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**ABSTRACT  
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## **O 1. VEHICLE WILDFIRES FORECAST PERFORMANCE (WFP) IN ALBANIA DURING THE SUMMER SEASON 2017**

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**ABSTRACT:** Albania is situated in the Balkan Peninsula and is characterized by a Mediterranean climate, with dry and warm or hot summers. Albania like other Mediterranean countries, is repeatedly threatened by wildfires resulting often insignificant economic and ecological losses, and occasionally threatening the human lives. Nowadays, the safeguarding process of human lives and properties from natural hazards comprises not only prevention but also protection and mitigation. The wildfire risk forecast is considered a mitigation measure, which helps to predict the probability of occurrence of wildfire within a closed area. National Center for Forecasting and Monitoring of Natural Hazards (NCFMNH), part of Institute of GeoSciences, Energy, Water and Environment of Albania was established in 2011. In the same year, the NCFMNH started delivering wildfire risk forecast over Albanian territory. Since 2016, the wildfires risk forecast is based on the results of the European Forest Fires Information System (EFFIS). The risk forecast is issued and disseminated in a daily basis to the General Directorate of Civil Emergencies, including wildfire occurrence probability (risk) by country's administrative unit (prefecture). The study evaluates the accuracy of the forest-fire risk forecasts issued during the 2017 summer season, calculating and analyzing results of the Forest Fires Forecast Performance (FFFP) for each Prefecture, by season and by month. The study proved high accuracy of the forecast for the High Level Risk, 59.2% during the season which varied from 55% in August to 70% in June and July. The forecast performance was considered as GOOD for June and VERY GOOD for July and August. The accuracy of the forecast for the Moderate Level Risk was low, 37.7% during the season which varied from 14% in June to 42% and 45% respectively in July and August. Hence the forecast performance was considered as BAD performance for June and GOOD for the July and August. The performance of the forecast for the Low Level of Risk was VERY GOOD for the season varying from GOOD in June and August to VERY GOOD for July. The performance of the forecast for the Low and Very Low Level of Risk was VERY GOOD as VERY GOOD for the season varying from GOOD in July to VERY GOOD in June and August.

*Keywords: Wildfires, forecast, risk, natural hazard*

**O 2. A COMPARATIVE STUDY TO ENHANCE THE PHOTOCATALYTIC ACTIVITY OF PICKERING EMULSIONS STABILIZED WITH DIFFERENT SURFACE-MODIFIED TITANIUM DIOXIDES VIA MEMBRANE EMULSIFICATION WAY**

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**ABSTRACT:** This study is based on the application of surface-modified TiO<sub>2</sub> to stabilize Pickering emulsions (PE) and then to be used in photocatalytic system for degradation of indigo carmine dye. Number of the reactive sites on the TiO<sub>2</sub> surface plays an important role on the performance of photocatalytic degradation. Due to this theory, the aim must be to increase the amount of TiO<sub>2</sub> nanoparticles adsorbed on the water/oil interface thereby creating stabilization of PE. In this regard, TiO<sub>2</sub> were modified using various types of organic acids such as salicylic, benzoic, and citric acids to investigate their effects on photocatalytic reaction efficiency and kinetics. Instead of conventional emulsification technologies, membrane emulsification method was used to prepare PE which enables the homogeneous particle size distribution. The bonding structure and surface properties of the particles along with the degradation efficiency of indigo carmine dye were investigated to assess the effect of the surface modification of TiO<sub>2</sub> on the photocatalytic activity of the PE-based system in terms of types of oil phase and organic acid. Additionally, the efficiencies of PE and bare surface-modified TiO<sub>2</sub> were compared to understand the advantage of PE. Characterization of surface modified TiO<sub>2</sub> was performed using TGA, BET, DSC, FTIR, XRD, and SEM analyses. It is found that surface modified particles help to achieve better degradation percentages rather than bare TiO<sub>2</sub>. According to the results, olive oil based composite particles stabilized with salicylic acid-TiO<sub>2</sub> having a content of 6.23 mg-TiO<sub>2</sub> /g-particles provided the best promising result as a 86% dye removal.

*Keywords: Pickering Emulsion, Surface Modification, Dye Decolorization, Water Treatment, Photocatalytic Degradation.*

### **O 3. SUCCESSION OF SOIL MICROBIOMES IN NATURAL AND TRANSFORMED ECOSYSTEMS**

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**ABSTRACT:** Microbial community dynamics in soil play a key role in the sustainable development of ecosystems. Conceptual models of exogenous and endogenous successions in soil microbiome of natural and transformed ecosystems were proposed. Heterotrophic successions were divided into exogenous and endogenous categories where exogenous succession is fueled by continuous external inputs of organic carbon, while the majority of organic carbon supplies in endogenous succession are derived from a single initial input contained within the substrate itself. These two categories are also differentiated by the degree to which the developing communities modify and influence the quantity and quality of available carbon supplies. During endogenous succession, microbial community structure and the nature of the organic carbon substrates available in the environment are inextricably linked and will change together as succession progresses. The general regularities of changes in the functional and taxonomic structure of soil microbial communities at different stages of the succession process have been established. It is noted that soil biomass and phylogenetic diversity are markers of succession processes in the soil microbiome. On the basis of long-term monitoring according to the concept, five main categories of succession are purposed with the indicated succession markers and drivers in different types of ecosystems.

*Keywords: Succession, Marker, Microorganism, Soil, Ecosystem.*

**O 4. TECTONIC MODEL OF THE KRESHPAN - VERBAS REGION AND OIL RESERVOIR  
RELATED WITH IT**

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**ABSTRACT:** The study region is located in the Kurveleshi belt part of the Ionian tectonic zone (Outer Albanides). Kurveleshi belt (subzone) is characterized by anticlinal structures with different dimensions and tectonic model with northwest to southeast direction. The Kreshpan – Verbas anticlinal structure is the northernmost structure of the Kurveleshi belt (subzone). Based on the seismic works and drilled wells in this region, will be given some consideration of the tectonic model of this structure. The anticline structures of Kreshpan - Verbas is characterized by duplex tectonic style. The lower duplex floor is formed by carbonate and flysch deposits that build the core and limbs of the Kreshpan - Verbas anticlinal structure, which is folded before Burdigalian age. The upper floor is formed by Miocene molasses deposits that are placed transgressively on the top of lower structural floor. The hinge of the Kreshpan-Verbas anticlinal structure is eroded up to the level of Jurassic deposits. The eroded limestone of this structure have served as source rocks and has formed oil reservoir in the sandy deposits of Messinian.

*Keywords: Anticlinal, Kreshpan – Verbas, Tectonic model.*

## **O 5. REMOVAL OF DIMETHYL PHTHALATE BY MACRONET ADSORBENT**

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**ABSTRACT:** The macroporous polymeric adsorbent, Purolite MN100, was used for the removal of dimethyl phthalate from aqueous solution. The effect of various experimental conditions such as adsorbent dose, initial solution pH, temperature, and contact time on the removal of dimethyl phthalate was tested. Sorption of dimethyl phthalate onto MN100 adsorbent obeyed the pseudo-second-order kinetic model and reached equilibrium in 300 minutes. Also, experimental data showed a good fit with Langmuir adsorption isotherm models and maximum sorption capacity ( $Q_0$ ) found as 463.37 mg/g-adsorbent. Moreover, the sorption of dimethyl phthalate is pH depended and it was decreased at alkaline pH. Additionally, the presence of  $Na^+$ ,  $K^+$ ,  $Ca^{2+}$ ,  $Mg^{2+}$ , and  $Mn^{2+}$  has a relatively low effect on dimethyl phthalate removal. Furthermore, the thermodynamic parameters demonstrated that the adsorption of DMP onto polymeric adsorbent is endothermic and spontaneous. On top of that, the exhausted adsorbent can be regenerated with 96% ethanol.

*Keywords: Adsorption, Dimethyl phthalate, MN100, Phthalate esters, Water Treatment.*

**Acknowledgment:** This study has been supported by The Scientific and Technological Research Council of Turkey (TUBITAK-Program code: 2209). We would like to acknowledge Purolite Int. Co. for ion-exchange resin samples

## **O 6. MANTA RAY OPTIMIZATION ALGORITHM FOR SOLVING DEFINITE INTEGRALS**

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**ABSTRACT:** This study proposes a newly emerged bio-inspired metaheuristic problem-solving method called Manta-ray optimization algorithm for solving definite integral problems. Inspired from the foraging behavior of intelligent manta rays, the proposed method emulates three intrinsic food search mechanisms of manta rays which include chain foraging, cyclone foraging, and somersault foraging. Collective application of these three foraging mechanisms forms a unique problem-solving strategy to overcome hard-to-solve real-world optimization problems. The optimization performance of the proposed method is evaluated on four real world engineering optimization problems which are efficient testbeds for assessing the diversification and exploitation capacity of any optimization algorithm. Furthermore, numerical results retrieved from Manta-Ray algorithm is benchmarked against some of the literature famous optimization methods of Particle Swarm Optimization, Differential Evolution, and Crow Search Algorithm. The superiority of the Manta Ray Optimization is so evident that it surpasses the compared optimization algorithms in each test problem with regard to solution efficiency and accuracy. Finally, the proposed method is applied to five different definite integral problems and corresponding numerical results show that the algorithm offers a plausible and efficient way to solve integral problems with higher accuracy and robustness.

*Keywords: Definite integrals, Manta Ray Optimization Algorithm, Metaheuristics.*



## **O 7. TRANSPORT CAPACITY ASSESSMENT FOR FREIGHT TRAINS USING SIMULATION TECHNIQUE**

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**ABSTRACT:** Freight trains are employed for efficient and economic freight transport between freight concentration centers such as dry ports, logistic villages, and seaports. A preliminary step of planning such a transport network is the capacity assessment of the proposed transport system in the manner of freight throughput. Unfortunately, this step requires a detailed study of the underlying transport network and infrastructure. In this study, a novel microscopic simulation model is introduced to evaluate the transport capacity of freight train service using the discrete event simulation concepts. A theoretical railway section, infrastructural and operational constraints are considered in the scope of several execution scenarios. With the microscopic simulation model, the deviation of the freight transport capacity is investigated for a set of model variables and operational constraints. This study demonstrates the applicability of the microsimulation models for railway capacity assessment considering the freight trains.

*Keywords: Railway, microsimulation, capacity, transport, throughput*

## O 8. GENETIC RELATIONSHIPS AMONG PRUNUS SP IN EX SITU COLLECTION IN ALBANIA

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**ABSTRACT:** The genus *Prunus* consist of fruit tree species of high economic value, well known for their edible fruits. Its germoplasm is represented by a large number of cultivars, breeding selections and rootstocks. The present study considers genetic diversity and relationships among four different *Prunus* species used for breeding new cultivars and rootstocks. Fifty-five accessions of *Prunus domestica*, *P. armeniaca*, *P. avium* and *P. persica* from *ex situ* collection in Albania were analysed using RAPD molecular markers. *Prunus* accessions were grouped into three clades, according to the unweighted pair group method with arithmetic mean (UPGMA) dendrogram constructed based on molecular data, with a mean similarity of 43%. The obtained results were supported by principal coordinate analysis (PCoA) which clearly differentiated *Prunus* sp. into three similar groups. The results demonstrated that *P. domestica* and *P. armeniaca* were more closely related among analysed species, their accessions were clustered in the same clade. The understanding of genetic relationships among *Prunus* sp. contribute significantly to breeding and effective utilisation of *Prunus* germplasm resources held in the *ex situ* collection.

**Keywords:** *Prunus* sp., Genetic relationships, RAPD, Albania

**O 9. PERIPHYTON DIATOM DIVERSITY AND WATER QUALITY EVALUATION IN POJSKA TRANSECT, (OHRID LAKE)**

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**ABSTRACT:** Aim of this paper is analysis of the composition for the periphyton communities on Macrophyte species (Chara) in Pojska transect (Ohrid Lake). The lake has underwater resources, which contribute to the creation of endemic species-specific habitats as they supply oxygen, nutrients, and create conditions for the development and growth of endemic species. Changes in diatom community structures suggest a change in environmental conditions such as, for example the deterioration of trophic status observed in Ohrid lakes. Estimation of diatom species based on two standards: EN 13946:2003 and EN 14407:2004, we calculate biodiversity variations (Shannon index) between different depths. The Saprobic Index fluctuated from oligosabrob to oligo- β-mesosaprob but Trophic Diatom Index (TIDIA) fluctuated from mesotroph to meso-eutroph. The structures of the diatom communities reflect real environmental changes.

*Keywords: Periphyton diatom diversity, trophic status, Pojska transects, Ohrid Lake.*

**O 10. ENDEMIC AND SUBENDEMIC PLANT SPECIES IN MT TREBESHINA IN SOUTHERN ALBANIA; THEIR STATUS AND THREATS**

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**ABSTRACT:** The Trebeshina Mt is part of a very important Albanian mountain range Trebeshine-Dhembel-Nemercke, known for its biodiversity richness, situated in Southern Albania. Trebeshina Mt is one of the main source of livelihood for the surrounding communities, which have long benefited from the utilisation of its natural resources, mainly in harvesting of medicinal plants, grazing livestock and extensive use of woody ecosystems. The sustainable utilisation of mountain biodiversity, especially the conservation of subendemic and endemic vascular plant species that falls under the threatened IUCN categories is of great importance. In the present study we investigated the status of plant species grown in Trebeshina Mt and their threats factors this plants are facing. In total, we identified 100 endemic vascular plant taxa, from which 60 were subendemic and 40 plant species were endemic of Albania. Based on IUCN categories, 80% of endemic plant taxa found in Trebeshina Mt are listed in the Albanian Red List and classified as threatened. The major threats affecting the status of endangered species were due to anthropogenic activity, habitat fragmentation and uncontrolled harvesting of medicinal plants. This study, as an approach of plant conservation, provides the first baseline for future research towards the protection of the endemic and subendemic plant species of this mountain in order to prevent future plant extinction and loss of biodiversity.

*Keywords: Trebeshina Mt., Endemic and Subendemic species, IUCN, Albania*

## **O 11. EVALUATION OF ORGANOCHLORINE POLLUTANTS IN RIVERMOUTHS OF VJOSA, SEMANI AND SHKUMBINI RIVERS**

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**ABSTRACT:** Purpose of this study was evaluation of levels for some organochlorine pesticides (DDTs, HCHs, Heptachlors, Aldrins and Endosulfanes) and polychlorinated biphenyls (PCB) in water samples of Vjosa, Semani and Shkumbini rivers. These rivers have a catchment area that collect waters from large agricultural areas includes Myzeqeja Field. Many industrial wastes finished in these rivers because of elevated industrial activity near these rivers. All these rivers flow into Adriatic Sea, so it is important to evaluate the pollutant levels in their estuaries. Water samples were taken two times per year in a three year period from March 2017 to December 2019. Liquid-liquid extraction was used to isolate chlorinated pollutants and a florisil column was used for clean-up procedure. Analysis of organochlorinated pesticides (according to Method EPA 8081) and polychlorinated biphenyls (7 PCB markers) were realized by using gas chromatography technique equipped with electron capture detector and RTX-5 capillary column. Organochlorinated pollutants were detected for all stations, for each sampling periods because of agricultural and industrial impact in water rivers. The highest levels were found in Semani and Shkumbini rivermouths due to higher agricultural areas near these rivers. New arrivals from water irrigation and discharges of industrial wastes influence in found levels. Degradation products of pesticides and volatile PCBs were found in higher levels for all analyzed samples. The levels of organochlorine pollutants were higher than EU and Albanian norms for Semani and Shkumbini rivers.

*Keywords: Organochlorine pesticides; PCBs; PAH; Water analyzes; GC/ECD*

**O 12. BETWEEN A RESILIENT AND SUSTAINABLE FUTURE: RESHAPING  
HUMAN–NATURE INTERACTIONS TO AVOID THE COLLAPSE OF OUR  
SOCIO–ECONOMIC SYSTEM UNDERGROUND WATER QUALITY FOR IRRIGATION  
SUITABILITY IN KONYA CITY**

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**ABSTRACT:** Socio-economic systems built by humans are subsystems of the natural systems and are closely related with each other. The history of past human civilizations reveals that all socio-economic systems of the past used to experience short periods of economic prosperity which were followed by the inevitable collapse. The failure of those systems may be explained with the depletion of natural resources, climate changes, and the inability of former civilizations to act wisely by adjusting their needs to the carrying capacity of nature. Bearing in mind the past of humanity, this presentation aims at contributing to: 1) applying a holistic framework to integrate socioeconomic and natural systems, 2) proposing the use of system dynamics principles to prepare simulation models to design and implement better socio-economic and environmental policies at different space-time scales, 3) applying system dynamics methodology via simulation models to forecast future scenarios for our socio-economic system and the depletion of natural resources in the coming decades. Due to the complexity of the real world, simulation models may be the best alternative in comparison with the analytical (mathematical) solutions to forecast the future reality. These models can continuously be improved to offer better approximations of the real world situations by using software programs.

*Keywords: Holistic Approach, System Dynamics, Software Programming.*

**O 13. CHALLENGES IN STANDARDIZING THE INDOOR CLIMATE OF MEDIEVAL CULTURAL HERITAGE BUILDINGS IN ALBANIA**

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**ABSTRACT:** The core problem addressed in this contribution is connected with current challenge on "how nowadays knowledge and best practices regarding climate environment control of the post byzantine churches should be handled in order to secure presentation and further management". Based on the historical reasons, dozens of important cultural heritages within country are facing serious threatening aspect linked with indoor climate and lack of control. The control of the relative humidity in climate specifications in limits of 25 to 75 % for preventing the all high risk extremes is affected by: (i) damages in structures; (ii) lack of financial support and (iii) lack of management. Further on the particularities sin climate conditions, high oscillation of temperature and climate change appears as further threatening aspects. Following the best practices within this contribution we propose a multi step developing of environmental management strategy and setting an environmental specification for a collection.

*Keywords: Standards, Climate, Environment, Medieval, Preservation.*

## **O 14. THE ROLE OF BEECH FOREST IN BIODIVERSITY CONSERVATION IN ALBANIA**

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**ABSTRACT:** In the last three decades the size of protected areas has been considerably increasing particularly after the Strategy and Action Plan on Biodiversity, 2000. Since 2005, the number of protected areas has more than doubled, out of 5 % to over 16 %. The current network of Protected areas includes 119.401 ha coastal areas and 13.261 ha marine areas. In the last decades the national interest in the protection of the virgin beech forests in Albania with its natural values and high biodiversity has been reflected in proclaiming series of protected area including Rrajca and Lumi i Gashit as strict nature reserves. After the '90s due to the hard economic situation, these forest sites were affected by unsustainable forest use in the surrounding areas, but the current policy reflects an increased conservation effort. The current beech forest cover in Albania is estimated to be approximately 142 610 ha, with ancient and virgin forests almost completely altered. Beech forest in Albania provide important habitat for a number of medium to large mammals, including Balkan lynx, wolf and brown bear. Further on the aquatic biodiversity is also connected with beech forest areas. In both Albanian Alps and also at the northeastern and eastern part of the country, there are numerous species of community interest and other species. Among amphibians is been identified *Bombina variegata* and several reptiles that are listed in the Annex II, while eight species of Amphibians and 31 species of Reptiles are listed in the Annex IV. These areas fit well with beech forest and subalpine areas distribution. 20 mammal species, of which 18 terrestrial mammals and two marine ones are included in the Annex II of HD in Albania, while 40 mammal species in Albania are part of the HD Annex IV.

*Keywords: Biodiversity, Beech forest, Conservation, Species, Wildlife.*



**O 15. INVESTIGATION OF THE EFFECT OF CORONA VIRUS OUTBREAK MEASURES  
ON ATMOSPHERIC PM VALUES FOR KONYA CITY CENTRE**

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**ABSTRACT:** This present study is to investigate the change in atmospheric particulate matter values of curfews taken due to the corona virus outbreak in Konya city centre. In this study, PM10 pollutant data was used in Konya city centre data of the Ministry of Environment and Urbanization. The period in which strict measures were taken in the study was compared with the period between 16 March 2020 and 15 April 2020 before and after. In addition, seasonal conditions, 2020 epidemic period data and normal period 2018 and 2019 data were also compared. As a result, because the vast majority of living in major cities in the epidemic period of restrictions in Turkey Konya seen the positive effects on air quality in the city centre it has been found to be examined in PM10. It was revealed that the measures taken in the period of virus outbreak, curtailment of traffic and reduction of industrial activities caused a remarkable improvement in air quality. Considering the measures and improvements in air quality, it is considered to be worth investigating how the measures should be evaluated in the coming periods in combating air pollution.

*Keywords: Air pollution, Konya, Corona Virus, Pandemic, Air quality*

**O 16. AIR QUALITY ASSESSMENT IN KONYA CITY CENTER DURING FIRST HALF OF 2020 YEAR**

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**ABSTRACT:** In regions where the industry is very high developed, provincial centers where traffic is heavy and settlements where winter is cold, low-quality fossil fuel consumption affects quality of life especially in people with respiratory diseases. The topographic structure and climatic features of a region are as effective as emission sources in the formation of air pollution. Especially in the winter months, there is no increase in the emission levels as the temperature decreases. However, the negativity caused by meteorological conditions causes lower than expected levels of air quality. Using the data of the existing air quality monitoring station in the Konya city center, it is seen that the air quality increases and then returns to normal levels during the period when curfew is restricted for measures taken due to the covid-19 outbreak. The restrictions that cause the reduction of vehicle exhaust emissions, which are important factors in the formation of some air pollutants, are thought to be effective in improving the air quality. This should not be neglected; as meteorological conditions are effective on the days when air pollution occurs. For this reason, the changes in the air quality should be examined in more detail. It is thought that the reduction in HC, NO<sub>x</sub> and CO emissions, which can be evaluated as exhaust emissions, will be an effective factor due to the restrictions. In parallel with the decrease in air pollution, the increase in O<sub>3</sub> values increased by the sun rays in the atmosphere with the formation of O<sub>3</sub> in the clean air. In addition, atmospheric ozone reduces NO<sub>x</sub>, CO and HC compounds from the air pollutants by oxidizing them with the reactions it creates. It is estimated that the pollutants present in the air before the restriction will cause a decrease in the ozone values, and the increase in the air quality will cause an increase in the ozone values.

*Keywords: Air quality, Ozone, NO<sub>x</sub>, CO, PM, emissions*

## **O 17. OVERVIEW OF MEDICAL WASTE COMBUSTION SYSTEMS**

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**ABSTRACT:** With the rapid population growth, industrial activities, increase in welfare level and developing technology, the consumption diversity of mankind has increased. One of the biggest problems caused by diversified and increased consumption is waste. Due to the increasing population density in large cities, cities are expanding and the formation of large waste storage areas has started to be a big problem in city administrations. In this respect, waste disposal is a very important and critical issue all over the world and has become a topic that is constantly studied with new methods and technologies. In addition to domestic wastes, which are the easiest and relatively low cost of disposal: disposal of hazardous wastes such as medical wastes and chemical wastes remains an issue that makes them think both environmentally and economically. Medical wastes are wastes released during healthcare. The institutions with the highest medical waste generation are hospitals. However, medical wastes are generated at many points, such as health cabins, pharmacies and infirmary facilities that employ more than 50 workers. Although 75-90% of these wastes fall under the general waste category, the rest fall into the hazardous waste section. Medical wastes are beginning to form in large volumes today due to the developing technology, increasing welfare level and widespread health services. The importance of medical sciences has been better understood over the past year due to the covid-19 virus, which has shaken the world. The one-time equipment (mask, gloves, device, etc.) used in these days, which focused on how sensitive the epidemic diseases are in the recent period, has increased its waste. In addition to being infected, medical wastes contain hazardous chemicals, drugs, toxins, radioactive substances, etc. Medical wastes are in the hazardous / risky waste group that threatens human and environmental health. The separation, temporary storage, transportation and disposal of medical wastes in hospitals is critical for the environment and human health. In this study, investigation of waste incineration processes, one of the methods of disposal of medical wastes threatening the environment and human health, and examination of emissions released after incineration will be carried out.

*Keywords: Medical Waste, Waste Disposal, Waste Incineration Systems*

**O 18. THE EFFECT OF SOCIAL RESPONSIBILITY TOWARD ENVIRONMENT AND SOCIETY A FIELD STUDY IN THE IRAQI BUSINESS ORGANIZATION**

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**Abstract:** This study aims to know the extent to which Iraqi business organizations respect the principles and laws, environmental and social responsibility approved by the Iraqi government, a random sample was chosen from the group of small and medium industrial companies (research sample) and the estimated questionnaires were distributed, (150) a questionnaire for executives in the top management of companies and conduct structured personal interviews with the heads of environmental protection departments in the organizations to determine the pollution caused by these companies.

On the other hand, this study light on attention to environmental issues on the part of social responsibility, especially in industrial projects because they have negative effects on the environment such as: pollution, desertification, global warming, increased carbon dioxide emissions, loss of biological diversity.

The researchers reached several conclusions, the most important of which can be mentioned: There is a multiplicity of views on social and environmental responsibility by the sample members, some companies were applying environmental responsibility, but with a small percentage, many companies do not apply responsibility because they affect the company's economy.

*Keywords: Social Responsibility, Environment Responsibility, Environment pollution, Environmental policy, Iraqi business organization*

**O 19. THE EFFECT OF PARTICULATE MATTER POLLUTION OF SAHARAN DUST OVER EUROPE IN MAY-2020: A CASE STUDY OF KARAMAN CITY CENTER, TURKEY**

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**ABSTRACT:** Desert dusts rising from the African region and covered very long distances with meteorological events can be an important source of pollution for many countries from time to time. Although the dust and sand masses that remain in the atmosphere for a long time are known to be inert and stable, but some studies indicate that they are effective in vegetative production by precipitation. It is important in natural phenomena and has also revealed its effects in natural areas around it through atmospheric transport. Sahara dust, which was strongly transported from Northern Africa to Europe in mid-May 2020, affected many European countries. In Europe, the mass of hot air in the south-south-western part is reported to transport Sahara dust over the Mediterranean region to the Balkans. It is known that with decrease of Saharan dust is then passed over Turkey. Depending on the climatic conditions, the Sahara dust may remain in some regions for a little longer time. Rainy and humid weather conditions slow down flooding of dust and increase the settling rate in that region. It is known that sometimes makes mud-like precipitation is seen with precipitating. In this study, Sahara dust pollution effect and relationship were investigated on particulate matter pollution which was measured the network system in all cities in Turkey. For this purpose, before reaching the desert dust over Turkey land, when it comes to Turkey and left in the period it analysed the value of PM pollution. For this purpose, when PM measurement values of Karaman province were examined, it was revealed that the Sahra dust increased significantly in the period when it reached this region. Then, PM values were seen to come down to normal levels.

*Keywords: Africa, Dust, Sahara, Karaman, Particulate matter, Air pollution.*

**O 20. ENERGY AUDITING IN ALBANIAN HOSPITALS, A CASE STUDY FOR LEZHA REGIONAL HOSPITAL**

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**ABSTRACT:** General objective of this paper is to realize an Energy Audit Services for the facilities in order to contribute towards improving the energy efficiency of the building sector and specifically towards energy efficient hospital buildings. The Energy Audit did prepare the technical analysis based on energy performance assessment of hospital buildings for Lezha Regional Hospital. Main goal of the study has been how to collect data and provide useful information on the existing energy performance of selected Hospital buildings through energy auditing as well as suggest possible interventions for improving their energy efficiency. The audit of the Lezha Regional Hospital also aims to integrate the latest technological solutions in order to get a significant energy saving in the existing hospital building, through better management of energy resources and reduction of losses. An analysis of building structure, technical systems and thermal comfort is given. Electricity represent the main energy source followed by diesel oil. Are identified and analysed factors that influence energy consumption. This analysis presents the key findings and recommendations from the application of EE/RES measures for Lezha Regional Hospital as an example that can be applied to other hospitals. Following energy audit, a list of prioritized energy conservation measures requiring further consideration are drawn up, indicating the energy saving for each one, the respective investment required and providing a cost-benefit analysis, showing both economic and financial indicators.

*Keywords: Energy auditing, hospitals, thermal comfort, heating, lighting.*

**O 21. EVALUATING THE ENVIRONMENTAL MANAGEMENT SYSTEM  
ACCORDING TO INTERNATIONAL STANDARDS (ISO 14001: 2015) A FIELD  
STUDY IN THE IRAQI OIL WELLS**

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**ABSTRACT:** One of the ways to reduce environmental pollution is to improve the environmental performance of companies that extract oil. As the word ISO became the buzzword in the world today, the international standard ISO 14001: 2015 aims to help organizations reduce activities that negatively affect the environment and define controls for these activities, including the use of natural resources, waste handling and treatment and energy consumption. The research aims to Highlight on the benefits of the application of ISO 14001: 2015, with the availability of administrative tools that companies operating in the field of refining crude oil in Iraq lie in controlling the negative effects in the environment and the trend towards green technology without side effects on the environment, we mention the most important advantages of using ISO: Reducing the use of raw materials / resources, improving the efficiency of operations, reducing the amount of waste generated by operations and reducing costs of disposal, and reusing recyclable resources. On the other hand, there are major environmental damages that occur during oil refining operations, such as air and soil pollution. These impacts can be decrease by setting a comprehensive plan for environmental management by reducing pollutants produced during operational, in addition to that, And expedite the enactment of new strict laws by the Iraqi government to reduce pollution.

*Keywords: Environmental management, Environment management system Air pollution, ISO 14001: 2015, Iraqi Oil wells*

## **O 22. DEBT MONETIZATION**

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**ABSTRACT:** Although it remains one of the most discussed economic issues in various countries, everyone wants to find the best possible solution. In developing countries like Albania, alternatives are limited, but we still tend to follow the example of the West, especially the United States. Debt management strategies are very different, what is required is to choose with less additional costs.

What is often attempted is to reduce the burden of generations to pay. Often policies do not bring the expected result and the situation changes. Debt settlement has also been seen as a solution, but how many times will it give us a positive result that no one predicts. We believe that the issuance of new money will bring results in certain situations. Putting new money into circulation would not create new debt, but would have other costs for the country.

New emissions could create inflation. Such strategies have been used since early times in developed countries. In cases like this, the cost of new emissions and inflation costs remain to be compared. Many policymakers are affected here and follow the negative consequences of these cases and link the events one after the other. Different countries have different reactions, but a common goal, before the state budget. These and more will be addressed throughout the topic Debt Monetization.

*Keywords: Money issuance, dept, inflation, cost.*



**O 23. DETERMINATION OF PRIORITY CLASSES IN WATER PROTECTION ZONES OF LECHTINGEN AREA BY GIS**

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**ABSTRACT:** Water protection zones are mainly established for protecting different types of water sources such as surface water, coastal water, and groundwater. Many European countries use these areas to evaluate the potential contamination risk encountered by the water sources. Germany has described three different water protection zones changing with respect to the types of water sources. Zone I covers the immediate water catchment area within a radius of at least 10 meters. Zone II covers the area of zone I and distance which has been reached by the contaminant up to 50 days. Zone III is more comprehensive than others. It covers the area from Zone II to the very edge of the catchment area of the water source. Determination of priority classes in water sources is important to evaluate the risk of contamination. In this study, priority classes for nitrate leaching, which is dangerous for health if it is found higher levels in a drinking water source, in the water protection zones found in Lechtingen area of Osnabrück, Germany was determined with geographic information system (GIS). The data of nitrate leaching risk, land use, and water protection zones in that area were used to make evaluation about priority classes. As a result, almost 40% percent of the area found as a high priority against nitrate leaching.

*Keywords: Water protection zones, nitrate leaching, priority classes, GIS, water sources.*

## **O 24. THE RELATIONSHIP BETWEEN HEALTH, ENVIRONMENT AND ECONOMIC DEVELOPMENT**

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**ABSTRACT:** This paper examines the link between health, environment, and economic development, focusing on Albania. Health and development are irrevocably interrelated. Life expectancy and also child mortality are considered key development indicators. Air pollution leads to premature death from heart disease, stroke, and cancer, as well as acute lower respiratory infections. It caused an estimated 7 million deaths globally in 2016, according to the World Health Organization. Most recorded air pollution linked deaths occur in developing countries, where laws are weak or not applied, vehicle emission standards are less stringent and coal power stations more prevalent. In Albania, the situation of air quality is one of the major issues that disturb local and national authorities for the impact on the health of the population, agriculture, and the environment in general. The transport is the main source of urban air pollution. The number of vehicles continues to grow from year to year, and their average age is 20 years, from 10.2 years in the European Union. Moreover, we can say that Albania has become Europe's "rubbish bin" because new cars make up only 4% of the total number of cars and the difference, 96%, are used one, which, although developed the business of used cars, the pollution they cause is deadly. Clean air is a human right and a necessary pre-condition for addressing climate change as well as achieving many Sustainable Development Goals. Air pollution does not only damage human health, but it also hampers the economy in many ways. In Albania, it is noticed that the budget that municipalities allocate to services directly related to the environment (including the protection of air, soil, and water quality from pollution) is very low. The maximum value distributed in the total budget for these services is evidenced by 0.7% in 2016, and 2.9% in 2017. While for the years 2018 and 2019, the maximum value distributed in the budget for these services is evidenced by 1.6% in both years and the minimum value distributed is 0% for both years. According to the Household Budget Survey 2018. We use macroeconomic data to give answers to the basic hypothesis of the paper that environment situation is closely linked with the health and economic development of a country.

*Keywords: Health, Environment, Economic Development, Air pollution.*

**O 25. ENVIRONMENTAL IMPACTS OF THE INTERGRATED DRY GRANULATION  
METHOD APPLICATION OF FERONICKEL SLAG**

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**ABSTRACT:** Metallurgical industries rentable and responsible towards the environment among the key objectives put the development of utilization schemes of all of its middle – products. The smelting process of nickel oxides ores, is almost slag process, where about 75% of the calcine pass to slag. In the New Ferronickel smelt plant in Kosova, produced slag is thrown in the landfill without adequate proper treatment. Such exploiting concepts, without any valorisation strategy, have resulted with the no effective manufacturing cost, irrational use of resources and high concentrations of polluting components. This slag represents the mid - product, with the high value effects in economy and environment. Developed research in terms of opportunities to use it, verify that the application of the integrated dry granulation method will transform slag into a resource with corrected qualities (composition and properties - by adjusting it in the valuable aggregate for cement products, asphalt concrete and all other of the construction industry). In renewable energy source, through returning it in production process and reduce its pollution impacts.

*Key words: Slag, granulation, resources, energy recuperation, products performance*

## **O 26. SUSTAINABILITY OF ENERGY SUPPLY IN THE CEMENT INDUSTRY**

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**ABSTRACT:** Various roadmaps are drawn in the industry to reduce dependence on fossil fuels and to gain energy. In the cement industry, the use of waste in energy recovery is a very convenient method. This article details the use of waste as an energy source instead of fossil fuels in cement. Substituting waste for non-renewable fuels provides multiple advantages such as efficient use of energy, independence on fossil fuels, prevention of environmental pollution, reduction of waste volume, contribution to national economy, saving of greenhouse gases, conservation of natural resources and reduction of mining needs. Process conditions of the cement industry are different from other industrial sectors, providing an ideal environment for waste use. Combustion of waste does not have any effect to increase the production of cement emissions that occur under normal conditions, but it also helps to save investments in waste incineration plants. Co-processing of waste has no negative impact on the environment and the technical quality of the product. In this article, it has been shown that how the co-process waste saves energy with energy recovery at 2017 and provides safe and robust solutions for the environment and the energy supply.

*Keywords: Cement, enery, waste.*

**O 27. WATER USE EFFICIENCY AND TECHNICAL APPLICATIONS IN LANDSCAPE  
ARCHITECTURE REGARDING CLIMATE CHANGE**

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**ABSTRACT:** Turkey is a water-rich country with large water resources. However, the cross-border water resources are shared between Turkey and the neighboring countries. Thus, the water supply of the country must be managed effectively, and water usage must be restricted. Therefore, drip irrigation is the most sufficient way to achieve this goal. Sustainable, easy-care landscape projects that both suit the climatic conditions and could still be perceived as an aesthetic entity help to prevent environmental issues. Drought and rising temperatures that are caused by global warming affect plant growth in a negative way. This article examines the irrigation systems that require minimum usage of resources and obtain maximum benefit. Also, the importance of xerophytes is discussed.

*Keywords: Irrigation, Global warming, Landscape applications*

## **O 28. MAINTENANCE AND PROTECTION OF URBAN TREES**

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**ABSTRACT:** Trees are the backbones of nature and help urban life to become more sustainable. Also, trees are significant indicators that define the quality of urban life due to their aesthetical, ecological, psychological, hygienical and multifunctional aspects. Therefore, tree culture in urban life becomes an important area of activity for local authorities to conduct. The benefits of trees reflect the real and unreal values of planting in landscape projects. The real value of growing a tree is determined by the cost made in the beginning for a certain period. However, aesthetical, ecological, sociocultural, psychological and hygienical unreal value is greater and more important than the real. The values which can be calculated according to some approach, are indicators of the purpose of urban tree culture. In this paper, it is aimed to demonstrate the functions of urban trees in cities, protection, evaluation and appraisal approach.

*Keywords: Sustainable environment, Planting, Urban landscape*

## **O 29. SENSORY GARDENS: DESIGN CRITERIA AND CASE STUDIES**

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**ABSTRACT:** In urban life, humans' longing for nature increases persistently. Sound, visualizations, smell are perceived as a whole. Plants have an important role in nature. Plants' colors, textures, smell can be both stimulating and relaxing. Nowadays, to strengthen the bond between humans and nature, designers integrate green into their projects because nature's positive impact on humans is a well-known fact. This article examines the sensory gardens as a way of natural therapy, the historical process, design criteria and some case studies.

*Keywords: Garden therapy, Landscape, Sustainability environmental*

**O 30. THE LINK BETWEEN URBAN ECOSYSTEM AND TREES IN ROADSIDE PLANTING**

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**ABSTRACT:** Playgrounds, parks in neighbourhoods, urban parks, cemeteries, school gardens are considered to be the most common forms of urban green areas. However, these local green areas are seen all over the city. Besides local greenery; trees along the highways and roads play an essential role in creating urban green areas. Thus, trees along highways and the ones in open public spaces contribute to the sustainability of urban green areas as they are the linear forms of greenery. Trees along roads are the most affected by their environment. Therefore, roadside planting requires attention and precision and the effort put into the work must be extreme. This paper explains the importance of using suitable trees in roadside planting according to trees' purpose and ecological needs.

*Keywords: Landscape ecology, Landscape planning, Planting*



## **O 31. HAZARDOUS WASTE MANAGEMENT: CASE STUDY OF NORTH MACEDONIA**

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**ABSTRACT:** Hazardous waste is the most complex type of waste and in the same time its management is very difficult and complicate. This waste produces a great risk to the environment and human health. It may be in different physical states, such as gaseous, liquids, or solids. Considering a very large types and sources of hazardous waste its management is very complex and needs different measures and activities during all life cycles, from its origin to final recovery or disposal. There are very different types of hazardous waste such as: electrical and electronic, battery, chemical, medical, radioactive etc. The biggest portion of this waste is generated by different industrial process, but also from other business, public and health services, households, transport, education and science, and many other sources. Hazardous waste management has to be based on the principles of precautionary, prevention, high quality, sustainability, polluter has to pay, recycling and recovery and high level of environmental protection. But a key point for environmentally friendly hazardous waste management is its minimization. North Macedonia as a country which has just start negotiation with the European Union for becoming a full member state, it is just on beginning of the establishment efficient and effective hazardous waste management. On this way it faces with a number of difficulties. There is significant progress in the sectors of electrical and electronical waste and waste from batteries where there are transposed a part of EU regulation and it is establishing collective operator schemes, but in other sectors such as chemical, radioactive and medical waste, additional measures and activities has to be done in the near future. Additional problems arising from such as named historical “hot spots” from the industry and especially mining sector. Improving hazardous waste management in the country needs significant financial funds. Also it has to be considered that small countries such N. Macedonia is not able to establish completely autonomy treatment of hazardous waste. It has to be done on a wider base with cooperation with international community. The main goal of this paper is to analyze the conditions with hazardous waste management in N. Macedonia and to give some proposals.

*Keywords: Hazardous waste, management, environment, protection, regulation.*

## **O 32. WATER LOSSES AND LEAKAGE IN DRINKING WATER SYSTEMS**

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**ABSTRACT:** The description of the water loss can be defined as the difference between the water that cannot be explained and charged, that is, the amount of water supplied to the drinking water line and the amount of water used by users. It is resulted by water leakages and losses in the pipes in the drinking water line and also unauthorized network connections and water meters that are recorded and/or read incorrectly. These losses leak to underground from cracks of the pipes, from pipe connection points or water structure of infrastructures like valves. Since water pipes are generally buried under the ground, it is very difficult to determine the place of the water leakages, losses and the amount of water leakages due to damages of the pipes. In this study, improvement and development of the studies on the water leakages and losses will be surveyed and investigated.

*Keywords: Drinking Water Networks, Physical Water Losses, Water Use, Pipe Leakages*

**O 33. DESIGN OF SPILLWAY DESIGN**

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**ABSTRACT:** Spillways are structures that have an important place in the project cost of a dam and have important functions related to the security of the dam. The labyrinth spillway concept involves reducing the reservoir water level by increasing the effective length of the spillway crest with various forms applied on the plate, increasing the discharge that can be discharged at a certain lake level, or passing a constant stream with smaller crest water loads. These weirs can also be considered as alternatives that provide advantages within the topographic boundaries. In addition, easier construction and more reliable operating conditions compared to classical controlled spillways are other advantages. Spillway length, crest height and spillway capacity are important parameters in spillway design. Application of the labyrinth spillway is also important for available dams as it can be applied to constructed and under operation dams by increasing spillway length and dam capacity. During the last decade application of the labyrinth spillways show increasing trend. In this study, improvement and development of the labyrinth spillways will be surveyed and investigated.

*Key words: Labyrinth spillways, spillway design, dam spillway, spillway capacity.*

## O 34. THE ROLE OF CALIXARENES IN THE ENVIRONMENTAL SCIENCE

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**ABSTRACT:** The removal of toxic species from the polluted environment has been the matter of concern for the scientists in all over the world. The host-guest chemistry provides versatile approaches in this regard. Recently; More significant efforts have been made to synthesize materials with high selectivity for ions/molecules, which are of great interest for many analytical/industrial purposes and for recycling the resources as well as for waste water treatment. For example, the use of synthetic materials in sensing of ions by ion selective electrodes (ISE) and/or remediation of toxic substances from aqueous environment are interesting fields of research. Thus, different strategies have been impelled to search for molecular structures that can serve as building blocks for the production of selective sophisticated functional materials. Consequently, these building blocks could be modified by anchoring space oriented various groups, in such a way that they delineate a suitable binding site and act as nano-robotics according to the desired field/approach. Among other polymeric functional materials, calixarenes [1-2] are a class of host molecules that can easily be modified; thereby leading to nanoporous materials with selective host-guest properties [3-5]. Their application in diverse areas of electroanalytical chemistry as well as separation science and technology in particular makes them a better choice for extraction, chromatography, membrane and sensor technology etc. Herein, different aspects of calixarenes, their synthesis and application in separation and sensing of ions and or neutral molecules will be discussed.

**Keywords:** Calixarene, Complexation, Sensor technology, Separation science, Supramolecular chemistry.

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**O 35. BASICLY STATISTICAL ANALYSIS AND SUSCEPTIBILITY PROPERTIES OF  
HEAVY METAL POLLUTION IN SURFACE SEAWATER**

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**ABSTRACT:** Since approximately 3/4 of the world is covered with seawater, the seas are referred to as the easiest waste disposal site. Especially in the metropolitan, the wastewaters are thrown directly into the sea or drained after a certain purification process. Various chemicals in seawater affect both marine life and indirectly human life. In the bays, this situation occurs in more seriously, due to insufficient bay inner water flow and continuous the wastewater throwing by mankind. The inner bay of Izmir, which is the studied field in this study, is known as the part between Sasalı / Karşıyaka coastline and Güzelbahçe / Bayraklı. In terms of depth, the inner bay is suitable for sea transportation and is used very intensely. There is constant ferry transportation and an international port operates in this region. There are also several streams pouring into the inner bay. Therefore, the inner bay can be exposed to continuous pollution, and chemical waste pollution can be observed intensely in the inner bay. In this study, the magnetic susceptibility values and elemental analysis of the samples taken from the surface waters of the inner bay coastline were performed. In addition, various basic statistical data were examined. Although there are various heavy metal ions and transition elements, intense contamination was not observed in the inner bay waters.

*Keywords: Statistic, susceptibility, bay, pollution.*

### **O 36. INVESTIGATION OF AIR QUALITY IN THE PROVINCE OF KARAMAN CITY CENTRE**

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**ABSTRACT:** Karaman, which has a very old historical background and mixes different economies and cultures, has cradled many civilizations. Karaman is geographically located in the south of Central Anatolia region. The period of the Republic of Turkey took its name Karaman. Karaman became the 70<sup>th</sup> province of Turkey on June 15, 1989. Economy and industry developed in Karaman, which has fertile lands, based on agriculture. There are modern industrial facilities that employ a large number of labour force in Karaman city centre. It can be accepted that it has a great industrial potential during last 20 years. The total area of 886,900 ha of Karaman province; 228,820 ha of it (26%) is flat, and 653.645 ha of it (74%) is mountainous. The population size is 250.000 people. 35% of biscuit production and 20% wheat production of Turkey is produced by Karaman industry. As with many developed cities in Turkey, which are used fossil fuel consumption for heating in cold winter, air pollution is observed. Vehicle exhausts in traffic and industry are other important sources of pollution in the city centre. In Turkey, in March 2020, Covidien-19 measures thus markedly obvious improvement in air quality. The Sahrah dust event, which occurred after the virus measures, especially PM pollution increase was observed.

*Keywords: Air quality, Pollution, Karaman province, Covidien-19 measure*

**O 37. HOMOGENITY AND TREND ANALYSIS OF ANNUAL TEMPERATURE CHANGE IN KONYA KARAPINAR BASIN**

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**ABSTRACT:** Homogeneity and trend analysis are two important features of hydrological meteorological time series. In this study, Karapinar meteorological station (station No. 17902), located in the Konya basin in Turkey, with an average annual temperature trends of meteorological parameters and homogeneity analyses were performed. The annual average temperature data were evaluated statistically and the presence of a trend and hydrological change point, if any, was investigated. The data of average annual temperature of 56 years has been provided by the General Directorate of Meteorology (MGM) and if the data are random among themselves or not was determined by using Run Test. Annually change was determined by Pettitt and Standard Normal Homogeneity test methods. Annually temperature change was determined 95% confidence interval. Both methods gave consistent results in determining the annual average temperature variation. For trend analysis, Sen's T Test, and Spearman's rho (SR), Test Statistics methods gave consistent results. These tests were examined according to the 0.05 significance level.

*Keywords: Konya Basin, Trend analysis, Standard normal homogeneity test, Pettitt test*

**O 38. TECHNOLOGY, ENVIRONMENTAL SUSTAINABILITY AND THE ETHICS OF ANTHROPOHOLISM**

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**ABSTRACT:** Technology has immensely shaped our society, economy and environment. The quest for new, better and smarter ways to human development has always been a key driver of technological advancement. However, this technological drive has transformed humans into slave owing to its devastating effect(s). Hence several philosophers of technology have described technology as alienating because it causes humans to lose their connection with other species in nature - resulting in environmental degradation. As human civilisation faces unprecedented environmental challenge(s) in the face of the negative impact of technology on human societies, it (technology) can still be and remain useful. Tackling the ensuing environmental challenges threatening humanity is not simply a matter of reducing or increasing technological use, but rather a clarion call for re-thinking the way technology is being developed, deployed and employed. This study investigates how environmental sustainability can be achieved by humans even while applying technology to the environment. It agrees with several environmentalists that anthropocentric attitude which sees the environment only as a storehouse for human exploitation with the use of technology is the major reason behind environmental degradation. The research, therefore, proposes that humans need to adopt the ethics of 'anthropoholism', which sees the environment as having inherent value and humans as a caretaker of the environment. The work posits that since anthropoholism emphasizes humanity as a part of nature, such that humans cannot exist independently of the environment, it could offer the ethical framework that technological tools should be developed and applied with the 'live and lets live' attitude towards sustainability of the environment. This study employs the contextual analytical and critical approach to arrive at its conclusions.

*Keywords: Anthropoholism, Technology, Environmental Ethics, Environmental Sustainability.*



**O 39. INCREASING CARBON DIOXIDE AVAILABILITY IN MICROALGAE CULTIVATION SYSTEMS BY USING TRIETHANOLAMINE**

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**ABSTRACT:** In this study we investigated the use of triethanolamine (TEA), a well-known carbon dioxide (CO<sub>2</sub>) capturing chemical, to increase CO<sub>2</sub> availability in microalgae growth media. Microalgae culture used in the study was a mixed culture, in which the dominant species were determined by microscopic analysis as *Chlorococcales* order of the *Chlorophyceae* class (i.e. *Scenedesmus* sp., *Chlorococcum* sp.). The non-toxic triethanolamine concentration was determined by measuring the specific growth rates of microalgae cultures grown in BG11 medium spiked with 1, 2, 5, 10, 20 and 40 mM TEA. It was observed that the growth rate started to drop at TEA concentrations bigger than 20 mM. It was also observed that the biomass growth rate as well as nitrate and phosphate consumption rates of microalgae at 20 mM TEA concentration were similar to those grown without any TEA addition. Based on GC-FID analysis, a decrease in TEA concentration was detected after 6th day of the growth period, but a separate study indicated that this decrease could not be associated with abiotic oxidation, biosorption or sorption by microalgae. Using pre-CO<sub>2</sub> loaded BG11 mediums with 20 mM TEA concentration resulted in higher biomass production rates compared to those without TEA addition, when the cultures were not aerated during cultivation. When the cultures were subjected to aeration, the biomass production rates of the cultures with and without TEA addition became close to each other. It was found that most of CO<sub>2</sub> loaded in the medium released within a few days of the growth period. Further studies are being conducted to reveal CO<sub>2</sub> release mechanisms from CO<sub>2</sub> loaded TEA solution to microalgae medium.

**Keywords:** Carbon dioxide capture, microalgae, alkanolamine, triethanolamine, biomass production

**O 40. PHOSPHATE REMOVAL FROM WASTEWATER BY USING CATIONIC  
COMPOSITE HYDROGELS**

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**ABSTRACT:** Wastewater treatment and making it reusable is of great importance especially considering global warming and limited water sources on earth. One of the water pollutants is phosphate pollution caused by domestic wastes such as detergents and this pollution increases alg blooms, which leads to decrement in water quality. In this study, which is thought that anionic phosphate pollution can be easily removed with the help of cationic materials, the composite hydrogels consisting of positive charged polymeric 3- acrylamido- trimethyl ammonium chloride and chitosan were prepared. After various characterization tests, phosphate uptake capacities of the composite materials were determined. With the phosphate holding capacities attaining up to 124 mg / g and its reusability up to 5 cycles, it was observed that the composite hydrogels have a potential to use for phosphate removal as an adsorbent.

*Keywords: Hydrogels, Wastewater Treatment, Adsorption, Phosphate Removal.*

**O 41. XENOTRANSPLANTATION TECHNOLOGY AND ITS POTENTIAL EFFECTS  
ON THE ENVIRONMENT**

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**ABSTRACT:** Scientific research is currently geared towards making xenotransplantation a clinical procedure. Most articles and books have been written challenging xenotransplantation from the moral, religious and medical perspectives. However, little or no attention has been given to the potential threat of xenotransplantation to the environment. This work through critical reasoning takes up this daunting challenge of exposing the inherent potential threats that xenotransplantation could pose to the already degrading environment. It recommends a halt in the research on xenotransplantation to avoid its potential threats to humans and the environment at large.

*Keywords: environment, xenotransplantation, effects, population, degradation.*

**O 42. THE ECOSYSTEM COMPLEXITY AND THE OVERLAP BIOACCUMULATION INDEX (OBI) AS A TOOL FOR THE MANAGEMENT OF MARINE ECOSYSTEMS**

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**ABSTRACT:** In this survey we have built, for the first time, the control charts for the metal's bioaccumulation in two selected biomonitors (mollusks) in the Beagle Channel (southern Patagonia). We have then determined the range of overlaps of metal concentrations and the overlap bioaccumulation index (OBI) with respect to the upper (OBI-L) and lower (OBI-L1) bound of the overlap range. For this purpose, we applied the probabilistic Johnson's method (1949). The use of OBI as an integrated tool in marine environmental management consents to identify the specific biomonitor (or biomonitors) needed for a particular condition of contamination that can arise from natural or anthropogenic activities. The second aim is to analyze the theoretical and practical implications of the OBI index and its relative guidelines for the environmental management. Marine ecosystems are complex systems. According to the Ashby's Law (1957, 1958), the understanding of a complex system (requisite variety) depends on the information variety owned by the observer. In view of this, here we propose to conceptualize the wide set of biomonitoring knowledge capacity as an open and evolutionary endowment of information variety supporting the environmental management. These theoretical and practical implications will be fully debated.

*Keywords: Biological monitoring, Beagle Channel, Mytilus chilensis, Nacella (P) magellanica, Baseline metal levels, Johnson's method, Control charts, Environmental performance, Information variety*

**O 43. HAZARD IN FOODS; BISPHENOL A AND ITS DETERMINATION**

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**ABSTRACT:** In our age, the main factors of many health problems such as cancer, obesity and sugar are chemicals used in foods. Many scientists are working on the determination methods for pesticides, hormones, preservatives and food additives that can be found in foods. Bisphenol A is an inner surface coating material used in cardboard milk and metal preserve cans and is also a toxic chemical. However, the transition rate of this substance to food, which also causes hormonal disorders, changes depending on the oil and water content and acidity of food, ambient temperature, contact surface and duration. Sensitive and selective determination of this substance, which is found in water, food, as well as in the blood and urinary systems in the human body, is possible with various separation and determination methods. High-performance liquid chromatography (HPLC), gas chromatography (GC), high-performance liquid chromatography with mass spectrometry (HPLC-MS), gas chromatography with mass spectrometry (GC-MS), liquid chromatography coupled with mass spectrometry (LC-MS), capillary electrophoresis and electrochemical techniques can be used as the determination methods for Bisphenol A. For these kinds of determinations, the use of solid phase extraction and molecularly imprinted polymer materials is highly effective in selective separations.

*Keywords: Bisphenol A, Food analysis, Human health.*

**O 44. CHEMICAL CLASSIFICATION OF DISINFECTANTS AND APPLICATIONS IN OUR LIVESLASSIFICATION LOCAL AREA BASED CLIMATIC DATA USED**

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**ABSTRACT:** Disinfectants are not the cleaning reagents such as soap or detergents. They are hygienic materials prepared with the composition of various chemicals. In general, it can be possible to classify in many different formats of them, but they are studied in two main groups, such as organic and inorganic disinfectants. Chemistry classification of them is phenolic, chloride, iodide, aldehyde, alcohol, quaternary ammonium derivatives, hydrogen peroxide, and ethylene oxide. In high-level disinfection applications, aldehyde, hydrogen peroxide, and chloride type structures are used. In contrast, alcohol, phenol, ammonium salts, and iodine solutions are enough for lower disinfectant applications. Soap, iodide and alcohol solutions are the best antiseptic reagents for hand and skin. Soap is formed fatty acid ester of the sodium or potassium hydroxide and served the purpose in the removal of dirt and organic materials from the body. Iodine solution is the good primer tissue and skin disinfectant. The alcohol solution has a good inhibitory effect on many microorganisms, micro bacteria, fungi and various viruses. It is not hazardous to use as both antiseptic and surface disinfectant compared to many other chemicals.

*Keywords: Organic disinfectants, hygienic materials, chemical classification of disinfectants.*

## **O 45. CORONAVIRUS IMPACT ON THE TOURIST SECTOR IN ALBANIA**

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**ABSTRACT:** Tourism is one of the most important sectors of the economy. According to a study conducted by the World Travel & Tourism Council (2019) in 185 countries around the world, tourism represented 10.4% of global GDP; 10% of employment, 6.5% of global exports and contributed 3.9% of global growth in 2018. Tourism is also a priority for the Albanian economy, overall contribution of tourism to the country's economy for 2019 is estimated at around 14.3% of GDP. Employees in this sector for 2019 reached about 100 thousand, with an increase of 26% in the third quarter compared to the second quarter. According to some INSTAT projections (2018), in 2025 employees in this sector will reach 220 thousand or about 20.4% of total employment, with an average increase of 2% per year. However, with the spread of Covid19 in the country, the tourism industry will have a resizing, the negative impact on this sector will be high. UNWTO estimates that tourism could decrease by 20-30% by 2020, which in monetary terms is a loss of \$ 300 billion to \$ 450 billion. This decline in this sector is higher than in 2003 caused by the SARS virus or in 2009 by the global economic and financial crisis. Our goal in this document, based on the above facts, is to study the impact that Covid19 has on Albanian tourism sector. In order to carry out the study in question, we will analyze the tourism sector in Albania and the complementary activities related to it. As a methodology for conducting the study will use descriptive statistics and statistical projections. The results expected from this study suggest that also in Albania the 2 main sectors this pandemic will damage the most are: tourism and transport. This decline will be only in the short term as a positive upward trend is expected by the third quarter and on. This study will be organized as follows: a brief introduction; a paragraph on the review of literature and various opinions on tourism, a synthetic methodology, a statistical analysis, closing and some final conclusions.

*Keywords: Tourism, Economics Growth, COVID-19, Albania*

**P 1. MEASUREMENT OF PAVEMENT ROUGHNESS IN ALBANIA ROAD NETWORK  
USING DIFFERENT EQUIPMENT**

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**ABSTRACT:** The Albanian Road Authority (ARA), is an independent, public institution in Albania, whose purpose is to construct and maintain roads network. It belongs to the Ministry of Infrastructure and Energy and is the legal owner of the roads and has the authority to execute construction of infrastructures on demand from the ministry. The national road network in Albania is 3945 km length. Based on the data provided by ARA, a segment of 1332 km is under the maintenance by WB project, and rest under the responsibility of ARA. All roughness data collected based on IRI (The International Roughness Index) but different equipment and application are used to evaluate pavement quality for national roads network. This poster aims to assess the different equipment that used on pavement data collection conditions and to make a comparison between them. All equipment has been used in recent years in some of the national road maintenance projects funded by the World Bank and ARA. Based on pavement roughness data collection verification through field survey and desk review, for all used equipment is confirmed that one of them fulfils all conditions without need of buying other equipment.

*Keywords: Data collection equipment, comparison, roughness.*



**P 2. ODD WESTERN BARK BEETLE (XYLEBORUS DISPAR F.) - A NEW PEST IN UKRAINE**

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**ABSTRACT:** The beetle damages all deciduous trees, gnawing at the woods, develops mainly in soft breeds and fruit trees (apple, pear, plum, cherry, etc.), rarely - in solid species (including walnut). In Ukraine, it is widespread in the Crimea, the Steppe, and the Forest-Steppe, while rarely occurring in Polissya. In addition to the above-mentioned fruit crops, there is a problem with whole woodlands being destroyed by beetles and bark beetles. In particular, the bark damages a number of forest crops such as ash, beech, oak, hornbeam, birch, alder, etc. Beetle bark causes a significant influence on growth and development, as well as the resilience of trees to the effects of other negative factors. This, in turn, leads to a decrease in quantitative and qualitative indicators of crop yields. The problem lies in the complexity of controlling and protecting plantations against bark beetles. These beetles are referred to as xylobionts, also called secondary stem pests, due to the belief, that they only inhabit dying trees. The study of disease caused by bark is very important. There is too little data on natural diseases. Well known the negative impact of *Bacillus subtilis* and the species of *Pseudomonas chlororaphis*. Important steps in preventing the emergence and fight against bark beetle odd western are: preventing the process of weakening the trees; avoiding flooding of plantations (drainage on flooded areas) regular monitoring is important in orchard gardens.

*Keywords: Bark beetle, Fruit trees, Protection, Monitoring.*

### P 3. ASSESSMENT OF THE SNOW PRODUCTS USING IN-SITU DATA

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**ABSTRACT:** Ecology is the study of the complex ways that living things interact with their environment. Deciduous plants handle the lack of water by shedding their leaves, which tend to evaporate water into the air. During cold winter months, most deciduous plants drop their leaves and go dormant. Evergreen plants keep their foliage, but their leaves and needles have a thick, waxy coating to reduce water loss. In areas that receive frequent snow and may have cold weather year-round, such as in the Arctic, plants have adapted in other ways. Trees may grow close to the ground or grow in shapes that help them shed heavy snow more easily. Plants may hold onto dead leaves for insulation or use deep snow like a blanket to protect against the cold. Some evergreens also have a special valve in their cells. This valve automatically seals off individual frozen cells to prevent a chain reaction of freezing. Satellites are well suited to the measurement of snow cover because the high albedo of snow presents a good contrast with most other natural surfaces except clouds. NOAA has a variety of snow products including those based on satellite passive microwave sensors such as JPSS AMSR2 and ATMS. Snow information: Snow Cover Area, Snow Depth and Snow Water Equivalent (SWE) - is an important input to numerical weather and climate prediction models. The objective of this project is to evaluate the performance of satellite-based snow products over regions that have sparse in-situ data. Of special interest are mountain regions and remote areas including those over US and elsewhere. To accomplish the goal of the project, the following activities will be carried out: Collect regional historical snow data not available via public networks. Do a quantitative evaluation of the snow products using in-situ data.

**Keywords:** Ecology, assessment, snow products, snow information

**Acknowledge.** Evaluation of JPSS satellite and blended snow products, project NOAA, 2018-2019, USA.

#### P 4. CHEMICAL CHARACTERISATION OF ESSENTIAL OIL FOR NATURAL AND CULTIVATED SALVIA OFFICINALIS FROM NORTH ALBANIA

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**ABSTRACT:** This study presents chemical data on essential oil samples of natural and cultivated *Salvia Officinalis* plant populations from North Albania. *Salvia Officinalis* is a widespread plant that is native in Mediterranean area and almost in all Albania territory. It is part of Lamiaceae family. Aerial parts of *Salvia Officinalis* have been used since ancient times in culinary, cosmetics and traditional medicine. Sage has different properties (antiseptic, aromatic, carminative, estrogenic, stimulant, etc) and thought to have positive effects in human brain functions. *Salvia Officinalis* plants from Tropoja (five natural stations and four cultivated areas) were selected in June 2019. The air-dried plant samples were cut in small pieces (1-2 cm). They were subjected to hydro-distillation for 4 hours using Clevenger type apparatus, recommended to European Pharmacopoeia, to obtain *Salvia Officinalis* essential oil. The chemical composition of the essential oils was obtained using GC/FID technique. VF-1ms capillary column (30 m x 0.33 mm x 0.25 µm) were used for separation of its compounds. Main constituents (20 compounds) were found from 92.6% to 98.7% in all studied sage samples from Tropoja (North Albania) whether it was cultivated or natural plants. Their profile was the same between two populations and similar to other studies from Mediterranean and Balkan area. It was: α-Thujone > Camphor > Cineol > β-Thujone > Camphene > Alfa-Humulene > β-Caryophyllene > α-Pinene. Alpha-Thujone (the main constituent) was found in higher percentage in cultivated *Salvia Officinalis* plants because of agricultural areas used for their grow and farmer work. Plant harvesting time can influence in differences between constituents in sage samples.

**Keywords:** *Salvia Officinalis*, Essential oil, α and β Thujone, Camphor, Cineole, GC/FID.

**P 5. A REVIEW ON THE COMBUSTION SYSTEMS IN MEDICAL WASTE  
MANAGEMENT AND ITS ENVIRONMENTAL EFFECTS IN TURKEY**

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**ABSTRACT:** The number of hospitals in Turkey is increasing day by day. This increase has also led to an increase in waste load. Increasing waste load led to the initiation of waste management practices related to this issue in hospitals. The arrangements were made regarding medical waste management in Turkey for the first time in 1993. These regulations have been amended in accordance with the 2005 EU Environmental Directives. Both in Turkey and in the world, it can be said that the revised format of the medical waste management, depending on the technology. This study focuses on the intended medical waste management made by considering the effects on the environment or harms in Turkey. In addition, ashes remaining as a result of incineration should be evaluated in terms of environment. Therefore, the disposal of these ashes is also mentioned.

*Keywords: Medical Wastes, Waste Disposal, Waste Incineration Systems.*

**P 6. DISPOSAL OF SEWAGE SLUDGE WASTES IN FLUIDIZED BED FURNACES: A REVIEW**

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**ABSTRACT:** In this study, the disposal of the sewage sludge by fluidized bed combustor and the pollutant emissions in the combustion plants were evaluated. The content of the sludge, its disposal by combustion and properties of fluidized bed plants are discussed from an environmental matter of view. Combustion is a method of disposal that quite reduces the volume and mass of the sludges. Sludges are generally combusted together with domestic wastes, while they are used as combustible alone in indirect combustion or together with another combustible as raw materials. Nowadays, there are alternative technologies available for the disposal of sludge by combustion, and choosing the most suitable one requires an investigation. Also, the technology chosen must be environmentally friendly and economically feasible. Among these technologies, mono-combustion is the most rooted method and fluidized bed furnaces are more preferred. Because in fluidized bed furnaces both wet and semi-dried sludge can be combusted. The major apprehension the combustion of sludge is the release of gas and solid pollutants into the atmosphere. During high temperature combustion, the problems of ash removal and filtration of heavy metals can be solved or reduced, while the problem of heavy metals can supply strict emission limits using the latest combustion technologies. In addition, combustion of sludges in fluidized bed furnaces and producing electrical energy in this way can both solve the problem of sludge and contribute to the solution of problems such as the use of local resources in energy.

*Keywords: Sewage sludges, Combustion technologies, Fluidized bed combustion, Emissions.*

## P 7. ROLE OF SPIRULINA PLATENSIS IN THE DETOXIFICATION OF FREE RADICALS AND GLUCOTOXICITY

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**ABSTRACT:** *Spirulina platensis* is free-flowing blue-green microalga. The organism as a whole as well as its extracts has been known to be highly nutritious and possess health-benefiting properties from combating against malnutrition to diabetes. The present research aims to explore such therapeutic properties of *S. platensis* extract using *in vitro* methods. Initially the biochemical and phytochemical properties of the aqueous extract of the organism were studied. DPPH assay was used to evaluate the free radical scavenging activity of the extract which exhibited the antioxidant potential of the organism. *S. platensis* extract could also inhibit the activity of  $\alpha$ -amylase enzyme by 37.09%, thus, indicating its ability to control postprandial glucose levels. Diabetes leads to hyperglycemia which promotes the formation of Advanced Glycation End products (AGEs). Effectiveness of the *S. platensis* extract in prevention of glycation was determined using BSA as the protein and glucose as sugar. Reduction in protein aggregation was detected spectrophotometrically and by Congo Red assay. *S. platensis* extract caused reduction in formation of fructosamine by 9.84%, carbonyl content by 55.77% as determined by NBT assay and DNPH method respectively. The extract could effectively reduce browning of sugars by 22.67% which occurs due to Maillard reaction in the initial stages of glycation. Agarose gel electrophoresis method revealed the efficacy of *S. platensis* extract to prevent the strand breaks in plasmid pBR322 which occur as a result of glycoxidative DNA damage. Thus, this research proves that the consumption of *S. platensis* can provide health benefits such as antioxidant, antidiabetic, antiglycating and anti-tyrosinase effect along with nutrition.

**Keywords:** Antidiabetic, antiglycating, antioxidant, glycoxidative DNA damage, *Spirulina platensis*.

**P 8. HEAVY METALS TOLERANCE BY S. PLATENSIS**

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**ABSTRACT:** Excessive discharge of wastewater into natural water bodies cause water pollution, due to disturbed self-revival systems. Heavy metals in the sewage have affected the ecosystem to the extent that it is a detriment of humans, as it is difficult to eliminate them and instead, they accumulate in the organisms. Use of dry biomass of *Spirulina platensis* has proven to precipitate and biosorb heavy metals. This study aimed to check the tolerance of wet biomass of *S. platensis* to various heavy metals usually associated with wastewater. Preliminary experiments were conducted to standardise and optimise the growth conditions of *S. platensis*, in turn establishing a growth curve. Special emphasis was made on checking the tolerance of the microalgae to mercury [Hg(II)], for other organisms seldom grow in the presence of mercury.

*Keywords: Bioaccumulation, Spirulina platensis, Heavy Metal Toxicity, Mercury, Wastewater*

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