, Malaysia

Dr. Abdulgaffar MUHAMMAD

National Open University of Nigeria, Nigeria

More information: www.bztacademy.com | +90 543 671 0123

SCIENTIFIC & ORGANIZATION COMMITTEES

LIFE, MATHEMATICS, ENGINEERING & APPLIED SCIENCES

Dr. Amirah HURZAID

University Sains Malaysia, Malaysia

Dr. Yassine ENNACIRI

Chouaib Doukkali University, Morocco

Dr. Özerk YAVUZ

Haliç University, Turkey

Didem Yavuz VELİPASAOĞLU

Izmir Democracy University, Turkey

Dr. Mustafa Alper DÖNMEZ

Konya Technical University, Turkey

Dr. Khurshid ALAM

Sultan Qaboos University, Qatar

Dr.K.P.Sanal Kumar

R.V. Government Arts College, India

Dr.Mohammad Arif Kamal

Aligarh Muslim University, India

More information: www.bztacademy.com | +90 543 671 0123

SCIENTIFIC & ORGANIZATION COMMITTEES

LIFE, MATHEMATICS, ENGINEERING & APPLIED SCIENCES

DR. K. THAMİZHMARAN

Government College of Engineering, India

DR. P. SIVASAKTHIVELAN

Annamalai University, India

Dr. Hatice Banu KESKİNKAYA

Necmettin Erbakan University, Türkiye

Dr. Rahile ÖZTÜRK

Selçuk University, Türkiye

Dr. Dhaval SAHIJA

Softweb Solutions Inc; Dallas, USA

12TH INTERNATIONAL ISTANBUL SCIENTIFIC RESEARCH CONGRESSES ON LIFE, ENGINEERING, AND APPLIED SCIENCES / HUMANITIES AND SOCIAL SCIENCES / HEALTH SCIENCES

DAY 1 – JANUARY 21, 2023

January 21-23, 2023
Istanbul, TURKEY

CONGRESS PROGRAM

Online (with Video Conference) Presentation

PARTICIPANT COUNTRIES (25 COUNTRIES)

Afghanistan, Algeria, Azerbaijan, Bangladesh, China, Czech Republic, Ethiopia, India, Laos, Malaysia, Morocco, Namibia, Nigeria, North Macedonia, Pakistan, Philippines, Portugal, Poland, Russia, Spain, Türkiye, Uzbekistan, Vietnam, Turkish Republic of Northern Cyprus, Sudan.

MEETING ID: 838 9808 8120
PASSWORD: 223185

IMPORTANT, PLEASE READ CAREFULLY

- To be able to attend a meeting online, login via **https://zoom.us/join** site, enter ID "Meeting ID or Personal Link Name" and solidify the session.
- The Zoom application is free and no need to create an account.
- The Zoom application can be used without registration.
- The application works on tablets, phones and PCs.
- The participant must be connected to the session 5 minutes before the presentation time.
- All congress participants can connect live and listen to all sessions.
- Moderator is responsible for the presentation and scientific discussion (question-answer) section of the session.

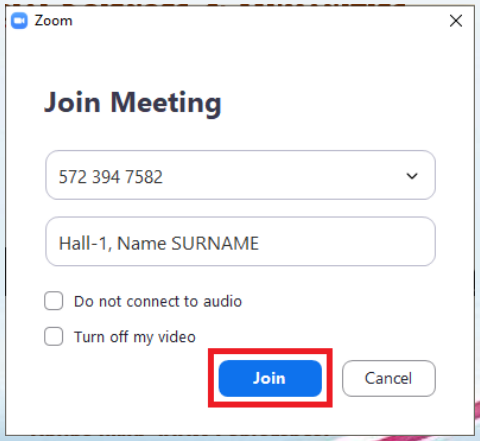
Points to Take into Consideration - TECHNICAL INFORMATION

- Make sure your computer has a microphone and is working.
- You should be able to use screen sharing feature in Zoom.
- Attendance certificates will be sent to you as pdf at the end of the congress.
- Requests such as change of place and time will not be taken into consideration in the congress program.

*(All speakers required to be connected to the session **10 min before** the session starts)*
Moderator is responsible for ensuring the smooth running of the presentation, managing the group discussion and dynamics.

*Each presentation will take **10 minutes.** There will be a question and answer session for 5 minutes after the presentation.*

Before you login to Zoom please indicate your name_surname and HALL number:
exp. Hall-1, Name SURNAME



SESSION (2)- HALL (2)

MEETING ID: 838 9808 8120
PASSWORD: 223185

	21.01.2023	Time: 13^{30}-17^{15} (Turkey Local time GMT+3)	MODERATOR: *Özkan ATAN* COORDINATOR: *Spc. Nigar EMECEN EZGİN*
	Authors	**Affiliation**	**Topic title**
13^{30}-13^{45}	Emine KERVAN	*Matlı Milk and Dairy Products Industry and Trade Inc., Türkiye*	DEVELOPMENT OF VITAMIN D3 AND B12 ENRICHED MILK
13^{45}-14^{00}	Merva Nur ATASOY Bahar Tuba FINDIK Hilal YILDIZ	*Nevşehir Hacı Bektaş Veli University, Türkiye*	ANTIBACTERIAL ACTIVITY OF LINALOOL AND EUGENOL AGAINST FOOD-BORNE PATHOGENIC BACTERIA
14^{00}-14^{15}	Ahmet AKDAĞ Canan Kop BOZBAY	*Ondokuz Mayıs University, Türkiye* *Eskişehir Osmangazi University, Türkiye*	GROWTH PERFORMANCE AND MEAT QUALITY OF BROILERS FED DIETS CONTAINING SALVIA OFFICINALIS L ESSENTIAL OIL
14^{15}-14^{30}	Zekiye DEMİR Günseli KURT GÜR Semra Hasan ÇEBİ Emel ORDU	*Yıldız Technical University, Türkiye* *Trakya University, Türkiye*	REKOMBINANT EXPRESSION AND CHARACTERIZATION OF LEUCOJUM AESTIVUM L. TYROSINE DECARBOXYLASE
14^{30}-14^{45}	Selin YARDIMCI DOGAN Sezen COSKUN Mehmet BEYHAN	*Isparta Süleyman Demirel University, Türkiye*	SUSTAINABLE WASTE MANAGEMENT IN RECREATIONAL AREAS
14^{45}-15^{00}	Selin YARDIMCI DOGAN Sezen COSKUN Mehmet BEYHAN	*Isparta Suleyman Demirel University, Türkiye*	RISK ANALYSIS AND MEASURES FOR RECREATION AREAS
15^{00}-15^{15}	Arzu KORTUN Sermet KOYUNCU Uğur CENGİZ	*Çanakkale Onsekiz Mart University, Türkiye*	SUPERHYDROPHILIC ANTI FOG UV PROTECTED POLYMER BASED COATINGS
15^{15}-15^{30}	Bilgin TAŞKIN	*Van Yüzüncü Yıl University, Türkiye*	EFFECT OF PEG INDUCED DROUGHT STRESS ON SOME ENDOPHYTE BACTERIAL ISOLATES
15^{30}-15^{45}	İzzetcan KINACI Ali KARACA İrem PALABIYIK	*FG Tekstil Konfeksiyon San. Tic. A.Ş./Ar-Ge Merkezi, Türkiye*	DEVELOPMENT OF OZONE EFFECTING SYSTEM WITHOUT USING HARMFUL CHEMICALS
15^{45}-16^{00}	Semiha EREN İdil ÖZCAN Doğan DEREN	*Bursa Uludağ University, Türkiye* *RB Karesi Textile Industry Trade. Inc. R&D Center, Türkiye*	POLYESTER BASED ELASTIC FIBERS PBT PTT FIBERS
16^{00}-16^{15}	Ömer Fırat TURŞUCULAR Yusuf ULCAY	*Uludağ University, Türkiye*	EXPERIMENTAL INVESTIGATION OF SURFACE MORPHOLOGIES FOR BIO-CHEMICAL FINISHING OF CHITOSAN IN-VITRO CONDITION OF ARTIFICIAL ACL LIGAMENT AS BIO MATERIAL
16^{15}-16^{30}	Betül ERİM Binnur Gören KIRAL	*Dokuz Eylul University, Türkiye*	INVESTIGATION OF FATIGUE CRACKS OCCURRED ON TIE ROD COMPONENT
16^{30}-16^{45}	Hareth Mothanna Rashed ALFEEL Mustafa Fazıl SERINCAN Recep ÖNLER	*Gebze Technical University, Türkiye*	INVESTIGATION OF AN AMMONIA CRACKER FOR GENERATION OF NH3/H2 FUEL MIXTURE
16^{45}-17^{00}	Nuri Yunus KOCADAĞ Zehra AKCAN KOCADAĞ	*Bingol University, Türkiye* *Kocaeli University, Türkiye*	WARNING AND GUIDANCE AGAINST TRAFFIC HAZARDS BY COLORING THE ROUTE WITH INSTANT AND BIG DATA ON ROAD

SUSTAINABLE WASTE MANAGEMENT IN RECREATIONAL AREAS

Selin Yardimci Dogan [1*], Sezen Coskun [2], Mehmet Beyhan[3]

[*1] Suleyman Demirel University, Department of Environmental Engineering, Isparta, Turkey.

Orcid: 0000-0002-1663-7343

[2] Isparta University of Applied Sciences, Egirdir Vocational School, Isparta, Turkey.

Orcid: 0000-0001-7011-9187

[3]Suleyman Demirel University, Department of Environmental Engineering, Isparta, Turkey.

Orcid: 0000-0003-2312-2249

ABSTRACT

Natural areas have a high value in terms of tourism, which is associated with the presence of various natural resources and are highly valued for sustainable development. Recreation activities can be carried out in natural areas, so that people's psychological, physical, social, and cultural lives can be maintained in a healthier way. However, people are constantly interacting with the natural environment and the destruction and pollution of natural recreation areas must be prevented due to unconscious consumption, waste, vandalism (intentionally and willingly, damaging a person, product, or public object). Waste management is not only a behavior aimed at protecting the environment. However, waste management is a global need that can contribute significantly to sustainable development. Waste management in national parks around the world has become a priority for nature conservation. In this study, waste management of recreational areas was examined in six categories for solid waste: (1) Waste prevention, (2) recycling, (3) using recycling bins, (4) residual food, (5) ensuring the shipment of waste to licensed companies, and (6) employee and visitor information. Measures that can be taken as a result; (1) Avoiding the use of disposable cups and plates, (2) composting and recycling of organic wastes, (3) collecting waste in designated recycling bins, (4) donating leftover food to animal shelters, (5) providing necessary information to employees and visitors. In addition, to reduce the amount of waste, solutions such as suggestions to increase environmental awareness and planning solutions suitable for sustainable development should be implemented.

Keywords: Recreation areas, nature conservation, waste management, sustainable development.

INTRODUCTION

The ever-increasing demands for recreational areas are causing widespread ecological environmental damage in many parts of the world. Recreation areas: extensive forests, parks and gardens are essential spaces that can provide numerous benefits for both physical and mental health (Yu Liu vd., 2021). However, if recreational and touristic activities (such as walking, camping, horse riding) are not managed well, they can adversely affect natural and semi-natural resources (Mckercher, 1996; Ngoc ve Schnitzer,

2009). Soil loss/compression, increase in fire frequency, litter and water pollution due to camping, damage to vegetation and spread of soil pathogen are potential adverse activities (Sun ve Walsh, 1998).

Waste generated in recreational areas generally changes seasonally and harms natural resources. These wastes are a mixture of various materials that can have significant environmental impacts, including organic and hazardous materials with similar properties to mixed household waste (European Commission, 2017). When tourists come to visit national parks, they bring with them or generate on-site millions of tons of waste, most of which is recyclable or compostable. In addition, the waste left behind by many special events such as festivals, shows and picnics exceeds the current waste management and recycling capacity of protected areas and parks (EPA, 2010). Despite increasing pressure on protected areas (national parks and recreation areas etc.), often caused by anthropogenic impact on the environment, it is important to sustain sustainable development by ensuring that natural resources remain unharmed (Przydatek, 2019).

In ABD Green Guide for prepared Waste Management and Recycling During Special Events at National Capital Region Parks, disposable plates, cups, etc., as a recommendation for waste prevention it is suggested to avoid its use (EPA, 2010). It may be possible to significantly reduce the waste mass for landfill by composting from household waste and recycling packaging waste (Atik, 2010). Oner et al. (2019) stated that it is important to inform the employees and visitors in the recreation areas and that the waste management in sensitive areas can be achieved at the desired level by ensuring the persistence of the information.

This study has been prepared in order to limit the increasing pressure on the environment by reviewing the issues related to the management of wastes generated in recreational areas, which are seen as a deficiency. The cleaning of protected areas is usually done by personnel employed in this area. Most of the time, forest areas and picnic areas cannot be cleaned sufficiently and remain dirty. In order to increase social awareness and realize a sustainable waste management, the problems and precautions to be taken in this regard should be discussed more on different platforms.

POSSIBLE WASTES IN RECREATIONAL AREAS

According to where the wastes are generated; industrial, domestic and hazardous wastes are divided into different types. Waste sources in recreation areas can be listed as follows:

- Food waste
- Hazardous wastes (aluminum foil, battery)
- Glass bottles, including plastic bags, plastic plates, cutlery and papers, are left on mountain roads and camps.
- Beveage cups.
- Souvenirs
- Special event brochures
- Lamps containing mercury, glass, metal used for lighting (fluorescent lamp may be classified as hazardous waste)
- Worn out exercise equipment (contains steel, plastic, mercury, lead, gold, etc.)
- Combustible materials (liquid ignition gel, matches, etc.)

WASTE MANAGEMENT IN RECREATIONAL AREAS

The waste problem causes many important economic, environmental and social problems that need to be solved in recreation and tourism regions. These problems can result in significant damage in practice

as well. Therefore, waste management is an important component of the sustainable development of leisure and tourism regions (Khumarova and Krivenceva, 2022). Solid waste management, on the other hand, includes waste collection, transfer, resource recovery, recycling, treatment, and disposal (Shekdar, 2009). Reprocessing of used materials is the recycling process. In recycling, the material is broken down into its main components and new products are obtained. Recycling is widely used in metal, plastic, glass and electronic waste, where production from pure raw materials is more costly (Erdur, 2019). The 3R rule (waste reduction, reuse, recycling), which forms the basis of the waste management system, is among the great ways to protect our environment (Ulaşlı, 2018). Many sociocultural, economic, environmental, technical and political issues are important in successful waste management. The benefits of recycling in the production processes, especially in material and energy costs, have been effective in the economic development of institutions (Vatan, 2002). Advantageous situations provided both economically, environmentally and socially are the basis of sustainable development. For this reason, recycling of waste materials contributes to the sustainability and corporate sustainable development of industrial processes (Aka, 2022).

Waste generation in recreation areas was evaluated by EPA (Environmental Protection Agency) (1971). The wastes generated in the recreation areas are related to the use of the visitors. With the development of campsites, waste may change. It is stated that the activities of Forest Service Region officials regarding the collection of wastes in recreation areas should be given importance.

The success of environmental protection approaches in coastal recreation areas of Antalya/Turkey was examined by Atik (2010). The main management components of study areas were defined. Results were evaluated in six main categories: (1) Protection of environmental, (2) Infrastructure facilities, (3) Water saving, (4) Energy saving, (5) Management of waste and (6) Protection of the nature with an emphasis on environmental protection. Wastes are generated during various recreational activities on the beach, the most common being swimming and picnic (Atik, 2010).

There is a research conducted on the management of waste from the cultural and entertainment area in the United States (EPA, 2010). Wastes were separated and evaluated as pre-event activities, during and post-event activities. Pre-event activities; waste prevention, recycling plan, contract with recycling company, coordination between vendors and participants, recycling bins, training for personnel, signage, compost production and shipping of leftover food. Activities during the event; It consists of recycling and composting boxes, signs, recycling area, waste disposal, separation and cleaning parts. The post-event activities are; data collection and sharing.

Yildirim (2012) calculated the environmental pressures in intensive use areas such as public and private beaches and the physical carrying capacity of the recreation area by using the LAC model, which is the “Acceptable Limits of Change Model”. As a result, continuity of cleanliness should be ensured along the coast, wastewater should be treatment and effective use of the areas should be ensured.

Öner et al. (2019), depending on the tourism activities in the region, the waste management systematic in Bodrum Municipality was examined. The increase in waste in summer months in parks and gardens due to the absence of a landfill facility is a major environmental problem in the touristic area. Bodrum Municipality signed a storage facility establishment contract to bring a solution to the issue and accelerated its construction. Training has been planned for the employees.

CONCLUSION

Recreation activities improve people’s psychological and physical well-being and contribute to their health as well as the social and cultural dimensions of life. There are many approaches to the management of recreation and tourism in parks and protected areas. Various approaches are recognized as essential tools for the conservation and sustainable use of resources to minimize environmental impacts. It is pointed out that in terms of sustainability, attention should be paid to the relationship of

tourism with recreation areas and the environment and that this should be corrected in the future. In waste management in recreation areas, which are examined in six categories for solid wastes; 1) waste prevention, (2) recycling, (3) use of recycling bins, (4) leftover food, (5) ensuring that waste is sent to licensed companies, and (6) employee and visitor information items must be present. Leftover food can also be sent to animal shelters.

REFERENCES

Aka DC 2022. Endüstriyel A System Dynamics Model Proposal to Determine the Impact of Solid Waste Recycling on Environmental and Economic Performance. Sakarya University, Graduate School of Business, PhD Thesis, 301 pp, Sakarya.

Atik M 2010. Environmental Protection in Coastal Recreation Sites in Antalya, Turkey. Coastal Management, 38(6): 598-616.

EPA, 1971. Solid Waste Management in Recreational Forest Areas. Solid Waste Management Office, Washington, 97pp.

EPA, 2010. A Green Guide for Waste Management and Recycling During Special Events at National Capital Region Parks. US EPA Archive Document, 8 pp.

Erdur E 2019. Zero Waste Project in Turkey and Implementation of the Project in Public Institutions; Example of Suleymanpasa Municipality. Gazi University, Graduate School of Natural and Applied Sciences, Master Thesis, Ankara, 102 pp.

European Commission, 2017. Waste and Waste Water Management in Tourist Accommodation. Best Environmental Management Practice in The Tourism Sector, 318-360, Spain.

Khumarova N, Krivenceva A 2022. A Complex Systems Approaches to Sustainable Waste Management: the Case of a Recreational and Tourist Region of Ukraine. Economics, Ecology, Socium, 6(1): 1-10.

Mckercher B 1996. Differences Between Tourism and Recreation in Parks. Annals of Tourism Research, 23(3): 563-575.

Ngoc UN, Schnitzer H 2009. Sustainable Solutions for Solid Waste Management in Southeast Asian Countries. Waste Management, 29(6): 1982-1995.

Oner B, Eleren SÇ, Salihoglu NK 2019. An Example of Waste Management in Touristic Coastal Areas: Bodrum. Uludag University Journal of Engineering Faculty, 24(1): 207-218.

Przydatek G 2019. Waste Management in Selected National Parks – A Review. Journal of Ecological Engineering, 20(4): 14-22.

Shekdar AV 2009. Sustainable Solid Waste Management: An Integrated Approach for Asian Countries. Waste Management, 29(4): 1438-1448.

Sun D, Walsh D 1998. Review of Studies on Environmental Impacts of Recreation and Tourism in Australia. Journal of Environmental Management, 53(4): 323-338.

Ulasli K 2018. Recyclable Waste Management and Zero Waste Project Practices: Kadıköy Municipality. Hasan Koyuncu University, Institute of Science and Technology, Gaziantep, 129 pp.

Vatan C 2002. Recycling of Plastic Materials: Examples from the Automotive Industry. Istanbul Technical University, Institute of Science, Master Thesis, İstanbul, 153 pp.

Yildirim UB 2012. Determination of Visitor Carrying Capacity in Beach and Marine Recreation Areas and Application of LAC Model in Beach Management. Akdeniz University, Graduate School of Natural and Applied Sciences, Master's Thesis, Antalya, 136 pp.

Yu LW, Sheng FB, Ming HC 2021. Evaluating the Recreation Value of Alishan National Forest Recreation Area in Taiwan. Forest, 12(9):1245.