ICSD 2019

5TH INTERNATIONAL CONFERENCE ON SUSTAINABLE DEVELOPMENT

Book of Abstracts

April 17 - 21, 2019 Belgrade

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5th INTERNATIONAL CONFERENCE ON SUSTAINABLE DEVELOPMENT (ICSD)

BOOK OF ABSTRACTS OF THE
5th INTERNATIONAL CONFERENCE ON SUSTAINABLE DEVELOPMENT (ICSD)
17–21 APRIL 2019, BELGRADE

Edited by

Prof. Dr. Özer Çınar

Published, 2019

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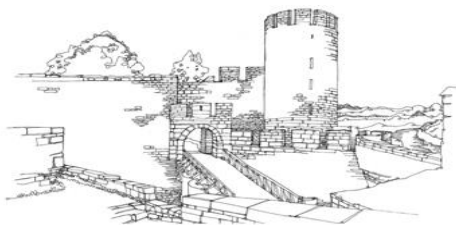Ismet Uzun - Zenith Group - Bosnia and Herzegovina
Mahira Causevic - Bosnia and Herzegovina

WELCOME TO ICSD 2019

On behalf of the organizing committee, we are pleased to announce that the 4th International Conference on Sustainable Development (ICSD-2019) is held from April 17 to 21, 2019 in BELGRADE. ICSD 2019 provides an ideal academic platform for researchers to present the latest research findings and describe emerging technologies, and directions in Sustainable Development issues. The conference seeks to contribute to presenting novel research results in all aspects of Sustainable Development. The conference aims to bring together leading academic scientists, researchers and research scholars to exchange and share their experiences and research results about all aspects of Sustainable Development. It also provides the premier interdisciplinary forum for scientists, engineers, and practitioners to present their latest research results, ideas, developments, and applications in all areas of Engineering and Natural Sciences. The conference will bring together leading academic scientists, researchers and scholars in the domain of interest from around the world. ICSD 2019 is the oncoming event of the successful conference series focusing on Sustainable Development. The scientific program focuses on current advances in the research, production and use of Engineering and Natural Sciences with particular focus on their role in maintaining academic level in Engineering and Applied Sciences and elevating the science level. The conference's goals are to provide a scientific forum for all international prestige scholars around the world and enable the interactive exchange of state-of-the-art knowledge. The conference will focus on evidence-based benefits proven in clinical trials and scientific experiments.
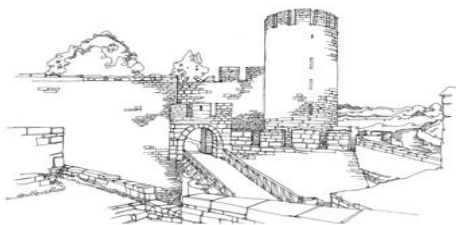
Best regards,

Prof. Dr.Özer ÇINAR

ICSD Belgrade

5th INTERNATIONAL CONFERENCE ON SUSTAINABLE DEVELOPMENT

April 17-21 2019 | Belgrade

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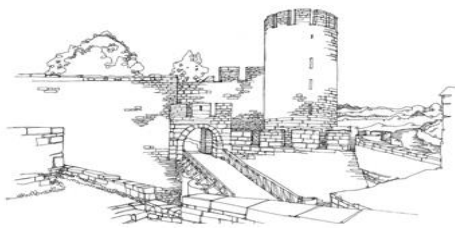
THE INFLUENCE OF SOME ORGANIC AND INORGANIC MATERIALS ON MAIZE YIELD BASED ON STATISTICAL ANALYSIS

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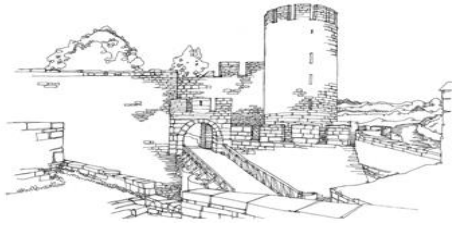
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Abstract:

The influence of some soil conditioners such as composted tobacco waste (CTW), poultry manure (PM), bio-humus (BH), lime (L), z   eolite (Z) and chemical fertilizer (NPK) applied during a period of 3 years on a Xerofluvent soil near to Izmir in Turkey was explored regarding corn (Zea mays L.) yield based on some statistical analyses. This study was conducted at the Agricultural Research Farm of Ege University. The experiment was carried out by four times replicated randomized block design on 28 plots. Experimental treatments were as follows: (1) 1 Mg ha-1 Z+NPK, (2) 4 Mg ha-1 PM+NPK, (3) 1 Mg ha-1 L+NPK, (4) 0.3 Mg ha-1 NPK, (5) 50 Mg ha-1 CTW, (6) 10 Mg ha-1 BH+NPK, and (7) control. The level of importance of the year (A), treatment (B) and interactions of year and treatment (AxB) parameters on yield were determined by using analysis of variance (ANOVA). The highest contribution ratio to yield was obtained by the factor A. During 3-years experiment period, effects of the treatments on yield were determined by Duncan's test (p≤0.05). A remarkable difference on yield was observed among the conditioners. The greatest yield results were found as 24.36 Mg ha-1 in the first year soil samples by the treatment of PM. The statistical significance of relationship between yield results and the related factors (A, B) was mathematically modelled by using the regression analysis method. The regression analysis and mathematical model were found sufficient to estimate corn yield.

Keywords: Bio-Humus, Composted Tobacco Waste, Lime, Poultry Manure, Maize Yield

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SOLVING URBAN MIGRATION PRESSURE IN INDIA THROUGH A RURAL TEA STALL

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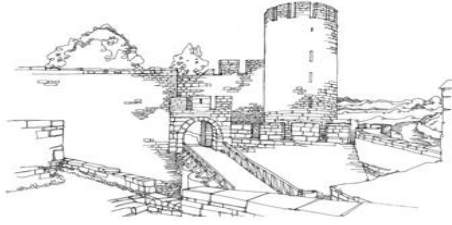
*vinodpandey@u.nus.edu

Abstract:

Urbanization in India is a consequence of demographic explosion and poverty-induced rural-urban migration. The whole and sole purpose of the migration is to make the most of their working age and contribute to the progress of the family. Migration is rampant in the rural pockets of the nation. According to the Socio-Economic Caste Census (SECC), 2011, nearly 833 million people migrate to urban centers in search of employment. Economic Survey of India 2017 mentioned that a number of inter-state migrations in India were roughly 9 million annually between 2011 and 2016.

As cities have fixed geography and limited space, they can't expand. Thus with an increase in population resources shrink, thereby giving birth to cities that have to combat new challenges especially with water, space, sanitation, education healthcare, transport, and food security.

One of the key reasons for migration is not the lack of jobs, but information on different jobs availability. Unfortunately, we cannot stop people from migrating to cities, but we can create a platform to inform people about the local jobs available in the villages through a structured information exchange system in a localized way. Possible a tea stall as rural knowledge and information exchange center-where there is an uncalled gathering could be turned in to an information exchange on local jobs availability and job seekers. The data collected and recorded at the center could also be used by policy makers to develop rural social programmes especially related with livelihood. Being a tea stall, revenues would be generated by selling of tea and information and knowledge sharing would be free. This model could be developed as public-private partnership. Restricting unsafe migration at villages would lead to reduce migration pressure on cities and would help countries to achieve sustainable Development Goal 11 of Sustainable cities and communities.

THE IMPORTANCE OF RECREATIONAL USER SATISFACTION IN SUSTAINABLE COASTAL ZONE PLANNING: ISTANBUL KARTAL-MALTEPE COAST BAND

Pinar Gultekin[a]*, Can Korkut[a]

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Abstract:

Coastal areas are valuable areas that have a variety of natural and cultural landscape elements from past to present. In addition to the ecological benefits they provide in urban areas, coastal ecosystems also serve the citizens in a social way. However, due to the impact of globalization, increasing population, unplanned construction and administrative deficiencies, the sustainability of ecological and cultural values of coastal areas is under the risk. It has been determined that changes in technology are reflected in the life styles of societies and there are changes in the perceptions, attitudes and preferences of individuals related to coastal purposes and the concept of recreation. The studies show that it is necessary to determine and diversify the recreational use opportunities in the sustainable planning of coastal regions within the scope of spatial planning and to include user satisfaction in the planning and management process. The study area is determined as Kartal-Maltepe Coastal Band in Istanbul which is the largest metropol of Turkey. An inventory was created for the use of recreation in the study area. And Recreation resources on the 1/1000 scale plan are marked with Arc Map 10.4 program. Recreational resources; Children's playgrounds, activity areas based on water, eating-drinking areas, shopping areas, recreation areas like walking, jogging, basketball, volleyball etc. They are divided into different categories depending on their activity type. Due to their proximity to important transfer and distribution points in transportation, their use density is graded as low, medium and intensive and transferred to the map. In order to measure the users perception, attitude and satisfaction level of recreation, a field survey was conducted with 408 participants in the spring and summer of 2018. In the analysis of the data, IBM Statistics SPSS 22 program was used. Frequency and percentage analysis, one-way analysis of variance, chi-square and factor analysis were applied. It has been found that users are uncomfortable in exceeding their carrying capacity, especially where the use is very high. They stated that the settlement area in the coastal zone was very dense and increased the pressure on the coastal use, there was insufficient security in some points of the study area. Within the scope of the study, user opinions were evaluated and suggestions for sustainable recreation-oriented coastal planning were developed in the Kartal-Maltepe coastal zone.

Keywords: Ecosystem Services, Coastal Zone, Recreation, Sustainable Planning, Istanbul

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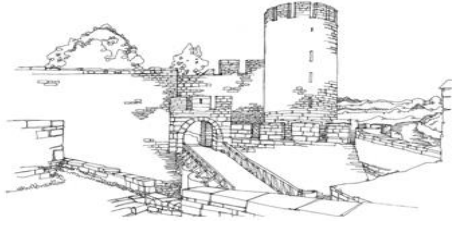
THE EVALUATION OF NONWOOD FOREST PRODUCTS IN THE SCOPE OF ECOSYSTEM SERVICES FOR EFTENI LAKE WETLAND

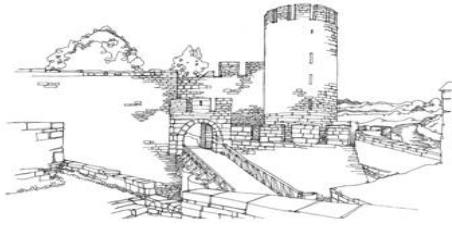Yasar Selman Gultekin[a]*

[a]Duzce University

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Abstract:

Ecosystem services refer to the benefits for human beings. It is a contemporary concept that emerges as a result of ecosystem and human interaction. The number and importance of studies on the identification, classification and evaluation of ecosystem services are increasing. Ecosystem services as specified in the Millennium Ecosystem Assessment Report; procurement services, regulatory services, cultural services and supportive services. Procurement and cultural services can also be addressed within the scope of non-wood forest products based on definitions. Nonwood forest products are defined as all kinds of vegetable and animal products other than wood obtained from forests. Particularly in rural areas, it contributes significantly to reducing poverty, improving welfare and improving the local economy. Efteni Lake were registered in 1992 as the only natural lake and as Wildlife Development Area located in the south of Duzce province within the boundaries of Duzce province. It is important to be the starting point in the Big Melen project which provides drinking water to Istanbul with its important location in the ecological network as the hydrological node of all the main river network in Duzce Plain. Efteni Lake is used as a wetland by many bird species as a feeding, sheltering and breeding area. Efteni Lake is a wetland area with low depth and environmental conditions. In the study, the agricultural and forest ecosystems and settlements located near Efteni Lake Wetland and approximately 100 km² were evaluated in terms of non-wood forest products and the services they provide. In the scope of procurement services, which are a group of ecosystem services; hunting, mushrooms, mountain strawberries, chestnuts, nettles and so on. It was determined that medicinal aromatic and edible plant gathering and apiculture were performed. Within the scope of cultural services, which are another sub-group of ecosystem services, various tourism and recreation sources have been identified. Within the scope of the study, some recommendations on the conservation of the Efteni wetland ecosystem has developed, non-wood forest products in the area were evaluated for the rural development puposes.

Keywords: Ecosystem Services, Efteni Lake, Wetland, Rural Development, Nonwood Products

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4

THE EXPERIMENTAL DETERMINATION OF EFFECT OF DOOR MIRROR TO DRAG FORCE ON A BUS MODEL IN WIND TUNNEL

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Abstract:

One major subject of study in the automotive industry is the determine of air flow around of a vehicle and its effect to drag and lift forces. High drag force reduces fuel efficiency and performance of vehicles. There are various ways to increase of vehicle performance and decrease fuel consumption such as improving the efficiency of engine and reducing drag force. In this study, the effect of mirror to drag force was investigated in a wind tunnel on a 1/33 scale bus model. The wind tunnel tests were made between the rate of 16.77 m / s-, 28.62 m / s in 5 different free flow velocities. To ensure geometric similarity 1/33 scaled licensed model bus is used. For the kinematic similarity blockage rate was %6.31. In studies Reynolds number independence is used to ensure dynamic similarity. It has been found that the mirror increase the aerodynamic drag coefficient by an average of 3.40%. It has been determined that the increase in aerodynamic resistance in this rate will increase fuel consumption by 2% at high speeds.

Keywords: Drag Force, Wind Tunnel, Aerodynamic, Bus Model, Door Mirror
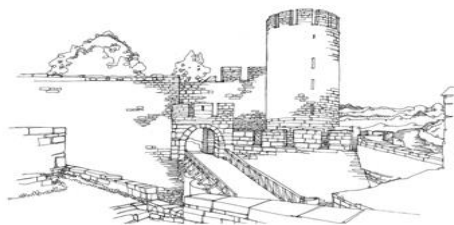
FORMULATION OF NIMODIPINE WITH BRIJ S100 AND PEG 4000 USING THE PGSS PROCESS

Maša Knez Hrnčič[a]*, Željko Knez[a], Gregor Kravanja[a]

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Abstract:

The e pharmaceutical industry is interested in obtaining the successful formulation of poorly soluble active compounds in order to increase their bioavailability and dissolution rate. The current delivery options for improving the dissolution properties of drugs are particle size reduction, crystal modification, pH modification, self-emulsification, amorphization and the formulation of drugs with surfactant carriers and amorphous polymers. Particle size reduction and drug formulation with polymeric carriers incorporate the most promising options in this regard. A number of conventional methods have been developed to improve the dissolution properties of drugs. Many of these methods possess drawbacks, such as thermal and chemical degradation of drugs, large quantity organic solvent use, broad particle size distribution and low drug load. To overcome these limitations, supercritical fluid technology promises to be an excellent option. The reasons for the widespread use of supercritical fluids mainly lie in the simplicity of the processes, high purity of products, no organic solvents in the process, no communication steps in drug preparation, mildness of operating conditions and the possibility of obtaining non-contaminated fine particles with narrow size distributions. Production of fine particles with improved characteristics using supercritical fluids has been obtained with rapid expansion of supercritical solutions (RESS), the gas antisolvent process (GAS), supercritical antisolvents (SAS), solution enhanced supercritical dispersion processes (SEDS), aerosol solvent extraction systems (ASES), supercritical fluid extraction of emulsions (SFEE) and particles from gas-saturated solution (PGSSTM). In particular, the PGSSTM used in our study is an organic solvent-free process in which polymeric carriers with the target pharmaceutical drug to be micronized and encapsulated are loaded into a high-pressure autoclave together with supercritical CO_2.

Keywords: Encapsulation, Particle Generation, Dissolution Rate, Active Drugs, Polymer, Pgsstm
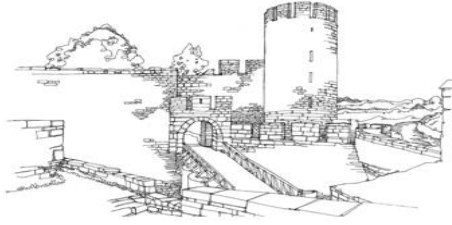
EFFECT OF GANODERMA LUCIDUM EXTRACT ON TESTIS MORPHOLOGY ON RATS

Basak Buyuk[a]*, Tuba Demirci[b], Hakan Turkon[a], Neslihan Demir[c]

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[b]Ataturk University Faculty Of Medicine
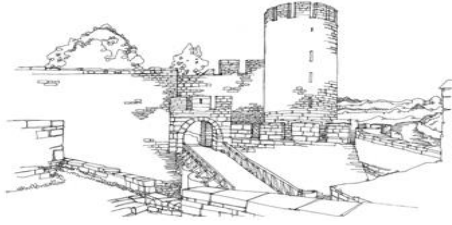[c]Canakkale Onsekiz Mart University Faculty Of Arts And Science

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Abstract:

Objectives: Ganoderma lucidum(GL) is a widely used medicinal mushroom. The therapeutic effects of this fungus on many diseases have been proven by studies. The aim of this study is to assess the effects of low, moderate and high dose GL extract administration on the testis tissue, and spermatogenic series cells in rats. Methods: Ganoderma lucidum extract was obtained with Soxhlet device before experimental procedure. 40 Wistar albino rats were randomly divided into 4 groups. Rats in group 1, 2, 3 and 4 were administered 2 ml physiologic serum, 500 mg/kg, 2500 mg/kg, 5000 mg/kg Ganoderma lucidum extract 1 time per day via gavage for 9 days, respectively. For evaluation of histopathologic changes, testes harvesting were done. Blood samples were collected for biochemical analysis. Results: Testis sections from the Group 1(control group) were investigated as normal, The walls of the seminiferous tubules contained spermatogonia, type 1 and type 2 spermatocytes and spermatids regularly arranged in order within the germinal epithelium above the basal membrane. When testis sections belonging to Group 2 are investigated, the seminiferous tubule structure had regular arrangement similar to the control group; however, there were small amounts of hyalinization observed in the interstitium between the tubules. In Group 3, in spite of germinal epithelium thickness and regular arrangement, occasional intercellular edema and cytoplasmic swelling were identified. Intense hyalinization in the interstitium was noted. In sections belonging to Group 4, the germinal epithelium in seminiferous tubules was regular as in other groups and all cells from the spermatogenic series were observed. However, in the cells between seminiferous tubules, interstitial edema, cytoplasmic swelling and hyalinization, even occasional vacuolization, in the interstitium was noteworthy. When the control group is compared with Groups 2, 3 and 4, the Johnsen score in these groups increased and this increase was statistically significant (p<0.05). Conclusion: In conclusion, low, moderate and high doses of GL extract administered to rats was revealed to increase spermatogenetic cells, however, high doses caused minimal damage to the testis, it is concluded that doses for oral use above 2500 mg/kg should be avoided. However, due to the reduction in serum testosterone and DHT levels, care should be taken during long-term use and it is considered that controlled use is necessary.

Keywords: Ganoderma Lucidum, Male Fertility, Sperm Motility, Testes

SUSTAINABILITY DIMENSIONS FOR INHABITANTS LIVING NEAR SINKHOLES

Seda H Bostanci[a]*
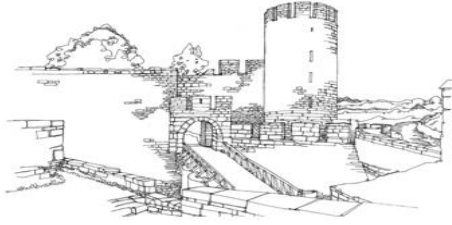
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Abstract:

The concept of sustainability has three main dimensions such as: ecological, economic and social. In terms of its geological description, dissolution of the ceilings of the karst pits, and large and deep pits formed by karstic dissolution are defined as a sinkhole. Sinkholes, as they occur naturally and also occur as a result of human activities. Processes such as disaster management, insurance systems, the approach of local governments to the issue, the government support, technical engineering solutions for the inhabitants which are effected from sinkholes vary from country to country. The aim of this study is to address the living conditions of the inhabitants whose houses are close to sinkholes in the context of sustainability. Among the sustainability and natural disasters, sustainability threats of the inhabitants can be examined with their ecological, economic and social dimensions. The threats they create on agricultural areas, their impacts on the settlement pattern, their eco-tourism potentials can be considered from an ecological point of view. The economic opportunities, property status, home sale, rent and insurance facilities of the families affected by the families can be discussed in terms of economics. Social solidarity, social assistance, local government support, and public opinion opportunities can be brought to the agenda on a social basis. Karstic structures are important for ecological environmental values, and these areas should be protected as natural areas. Besides, sinkholes that occur later in settlements is one of the problematic areas in which urban planning seeks solutions. In the study, it is aimed to find an answer to the question of what can be done for the sustainability of the inhabitants that live in the sinkhole areas. A literature review was used as a method in the research. As a result of the study, starting from the current literature, there are suggestions on how to address the subject of mitigation planning, which is an important tool of disaster management in urban planning.

Keywords: Sinkhole, Sustainability, Mitigation Planning, Disaster Management

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THE NUMERICAL DETERMINATION OF NON-SMOOTH SURFACE TO DRAG COEFFICIENT ON A MINIBUS MODEL

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Abstract:

The control of flow separation on vehicles is major interest area in fluid dynamics and as well as aerodynamic studies. In this study some techniques have been conducted to flow control around a minibus model. This study focused on decrease of drag coefficient of a 1/15 scale minibus model. Non-smooth surface plate was used to flow separation either by preventing it or by reducing its effects. The numerical flow analyses carried out between the free stream velocities 15-35 m/s and 2.8×10^5-6.6×10^5 Reynolds number. In study Reynolds number independence was used to ensure dynamic similarity and blockage rate was 5.34 % for kinematic similarity. It was found that the use on non-smooth surface on the roof decreased to drag coefficient by an average of 2.61%. This reduction rate decrease fuel consumption about 1.5% at high vehicle speeds. The pressure distributions on model vehicle and flow structure around the minibus model were determined numerically.

Keywords: Drag Coefficient, CFD, Aerodynamic, Minibus Model, Non-Smooth Surface

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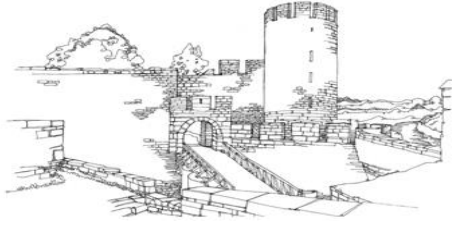
WAVELET ANALYSIS OF WIND SPEED AND SOLAR RADIATION DATA

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Abstract:

Solar energy and wind energy are the most popular among renewable energy sources. Detailed analysis of both wind and solar radiation data is very important for determining the potential. In this study, wind speed and solar radiation data of the Istanbul-Goztepe region were analysed. The data were obtained from the Turkish State Meteorological Service. In the analyses using the short-term data, the wind speed and solar radiation data of the region were analysed statistically. In the statistical analysis, first Weibull distribution was performed, and then standard deviation, mean, skewness and kurtosis values were calculated. Average temperature values; mean sunshine duration, average global radiation values for each month were determined in the analysis. In addition, maximum, minimum and average global irradiation values were determined during the year. Wavelet analysis of both wind speed data and solar radiation data have been done and compared to the data in these studies. In the wavelet analysis, high frequency and low frequency regions were determined and seasonal transitions were determined.

Keywords: Wind Speed, Solar Radiation, Wavelet Analysis, Statistical Analysis

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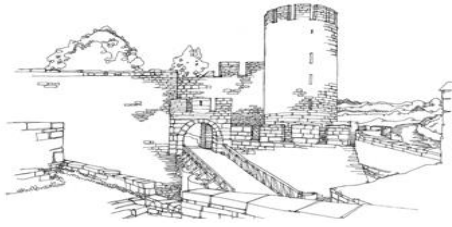
COMPUTER SIMULATION OF USER BEHAVIOUR IN BUILT ENVIROMENTS – IMPROVEMENTS OF NUMERICAL AGENT MODELS

Dujmo Žižić[a]*, Hrvoje Bartulović[a], Bruno Bartulović[a]

[a]University Of Split, Faculty Of Civil Engineering, Architecture And Geodesy
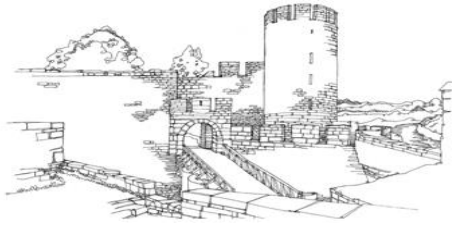
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Abstract:

The article elaborates several areas that can be improved in the field of computer simulations of user behaviour within the virtual 3D space, improving the efficiency, safety and overall sustainability of built environments. State-of-the-art research is generally focused on the following topics: Crowd simulation, Collision avoidance, Reaction distance, Following behaviour, Reorientation strategy, Self-organized patterns, Efficiency of traffic, etc. However, there is no systematic implementation of random elements: differences in perception, encounters, changes in priorities, heterogeneity of the population, different age groups and physical possibilities, individual reaction to danger, the formation of user groups etc., that is, the whole set of complex protocols we are witnessing in the real world. The objective of the article is to suggest the concept based on the modelling of a complex agent that would autonomously "make decisions" about its own behaviour and movement. Such a model would have several groups of variables (physical, motivational, perceptual, psychological, etc.) whose combinations would generate a vast population structure. Their behaviour would not be pre-programmed but would be calculated in real time according to the algorithm depending on the simulated spatial, temporal, social and other conditions.

By establishing a numerical model operational within 3D simulation, following processes could be optimised: determining the necessary space and equipment, ensuring an effective system of signalisation and user flow, detecting evacuation choke points and eliminating them, defining commercially interesting surfaces, etc. Implementation of the concept suggested in the article could provide the tools to designers and managers of buildings, transport and traffic systems, security services in the preparation of evacuation and rescue plans, insurance companies in risk assessment empowering all of them to analyse the efficiency, safety and sustainability of built environments.

Keywords: Computer Simulation Of User Behaviour, Improvements Of Numerical Agent Models, Sustainability Of Built En

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SUSTAINABLE INVESTING EXCHANGE-TRADED FUNDS: PORTFOLIOS OF THE GLOBAL LEADERS

Adam Marszk[a]*

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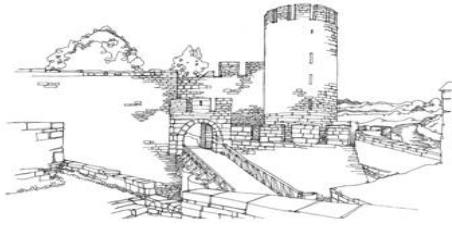
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Abstract:

This paper examines the portfolios of the world's largest sustainable investing exchange-traded funds (ETFs) in order to determine whether the assets they hold are consistent with the main principles of the principles-based investing. ETFs are one of the most rapidly growing categories of investment funds. They can be defined as innovative investment funds that combine the features of the conventional, much more established mutual funds with the attributes of the securities traded through the stock exchanges. Sustainable investing ETFs are a quickly expanding category of the innovative funds - on the most mature markets, such as the United States, their number and assets have increased considerably in the last decade. However, in some cases despite the declared devotion to the ethical investing, the assets of such ETFs do not meet the requirements of sustainable investing. The scope and severity of these deviations are examined in the paper. The results of the analysis show that in most cases the managers of the largest sustainable investing ETFs follow the policies that are declared in the documents of the funds. There are, though, some cases in which the designation of the fund as sustainable investing ETFs appears to be an overstatement and mostly a part of the marketing strategy. Additionally, assets of the funds and their financial results were studied in order to establish the relationships between the consistency with the principles of ethical investing and performance of the funds. The results are mixed and no clear-cut conclusions can be formulated. Data on the 10 world's largest ETFs for the period 2010-2017 were used in order to reach the stated research aim. The applied research method was the detailed analysis of the data on the assets of ETFs acquired from the financial databases and reports of the managing financial institutions.

ANALYSIS OF THE GLOBAL RESILIENCE ASSESSMENT FRAMEWORKS FOR THE URBAN REALM

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Abstract:

Climate change has increased the frequency and severity of disaster events and this trend is expected to grow in the future. Extensive structural damages and fatalities are particularly located in urban areas where people, activities and resources are largely concentrated. In this context, the concept of community resilience has gained high prominence as well as the need of developing methods and instruments for its assessment. During the last decade, diverse frameworks and tools have been developed in order to reduce disaster risk and to prepare communities to withstand and adapt to a wide range of disasters. After selecting the most relevant urban resilience assessment frameworks, this research aims to determine the adequacy of the City Resilience Index (CRI), the City Resilience Profiling Tool (CRPT), a set of urban risk and resilience indices powered by the Earthquakes and Megacities Initiative, the ICLEI Asian Cities Climate Change Resilient Network (ACCCRN) Process and the Disaster Resilience Scorecard for Cities to be globally implemented by deeming all aspects of resilience, namely Preparedness & Plan, Absorption, Recovery and Adaptation. Furthermore, some initiatives adopted by the international community such as the Sendai Framework and the 2030 Agenda were also considered in the analysis. Findings revealed significant gaps in several frameworks when covering the all aspects of resilience. The paper concludes by suggesting the CRI as the most suitable instrument to assess the resilience of urban communities worldwide.

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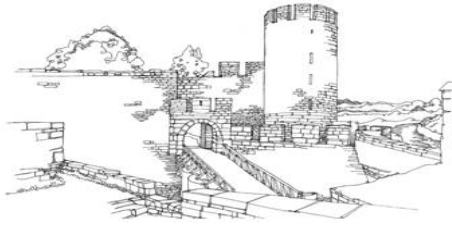
HOW INDONESIA'S SUSTAINABLE DEVELOPMENT IS ACHIEVED?: AN APPLICATION OF QUALITATIVE COMPARATIVE ANALYSIS.

Akhmad Fauzi[a]*

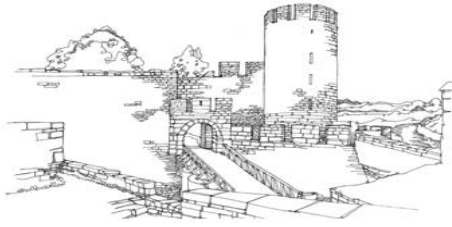[a]Bogor Agricultural University, Indonesia

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Abstract:

Sustainable development has been the main agenda for Indonesia' development, both at national and regional levels. Along with Laws on national development plan and regional development that mandate sustainable development framework, the government has also issued President regulation number 59/2017 on implementation of sustainable development goal. The issuance of these recent regulatory frameworks indicating that the sustainable development should be taken seriously in the development processes. Nevertheless, there are several factors that affecting the achievement of sustainable development. These include economics, social, environmental, as well as institutional factors. This paper investigates how these factors contribute to the achievement of sustainability at the regional level. Using the recently popular approach known as Qualitative Comparative Analysis or QCA, the paper seeks to find conditions or combination of conditions that influence the outcome of sustainability. Both multi value QCA (mvQVA) and fuzzy set QCA (fsQCA) were used to assess the sustainability at regional level. Lessons learned could be drawn for this analysis to formulate policy and recommendation for the betterment of pursuing sustainable development both at national and regional levels.

Keywords: Sustainable Development, Qualitative Comparative Analysis, Conditions For Sustainability, Policy Formulation

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MODELING AND ESTIMATION OF CR (VI) EFFICIENCY USING NON-LINEAR REGRESSION

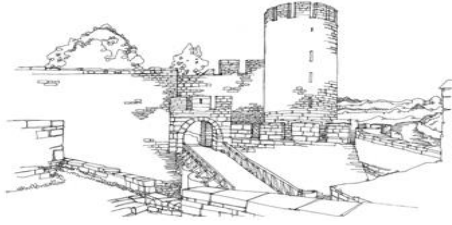Halime Yakisik[a]*, Ugur Ozveren[a]

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Abstract:

One of the most detrimental water pollutant is heavy metal ions. It increases in the rate of industrialization and causes severe health hazards on human beings. The removal of heavy metal ions from wastewater is essential before releasing them into the natural environment because of their toxicity. In this study, estimation of Cr (VI) removal from waste water was studied using nonlinear regression model. It contains mathematical equation of a complex chemical process. Therefore, the value of the proposed model is to be convenient and robust method to predict the Cr (VI) removal with minimum process knowledge. Adsorbent dosage, pH, temperature and initial concentration, were selected as the input variables, and Cr (VI) removal efficiency chosen as the output parameter of nonlinear model. The performance of the proposed model in this study was evaluated for Cr(VI) uptake rate in terms of root mean square error (RMSE) and correlation coefficient (R2). The validation confirms that the major advantage of this model is its capability to compute removal efficiency of Cr(VI) simply. The objective of this study was therefore to investigate the removal of Cr(VI) ions in aqueous solutions using non-linear regression model to explore the effects of factors on the adsorption. Thereby, the proposed model maintains a useful tool for prediction removal efficiency for Cr(VI).

Keywords: Non-Linear, Heavy Metal Ions, Cr(VI), Removal Efficiency, Polymeric Nanocomposite

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ESTIMATION OF DAILY PARTICLE MATTER CONCENTRATION (PM2.5) IN ANKARA KECIOREN

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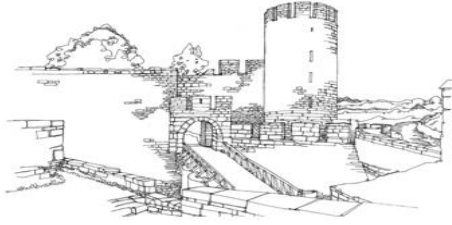*halimeyakisik@marun.edu.tr

Abstract:

The particle matter concentration is an important parameter of air quality and used to assess the impact of air on the health and welfare of every living being. The aim of this study is to predict the PM2.5 in Kecioren/Ankara and reveal the influences of meteorological and third parties effect including regional transport through the NOX, temperature and wind velocity by developing a generalized estimating model, that is to say, an ANN model with acceptable accuracy, applicable for air pollution.

ANN is a promising modeling technique, especially for highly complex nonlinear problems, using massively parallel-distributed information processing system that simulates the functions of neurons using artificial neurons, inspired by the studies of the brain and the nervous system.

The results indicate that the artificial intelligence approach offers a high degree of correlation and its robustness and capability to compute PM 2.5 by using network inputs. The proposed model can be performed to improve air quality.

Keywords: Neural Networks, Air Pollution, Particle Matter (PM2.5), Air Quality

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SIMULATION OF IMBAT COAL GASIFICATION IN FLUIDIZED BED USING ASPEN PLUS

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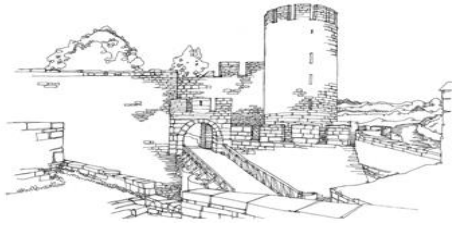*furkankartal@marun.edu.tr

Abstract:

Among the various types of gasification methods, fluidized bed gasification process has been applied as a key merit technology to ensure the product gas with high quality. Therefore, the aim of this study is to explore a novel steady state simulation approach of imbat coal in a circulating fluidized bed gasifier by using Aspen Plus model which is based on the minimization of the Gibbs free energy of the system.

The syngas composition was obtained for different operating parameters such as equivalence ratio, temperature, pressure and molar feed stock rate to evaluate performance of the developed ASPEN Plus model.

The simulation results show that the product gas produced during the steam gasification has much higher hydrogen contents than oxygen gasification models from the literature. Moreover, it is expected that the established model can be used for other type feedstocks to estimate the composition of product gas at optimised operating condition.

Keywords: Imbat Coal, Gasification, Circulating Fluidized Bed Gasifier, TGA, Uncertainty Analysis

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EVALUATION OF WHEAT STRAW GASIFICATION IN FLUIDIZED BED GASIFIER USING ASPEN PLUS

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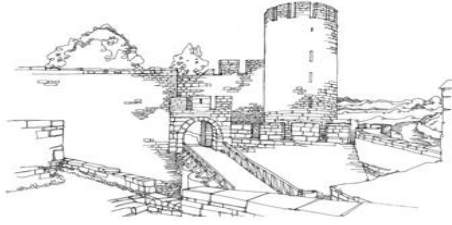
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Abstract:

Biomass gasification is an encouraging thermochemical process that converts this residue mainly into syngas, which may be applied to electricity, generate heat, and fuels. However, the biomass gasification is quite complex and dependent on many interrelated and independent variables because of gasification reactions including water-shift and Boudouard reactions.

In this study, a novel biomass gasification model for wheat-straw was developed to simulate the air–steam gasification in a fluidized bed for syngas production using Gibbs reactor (RGIBBS) in Aspen Plus simulator, which is based on the minimization of Gibbs energy, has been used in this work for the whole gasification unit.To reveal the effects of gasification parameters; gasifier temperature, steam/biomass ratio (SBR), equivalence ratio (ER) were investigated using sensitivity analysis.

The major evaluation criteria are estimation accuracy and generality of the developed gasifier model. The model is validated by data from literature and found relatively to be in good agreement. Results show that higher steam over air composition increases heating value of syngas.

Keywords: Biomass, Wheat Straw, Fluidized Bed Gasifier, Aspen Plus, Gasification

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ENERGY AND EXERGY ANALYSIS OF AIR GASIFICATION FOR PINE CONE IN DOWNDRAFT GASIFIER BY USING CYCLE TEMPO

Tulgaochir Tumurbat[a]*, Ugur Ozveren[a], Fatma Karaca[a]
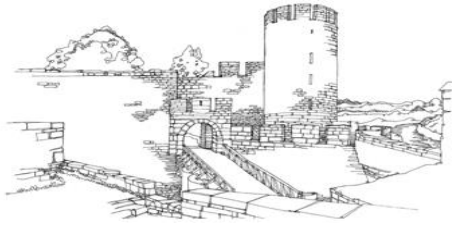
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Abstract:

Biomass gasification is considered as a potential pathway for energy production compared to gasification of fossil fuels such as coal, crude etc. from perspective of its environmental, and economical aspects. However, the exergy and energy analysis must be deemed for efficient conversion of biomass. The aim of this paper is to conduct a thermodynamic study with respect to exergy and energy analysis of a fixed bed downdraft gasifier for pine cone using Cycle-Tempo software (TU Delft, the Netherlands). The gasification process is predicted to occur at ambient pressure using air as gasifying medium. The gasifier produced a combustible gas with a H2, CO, CO2 and CH4 concentrations of 14.45, 22.15, 10.75 and 1.73 mol.% respectively, at a total flow of air of 40.616 kg/h. The pine cone in the feedstock was effectively gasified to produce syngas with chemical exergy value of 38.40 kW and a lower heating value of 4.98 MJ/Nm3. Results show that the model is able to assess, with a fairly good agreement, both the exergy and the heating value of the syngas.

Keywords: Biomass Gasification, Pine Cone, Cycle-Tempo, Downdraft Gasifier, Exergy Analysis, Energy Analysis.

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A LIFE CYCLE SUSTAINABILITY ASSESSMENT TOOL FOR CONSTRAINED LOCAL ENERGY SYSTEM DESIGNS

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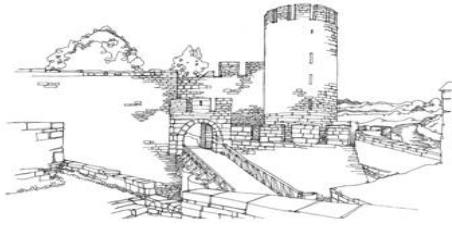
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Abstract:

The transition to sustainable energy requires strategic planning that takes into account the technical, environmental and socioeconomic characteristics of the energy technologies involved. This task is more difficult for a constrained local energy system because the generation options are restricted and the decisions about infrastructure development have to be context-specific rather than generic supports for low carbon energy technologies. Integrating a life cycle perspective into the planning is an additional challenge because this usually requires the stakeholders to spend more time and funds to acquire the relevant expertise. The Excel-based Constrained Energy Systems Life Cycle Sustainability Assessment (CESLCSA) tool has been developed within the EU-funded project "Intelligent Community Energy (ICE)" to overcome these difficulties and provide the stakeholders the ability to investigate the sustainability of their preferable energy system designs. Using the constrained electricity system of Ushant island in France as a case study, a suite of seven scenarios that could enable the shift to a fossil fuel free local electricity grid were evaluated. These scenarios featured carefully designed mixes of wind, solar and tidal energy and they were assessed in terms of the degree to which they can cover the predicted demand as well as their life cycle costs and life cycle environmental impacts such as global warming potential. The preliminary results show that only the scenarios that include a strong uptake of rooftop photovoltaics manage to completely meet the annual electricity demand and among them the scenario that includes the utilisation of tidal energy has the lowest cost and carbon footprint. This tool enhances the involvement of stakeholders so that the proposed energy system designs can be easily investigated, communicated and accepted by the local society.

Keywords: Sustainable Energy; Life Cycle Analysis; Constrained Energy Systems; Local Grid; Energy Decision Making

AN INTEGRATED COASTAL VULNERABILITY FRAMEWORK FOR SUSTAINABLE COASTAL PLANNING

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[b]Coastal And Marine Research Group, University Of Wales Trinity Saint David
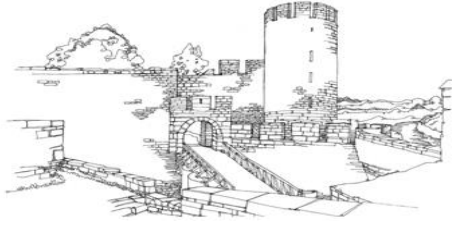[c]Faculdade De Ciências E Tecnologia, Universidade Dos Acores

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Abstract:

More than half of Europe's population, way of life and significant economic assets are at risk along the shoreline as a consequence of climate variability and changes. With a projected increase in extreme events and yet a growing coastal population trend, sustainable coastal development in the medium to long-run requires proper understanding of vulnerability along the coast. Grounded in the core concept that humans are an integral part of nature, this research assesses coastal vulnerability through the lens of a social-ecological perspective. Respecting the interconnectedness between human and environment, it develops a simple conceptual framework that characterises coastal vulnerability through three key attributes, i.e. exposure to external forcing, existing biophysical features and socio-economic characteristics. This framework forms the basis for the development of an integrated coastal vulnerability index (ICVI). Each coastal segment is assigned an ICVI score based on assessing a representative set of indicators that addresses all three attributes. The ICVI scores were subsequently employed to rank the coast into five classes ranging from very low to very high based on its relative degree of vulnerability. Superimposing the ICVI maps with land-use maps, vulnerable/sensitive ecosystem locations and socio-cultural heritage sites will inform coastal planning and management. Inappropriate siting of development and infrastructure contribute to shoreline vulnerability, consequently this approach will help identify highly resilient shorelines for future development. Importantly, the framework and ICVI approach will facilitate decision-making for sustainable coastal adaptation and improved climate change resilience.

Keywords: Coastal Hazards, Integrated Coastal Vulnerability Index, Coastal Adaptation, Sustainable Development, Resilience

SIMULATION OF ALMOND SHELL GASIFICATION IN CIRCULATING FLUIDIZED BED GASIFIER BY USING CYCLE-TEMPO

Tulgaochir Tumurbat[a]*, Beyzanur Ozturk[a], Halime Yakisik[a], Furkan Kartal[a], Yagmur Dalbudak[a], Fatma Karaca[a], Ugur Ozveren[a]
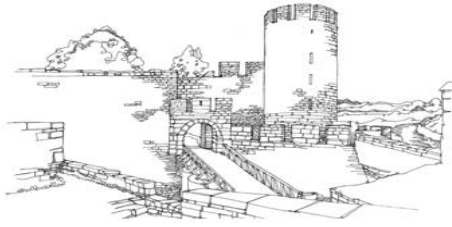
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Abstract:

Almond shell is considered as one of the most potential renewable energy sources in Turkey for steam gasification. Steam gasification of almond shell supplies remarkably higher gas qualities than air-blown gasification in circulating fluidized bed gasifier. The objective of this study is to simulate a circulating fluidized bed gasifier for almond shell gasification in situ steam atmosphere using Cycle-Tempo software (TU Delft, the Netherlands). The gasifier temperature, equivalence ratio and steam to biomass ratio were discussed. The results demonstrated that the higher amount of steam in almond shell gasification enhances the lower heating value of the syngas and the composition of H2 in syngas that produced in the circulating fluidized bed gasifier model. The model can provide in details the performance of the steam gasification of almond shell process in terms of product gas distribution and lower heating value as well as the process efficiency, and it is in a good agreement with the models found in the literature.

Keywords: Biomass, Circulating Fluidized Bed Gasifier, Almond Shell, Cycle-Tempo

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CHANGI AIRPORT AS A MODEL FOR NEW ISTANBUL AIRPORT

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Abstract:

It's obvious that Changi is the most innovative and attractive airport all over the world. Telegraph's 2014 Ultra travel Awards also gave the world's best airport name to Changi. This achievements can only be possible by applying innovations, artificial intelligence (facial recognition) and good data analysis which help the airport to keep its position as competitive and prominent. Additionally, Changi Airport Group (CAG) opened the Changi Airport Living Lab Program, which will collaborate with innovation-driven organizations and start-ups to improve and test new technology solutions in a live airport environment. Besides such innovations, Changi use good decorations, environmentally sustainable areas and service opportunities to differentiate. For instance, the building's ceiling has a waterfall with height of 40 meters in the airport that pours to a pool. Moreover beautiful garden with 6-metre tall waterfall and over 1000 species of butterflies is worth visiting. In addition, there's other green spaces like open-air cactus and sunflower gardens. All these applications and facilities are amazing examples for Istanbul's new airport. It seems that Istanbul airport will also use such technologies like automated robots, facial recognition, carrying vehicles between terminals, etc. By using these methods and adding some green places to the airport (as Changi did) Istanbul airport can create a sustainable competitive advantage and get a remarkable place in minds after grand opening. Moreover, both Changi and Istanbul are very important transit centers, which can bring huge opportunities to get advantages and require to be environmentally friendly while applying innovations. In short, in my presentation, I'd like to emphasize the importance of using new technologies (especially for airports) to get more sustainable environment and more business advantages at the same time. Moreover by benchmarking such innovations we can reduce environmental impact, prioritize economic growth and generate social progress also in Istanbul.

Keywords: Sustainability, Environmentally Friendly Airports, Facial Recognition, Big Data, Green Places In Airports
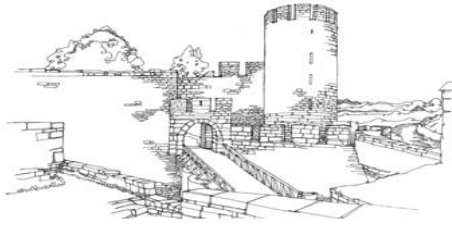
SUSTAINABLE HARMONIZATION OF AUDIT REGULATION OF ALBANIA AND NORTH MACEDONIA WITH THE EUROPEAN UNION

Agim Mamuti[a]*, Ervina Zinxhirja[b], Pina Puntillo[c], Mario Parrilli[c]

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Abstract:

By using a qualitative methodology, this research analyses the regulatory framework of auditing standards in two countries: Albania and Macedonia. An evaluative approach has been followed, starting from a descriptive analysis of the current state of art. The final aim was to conduct a comparative analysis of both countries in order to enhance similarities as well as differences. The main objective of this paper is: understanding the similarities and/or the differences between the audit standards and regulation frameworks between Albania and North Macedonia. In order to reach this result, the following descriptive analysis has been realized on: (1) the historical and current development of auditing standards and regulation framework in the world; (2) the historical and current development of auditing standards and regulation framework in Albania; (3) the historical and current development of auditing standards and regulation framework in the North Macedonia. Finally, a comparative analysis of auditing standards and regulation framework between Albania and Macedonia is provided. The main findings of this paper consists that, in comparing the two states, Albania and North Macedonia, were noticed several similarities as well as differences regarding the harmonization and adaption of the international auditing standards and regulation framework.

Keywords: Audit Standards, Harmonization, Audit Regulation, Albania, North Macedonia, Eu

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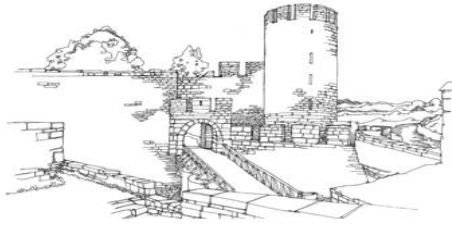
PRODUCTION AND CHARACTERIZATION OF PYROLTIC CARBON FROM WASTE COFFEE GROUNDS

Selcuk Yesiltepe[a]*, Mustafa Kelami Sesen[a]

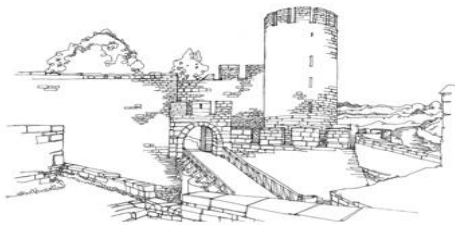[a]Istanbul Technical University

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Abstract:

Coffee is one of the most used beverages in world. World coffee production in 2017 is 158.78 million bags which is higher 0.7% than previous year. Coffee beans are consumed worldwide hence a source of large amount of organic waste produced as byproduct. Organic compounds in coffee beans are; oils and crude fiber. Oil type differs for different coffee beans but generally coffee beans contain 75% triacylglycerols, 14% terpene esters, 5% partial acylglycerols, 1% free fatty acids, 1.5% free sterols, 1% sterol esters and 1% polar lipids. Crude fiber composition of coffee beans is cellulose, hemicellulose and lignin. 158.78 million bags of coffee means 9.52 million tons of coffee beans are consumed per year. Coffee consumption is linked to the per capita income and cultural identity. Coffee consumption is lower in Asian countries where tea is seen as a ritual beverage. World's most valuable second fast food chain is Starbucks, a coffee shop. Italy is at the first place for coffee shops and cafes in Europe with almost 60.000 shops country wide. Italy is followed by Turkey with 43.200 shops, Portugal is at the third place 43.000 shops.

Already grounded and washed organic waste of coffee could be used for further beneficiation of ingredients. Studies showed that spent coffee grounds can be used in geoplymers, improving Polyurethane film properties, pyrolised coffee beans as a carbon anode in sodium-ion batteries and active carbon resource for nickel ion adsorption. Spent grounded coffee is used for different applications with different techniques. In this study spent grounded coffee is pyrolised and characterization of pyrolised coffee is done for understanding pyrolysis process dynamics. XRD, Raman spectroscopy, SEM imaging, calorimetric measurement and DTA-TG analysis' are done for pyrolytic carbon obtained from spent coffee grounds.

Keywords: Spent Coffee, Pyrolysis, Waste, Pyrolitic Carbon

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DTA-TG CHARACTERIZATION OF ORGANIC WASTES

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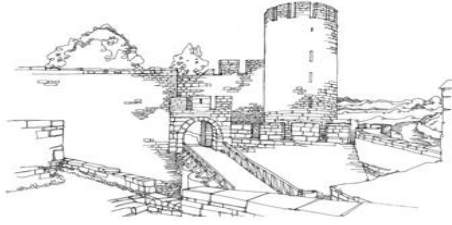[b]Hakkari University

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Abstract:

Organic wastes are valuable resources for some other processes. Organic wastes contain large amount of carbon and organic compounds that can be used in various applications. Increasing raw material demand and food production amounts are causing for new resource and application area search. In this study organic wastes such as spent coffee ground, walnut shell, nut shell and almond shell are studied with DTA-TG technique to understand pyrolysis behavior of these materials. DTA-TG characterization is done for organic wastes under Argon atmosphere. Pyrolysis experiments are conducted for all organic wastes. Pyrolysis experiments are done in alumina tube furnace with Argon purged situation and gas is washed and exhausted. Experiments are done at 600, 700, 800 and 900 oC. Pyrolysis efficiency and properties of pyrolytic carbon is evaluated. Understanding pyrolysis regime of these organic wastes is important for determining possible application areas for these carbon based pyrolysis products and possible use of pyrolysis gas applications.

Keywords: Spent Coffee, Walnut Shell, Nut Shell, Almond Shell, Organic Waste

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INFORMATION SYSTEMS IN SUSTAINABLE SUPPLY CHAIN MANAGEMENT

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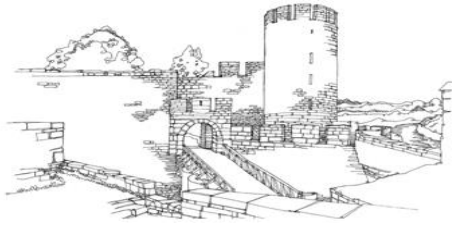[a]University Of Piraeus

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Abstract:

The research presented in this paper examines the role of information systems in the development of Sustainable Supply Chain Management. Sustainability focuses both on the protection of environment and on the social, as well as economic development of firms. Contemporary supply chains adopt sustainability practices to retain their market share and if possible gain competitive advantage. They also implement information systems to support these practices, improve their operations and increase their efficiency. Nowadays, information systems are considered as an integral part of supply chains, enabling organizational and interorganizational interconnection, supporting control processes and enabling measurement of performance across all stages of a supply chain. However, the role of Information Systems on Sustainable SCM is still unclear and warrants investigation. Previous research examining the connection between Sustainable SCM and Information Systems is limited and focuses on the environmental aspect of sustainability. Our aim is to address this limitation by clarifying the concept of Sustainable SCM, based on an extensive literature review, and analyzing the impact of Information Systems. We also aim to examine the relationship between the use of information systems, the adoption of sustainability practices and the attainment of competitive advantage. To address these issues we adopted an interpretive approach. We conducted a case study at a a modern 3PL company and carried out a qualitative method of analysis. Data was collected through open-ended interviews and limited participant observation, and was analyzed based on the Resource Based View (RBV) theory.

The results showed that the right use of Information Systems in SCM and the business alignment with trading partners are the main pillars, which enable the company to increase its business performance, but not necessarily its competitive advantage. Through the effective use of information systems, the company is able to increase its financial and environmental performance, creating an "environmentally friendly" image, and gaining the chance to increase its market share.

Keywords: Information Systems, Competitive Advantage, Sustainable Supply Chain Management

RECYCLE OF INDUSTRIAL WASTES IN INTEGRATED FACILITIES

Samet Balli[a]*, Murat Kalender Evirgen[a], Selcuk Yesiltepe[a], Mustafa Kelami Sesen[a]
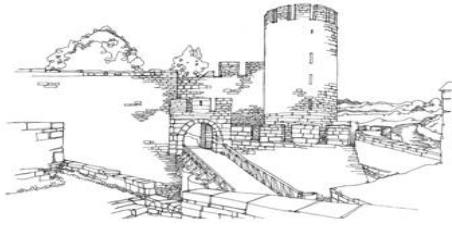
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Abstract:

Industrial wastes can be defined as the non-usable, unprocessed or inconsumable part of the processed materials which are used in institutions and enterprises. Since these wastes have a negative impact on life, they should be integrated into the economy rather than being left alone in nature, and tried to be recycled through reliable, accurate plans. Solid wastes that form in steel plants are the basic by-products that occur in various processing stages in the production of iron and steel. Solid waste types in the steel industry are basically classified as coke and coal dust, blast furnace slag, steel melting shop slag, mill scale, scrap, oily sludge, fly ash, acid sludge and refractory wastes. Solid wastes from integrated steel cause environmental pollution and they should be disposed. Until recently, the slag, dust, and sludge products produced by integrated steel plants have been called waste, and now these wastes are called by-products because of their high economic value and the necessity to minimize their negative impacts on the environment. Mill scale is one of the by-products which is about 19-40 kg/t during steel processing and this value changes depending on the deformation of the hot product in the rolling mill and the used deformation technology. The mill scale is considered to be a rich iron source containing the highest quality iron oxide and impurities. Besides, blast furnace flue dust is a valuable resource and waste from iron & steel industry that contains large amount of iron oxide and coke particles.

In this study mill scale and blast furnace flue dust is characterized and used in pelletizing process to produce sponge iron products. Properties of pelletizing and reduction processes are evaluated.

Keywords: Mill Scale, Blast Furnace Flue Dust, Oily Mill Sludge, Pelletizing, Characterization

SUBJUGATION, SUJŪD & ONENESS: EXPLORING THE CONCEPT OF HARMONY BETWEEN THE SELF AND THE ENVIRONMENT IN ISLAMIC PHILOSOPHICAL THOUGHT

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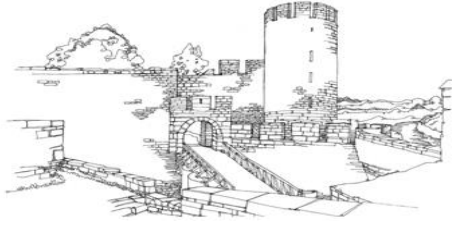[b]Yildiz Technical University

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Abstract:

The purpose of this paper is to introduce the deeper cosmological and ontological symbolism and significance of three concepts in Islamic philosophy and mysticism that affirm the significance harmony as both the origin and outcome of universal equilibrium; first, the concept of 'ubūdiyya or subjugation, second, the concept of sujūd or prostration in prayer and, third, the concept of oneness, in the works of three noted medieval Islamic thinkers and philosophers: Abū Ḥāmid al-Ghazālī (1058-1111 CE), Muḥyī-d-Dīn ibn 'Arabī (1164-1240 CE) and ibn Qayyim al-Jawziyya (1292-1350 CE). After examining the exoteric and esoteric connotations of sujūd and its intimate relationsip to the Islamic view of subjugation, this paper then explores how these two interrelated concepts can elevate the spiritual seeker to a state of 'oneness', a mystical awareness of the harmonious unity of the cosmos. This paper comes to the conculsion that to the Islamic mystic and thinker, subjugation, and its external manifestation sujūd, go beyond the individual and humanistic to the universal and cosmic since all creation is in perpetual metaphorical universal subjugation and sujūd before the universal Laws of Allah. The 'Angel-Human' who through his or her free-will performs sujūd, and who has been fortunate enough as to be enabled to do so through mashī'a or Divine Decree, transcends spatial and temporal limits, and actively participates in the harmony universal subjugation of all that is created, both celestial and terrestrial. While subjugation and sujūd can aid the 'Angel-Human', or the seeker of Divine Truth, in synchronizing him or herself with the harmonious order of the cosmos, the act of contemplative meditation, tafakkur, can transport the seeker to a state of fanā', and subsequently to a state of oneness, where all apparent shapes, physical boundaries, and restrictions of the intellect are annihilated to reveal the True One Omnipotent Creator.

EFFECTS OF DIFFERENT AGROECOSYSTEMS ON CT-MEASURED SOIL PORE CHARACTERISTICS

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Abstract:

Pore characteristics of soil are important for water infiltration into the soil and transport within the soil. The objective of this study was to examine effects of different agroecosystems on some soil pore parameters (number of macropores, macroporosity, and pore circularity) using computed tomography (CT). Undisturbed soil samples (76.2 mm diameter by 76.2 mm long) from agroecosystem sites (Tucker Prairie, TP; Prairie Fork, PF; Conservation Reserve Program, CRP; and row crop, RC: corn/soybean rotation) were removed with three replicates from the 0-40 cm soil depth in 10 cm increments. Five CT images from each soil sample were acquired using a X-ray CT scanner with 0.19 by 0.19 mm pixel resolution with 0.5 mm slice thickness and analyzed with Image-J. Soil under TP, PF, CRP, and RC on average had 42, 22, 27, and 8 macropores on a 2500 mm2 area, respectively across all the depths. Tucker prairie and conservation reserve program sites had significantly higher macroporosity (0.036 m2 m-2, 0.041 m2 m-2) than other sites. The CT-measured number of macropores (>1000 μm diam.) were 5 times higher for TP when compared with RC site. The CT-measured pore circularity values were lower for CRP and RC sites. The study showed that native prairie can improve CT-measured soil pore characteristics.

Keywords: Agroecosystems, Computed Tomography, Image Analysis, Soil Pores

ICSD 2019

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