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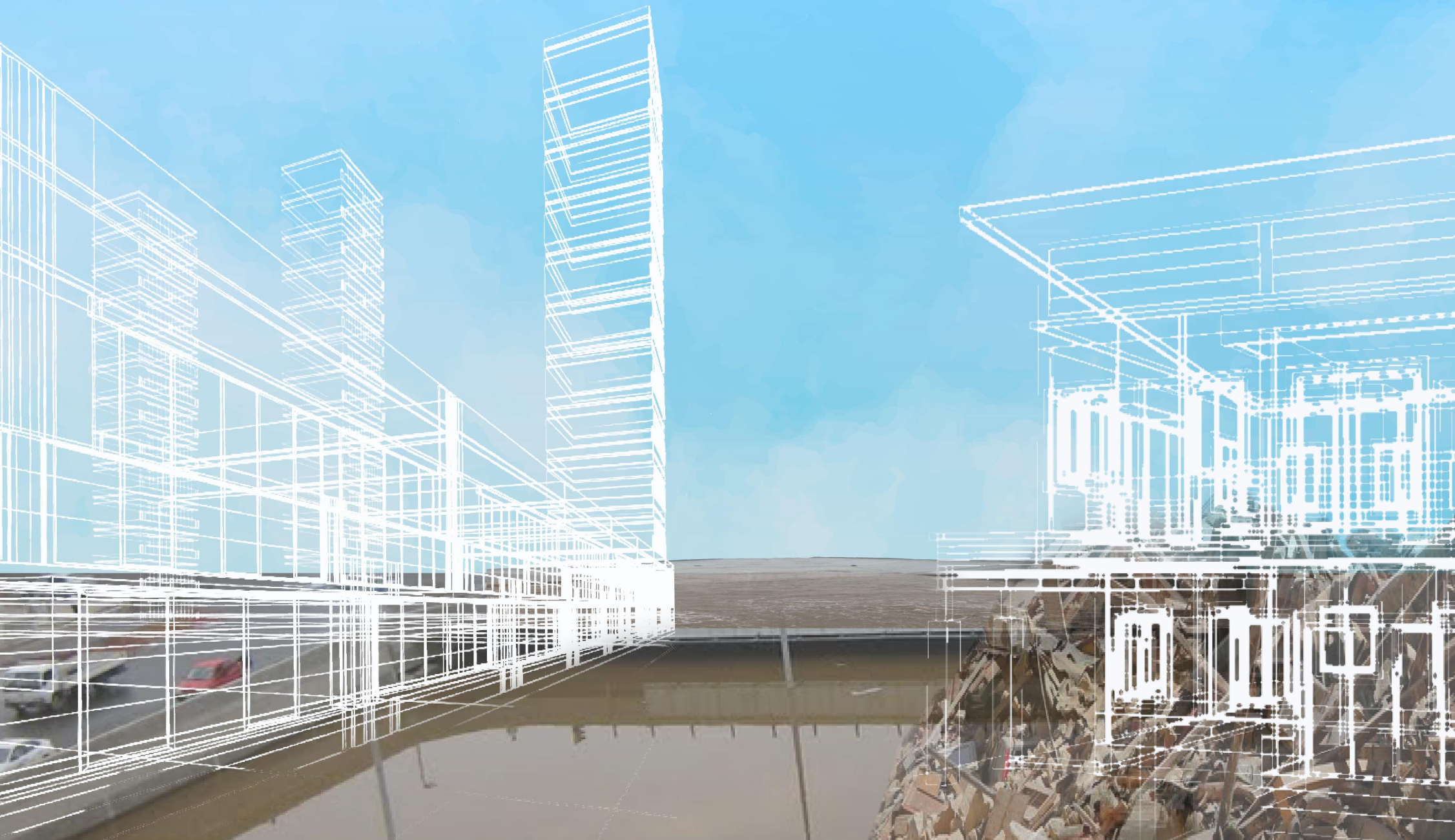


**MEMARYAT**  
Effat University

Architecture Department Welcomes you to the

## 2nd Memaryat International Conference - MIC 2018

### Architecture and Urban Resiliency



 18-19 April, 2018

 8:00am-5:00pm

 Effat Library & Cultural Museum - Gate 9

#### Theme One:

Resilient Buildings and Structures

#### Theme Two:

Resilient Cities: Challenges and Solutions

For more information please contact: PO Box 34689 Jeddah 21478 KSA, TEL. 920003331, FAX : +966-12-6377447  
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# 2nd Memaryat International Conference

## MIC 2018

### Architecture and Urban Resiliency



The ***Second Memarayat International Conference (MIC 2018)***, under the theme: *Architecture and Urban Resiliency* is another chance of knowledge and experience that is organized under the umbrella of Effat University.

The concept of resiliency at its core is most vital to the built-up environment and ours in particular. Effat University salute MIC 2018 participants for their efforts and valuable contributions to this event that is now, in its second round, became a focal point in Architecture, city planning, and urban design.

There are many questions shall be raised in MIC 2018 and addressed and shall find answers through the efforts of all participants. As ever Effat University is proud to showcase our educational supremacy through Memarayat exhibition, Effat organized this conference to additionally contribute to the global scientific debates in hot topics. At Effat University, we continue to pair education with what is beneficial to the community, sciences, needed research and the needs of the workforce.

We pray for continuous success and the chances to always be of benefit to our beloved country and communities.

Dr. Haifa Jamal AlLail  
President of Effat University

# 2nd Memaryat International Conference

## MIC 2018

### Architecture and Urban Resiliency

MEMARYAT  
Effat University



**W**elcome to MIC 2018

It is my great pleasure to welcome you to the **Second Memaryate International Conference MIC 2018**. **'Memaryate'** is an Arabic word that indicates two interrelated meanings: the first is the 'female architects' and the second is the 'discourse of architecture'. Memaryate was first used in 2008 to name the first Architecture Exhibition that introduced the work of the first female students of architecture in Saudi Arabia here in Effat University.

The Second Memaryate International Conference is dedicated to **Architecture and Urban Resiliency**; thus, it is of great significance in the exploration of the multifaceted paradigms and avenues of the built-up resiliency, which are complex in nature and involve multiple-terms effects. The conference revolves around two central themes constitute focal points for participants to initiate networking, workshops, roundtable discussions and inspirational presentations:

1) The first theme deals with the **Resilient Architectural Design and Construction**. It discusses the premeditated architectural design resilient approaches, experiences, and theoretical thoughts of different building functions and types in response to vulnerabilities to multi-dimensional challenges detrimentally affecting life quality of users. The interlinks of buildings resilient performance are about the holistic city systems; active and passive building resiliency techniques and resilient management systems, environmental challenges (climate change consequences for example) to architectural conceptualization and implications on architectural design paradigms, in addition to heritage buildings and resilience approach to historic preservation.

2) The second theme of this conference, **Innovations in Crisis Resiliency & Disaster Preparedness in the Built-environment**, deals with the important issue of natural and human-made disasters and presents steps to move practice into a community leadership role in smart growth, emergency planning, and real-time responsiveness. This theme covers innovative design strategies that combine smart growth, emergency planning, and hazard mitigation. In awoken of natural disasters, wars, epidemics, and other forms of crises, there is a growing movement for building resilient communities and responsiveness to severe natural and human-made shocks.

I hope this scientific gathering contributes to the international debate over the resilience of the built-up environment at all levels of the stakeholders.

**Dr. Mervat El-Shafie**

Dean, Effat Collage of Architecture and Design Effat University

# MIC 2018 Keynote Speakers

## Professor Hisham Elkadi



Professor Elkadi is currently hold the position of the Dean of School of the Built Environment at the University of Salford in the United Kingdom, a very successful and highly ranked school within the discipline. In the time he has been at Salford, Professor Elkadi demonstrated a capacity for strong and strategic leadership, relationship building and creating and implementing a model for Smart Urban Futures. He has contributed to regeneration of a number of cities including Geelong, Australia, Rome, Belfast, Salford and Manchester.

Hisham has a large number of publications (140+), 5 books, and graduated 25 Ph.D. students and attracted more than £1 million of external research grants.

## Professor Amr Abdalla Attia



Dr. Amr is currently a Principal Director for Planning, Design + Economics at AECOM Arabia which is ranked #1 in ENR - Engineering News Record 's "Top 500 Design Firms" for 8th consecutive year and is One of Fortune magazine's "2017 World's Most Admired Companies". Dr. Amr won, managed and delivered for AECOM several multibillion dollar programs and projects.

Dr. Amr is a Professor of Planning & Urban Design at Ain Shams University. He has been teaching urban planning, urban design, and architectural design for undergraduates and post graduates since 1991. He supervised more than 25 Master's and Doctorate Dissertations and participated as a jury member in many others.

## Professor Ahmed Rashed



Professor and was the former Head of Architecture Department at the British University in Egypt, and now the founding director of Farouk ElBaz Centre for Sustainability and Future Studies (FECSFS). Prof. Rashed was the chair of Architectural Department, Mansoura University, Egypt from 2004 to 2008. Graduated from Assiut University (Egypt) 1984), got MSc. from (Assiut University and King Saud University, Saudi Arabia) 1990, and obtained his Ph.D. January 1995, in Architecture Planning and Conservation, from University of York, UK concentrated on Public Participation for Luxor, Egypt. He worked as professor at different universities in Egypt, Saudi Arabia and the United Arab Emirates. He got different scholarships among those the FCO managed by the British Council from The British Government 1990/91, the American Research Center in Egypt 1992/93 and the Chevening 1993/94. He published about 80 academic papers in international conferences and magazines.

Professor Rashed was the Conference Chairman on the first International conference at the British university "November 2010" under the title "Future Intermediate Sustainable Cities" (FISC), as a result emerged The Centre of Sustainability and Future Studies (CSFS) to be Research and Development (R&D) Centre to address future sustainability in terms of environmental, economic, and social. Also Prof. Rashed was the Chair of the second International Conference at the British university "May 2016" under the title of "Mega Sustainable Projects: Chance Change Challenge" (SMP). And the Chairman of the "Green Heritage: Chance Change Challenge" which was from 6-8 March 2018". Prof Rashed was the initiator for several International and National Competitions and Campaigns; "Taking Leave competition (for Future Sustainable Cities), Hope and Work Competition for developing Suez Canal region, Civilizations rights to build Civilization Campaign, and the use of Graduation projects to find solution to our national needs. Professor Rashed was the president of AGTBE (The Association of Graduates & Trainees from Britain in Egypt) from March 2013 till Feb 2015 and now the treasurer of the association, board member of the Egyptian Society of Architects June 2011 till now and member of many other local, International and profession organizations

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## **Applying window to wall ratio analysis to determine the level of façade design adaptation to solar orientation for building in Al- Madina Al-Munawara Central District**

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*Abstract*— This paper studies the notion of how often do architects take into consideration building design response to climatic conditions. This is examined by finding correlation between façade window-to-wall ration (WWR) adaptations to solar orientation. This examination is done on a time-period, function, and contextually controlled urban wide sample; Al-Madina Al-Munawara central district. The WWR of those buildings are compared to solar radiation amount for eight façades orientations. This comparison is used as indicator for climatic design response on building façades. A sample representing 22% of the buildings has been surveyed and analyzed. Preliminary results show that the overall average WWR were 0.35 ranging from as low as .01 to a maximum of 0.76 with a standard deviation of 15.4. WWR was compared to façade orientation and local solar radiation for correlations and, comparisons for Zones, to be presented in the study. The relation between WWR and orientation was found to be insignificant, with a very weak positive correlation suggesting lack of intentional climatic design

*Keywords*—*component; Climatic design; Façade design; Adaptive design; Void-to-solid ratio; Windows to walls ratio*

## **Resilience Movement and Changing How Communities Approach the Challenges They Face: How Architects Can Lead?**

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*Abstract*— Quite recently, considerable attention has been paid to building resilient communities. The innovative design strategies that combine smart growth, emergency planning, hazard mitigation, and responsiveness to climate change and severe weather now become highly demanded. Resilience is defined as “the ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions”. Many think that term is referring to potential environmental shocks like fires, floods and earthquakes, but resilience as a concept can be extended to include everyday stresses such as chronic water and electricity shortages, economic inequality, inefficient buildings and life quality of users. How architects can lead to maintain a quality indoor environment for buildings in urban communities is the question this paper seeks to address. This study is exploratory and interpretative in nature. Thus, more attention will be given to the role can local authorities and NGO’s initiatives do to mainstream quality indoor environment for buildings into national development plans thus integrating issues of climate, disaster risk and energy at building level to build resilience, reduce energy demand and sustain development. The fundamental aim is to help communities in hot climate regions build resilience to the growing social, economic, and physical challenges by applying innovative design strategies and theoretical thoughts.

*Keywords*— *Resilient communities; climate change; innovative design strategies; quality indoor environment.*

## إنترنت الأشياء أداة لمرونة المدينة ومظهر للضعف الحضري

يوسف بركاني

أستاذ مساعد جامعة الملك سعود، كلية العمارة والتخطيط، قسم العمارة وعلوم البناء، الرياض، المملكة العربية السعودية

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### الملخص:

مع استمرار التوسع الحضري السريع أخذت المدن تعتمد بشكل متزايد على إنترنت الأشياء بالرغم من هاجس الهجمات الإلكترونية وضعف الأمن المعلوماتي الذي لا يزال أقل تحقفاً والذي هو من أكثر التحديات الناشئة . ولفهم مدى مرونة اعتماد المدينة الحضرية على إنترنت الأشياء وتحدياتها أجري استطلاع للرأي على شبكة الإنترنت للحصول على رؤى الخبراء المقيمين في المملكة العربية السعودية والإمارات وقطر باعتبارهم أسرع المناطق الخليجية نمواً حضارياً واستعمالاً لتكنولوجيا إنترنت الأشياء . فالقضايا المشمولة في المسح يشمل أنواع الأجهزة للوصول إلى الإنترنت والوقت الذي يقضيه الوصول إلى الإنترنت ومدى اعتماد المدينة الحضرية على إنترنت الأشياء والشعور حول التهديدات الهجمات الإلكترونية واختيار الخدمات الأكثر عرضة للتهديدات السيبرانية. وخلصت الدراسة إلى أن حتمية تعرض المدينة الحضرية للهجمات السيبرانية أمر لا مفر منه في الوقت الحاضر، كما أن الكثير من الناس والمدن ترتبط أجهزتهم الرقمية بالإنترنت وأكثر من ذلك فإنها تشمل خصوصياتهم و تهدد أمنهم وخلافاً للضعف الحضري التقليدي فإن إدارة الضعف السيبراني محدود المعرفة الا من عدد قليل من الأفراد والشركات المتخصصة ولتعزيز مرونة المدينة في مقاومة الهجمات السيبرانية يحتاج المجتمع الحضري إلى فهم الأفكار الأساسية وراء البرامج الضارة والتشفير وحتى فهم تقنيات الذكاء الاصطناعي.

**الكلمات المفتاحية:** إنترنت الأشياء، المرونة الحضرية، التهديد السيبراني.

## Shipping Containers as a Modular Component for Green Economic Buildings

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*Abstract*— Nowadays there's a great interest in using shipping containers as a basic unit to build economic buildings as it is concerned to be a highly customizable modular element of large structures. Building economic buildings are challenging due to the huge growth of population in Egypt. This research aims to provide the assessment of feasibility using shipping containers as a way to find some solutions for building economic buildings towards green architecture in Egypt through investing weather using shipping containers as a modular component in buildings construction is more economical than building using traditional methods. This comparison focuses on established planning & design goals, define and evaluate space requirements, review benchmark standards & guidelines, thermal comfort, alteration issues, and construction cost as a way to provide an overview of the performance of shipping containers buildings as an approach towards economic green buildings in Egypt. This research relay on extrapolation, analytical and descriptive methodology. The theoretical part includes related concepts of building using shipping containers as a modular unit, traditional building construction methods, and eco-friendly buildings properties. In its comparative analytical part, the research demonstrates features and characteristics of using shipping containers and traditional methods in building construction applying certain defined criteria to get an idea about quantity and quality of economic and green buildings in Egypt and how it will serve social needs. The Conclusions will be drawn from the findings of this research to prove that shipping containers are more economic building modular components that will be easily used in Egypt's green buildings.

*Keywords:* Shipping Containers; economic buildings; eco-friendly properties; low construction cost; recycling.

## **A Heterogeneous Resilient Approach to Urban Regeneration**

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*Abstract*— The city of Jeddah is going through a historical leap of development, as part of the urban development plans of the Kingdom of Saudi Arabia. The growing population and the expansion of the city size have generated fast development needs, both in infrastructure and in social life. The massive urban growth and the development of open spaces, gardens, and parks towards the north of the city are still looking for a shape and a form that can express the uniqueness of Jeddah's spatial environment. However, the current development is leaving an important part of the city with less attention, despite of their historical and spatial significant contexts. This paper aims to present a concept of a holistic approach to understanding the relationship between urban development and landscape development in the regeneration of unplanned districts in Jeddah. The research is investigating the socio-economic and urban development factors that influenced the social life and resulted in the deterioration of many of the unplanned districts in Jeddah city. East-Boughdadya district, in the South of Jeddah, is one of the unplanned districts that emerged out of the medieval city wall. The main objective of this study is to propose a heterogeneous resilient and sustainable model for the upgrading development of East-Boughdadya that might also be applicable to other districts in Jeddah.

*Keywords:* Jeddah, landscape development, heterogeneous resilience, spatial resilience, regeneration of unplanned districts.

## **Toward Walkable Neighborhoods: The Case of Jeddah, KSA**

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*Abstract*— The rapid urbanization of cities has affected the qualities of neighborhoods. Motorization became a vital focus in the planning of neighborhood streets, which resulted in an unsafe environment for pedestrians who share the road with vehicles. Planning and designing for a walkable neighborhood is a vital component for promoting healthy public life, creating sustainable neighborhoods, enhancing social life, increasing quality of life, and reducing the independence on automobiles (Singh, 2016). The objective of this study identifies the interrelationship of the neighborhoods urban form and walkability. An international case studies of walkable neighborhood is analyzed to conduct global practices. Then, an investigation is conducted locally in Al Zahra, one of the most populated neighborhoods located in Jeddah. Streets selected are analyzed through public surveys to highlight the most imperative factors of the neighborhood. The research concludes with recommendations for walkable neighborhood best practice in Saudi Arabia. The outcome should contribute to the Saudi 2030 vision of creating a vibrant society by promoting a fulfilling and healthy lifestyle and improving livability in Saudi cities.

*Keywords:* Walkability, Healthy city, Neighborhood, Saudi Vesion, Jeddah, KSA.



## **Toward Livable Public Waterfronts: Bio-climatic Design Approach**

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*Abstract*— While active and thriving waterfronts has been a goal for great cities, many recreational waterfront developments are only superficially satisfying. They lack substantial urban design qualities needed for the user's comfort and attraction especially in hot areas. The harsh climate conditions pose a challenge for decision-makers in finding the appropriate strategies to enhance climate resiliency and the outdoor comfort of its users. Enhancing the user's comfort will encourage people to spend more time outdoors, with the potential to improve their physical health, enrich their social cohesion, and enhance the overall quality of life. This study evaluates the urban design environmental quality of the recent developments of Jeddah north corniche. The objective is to analyze the interrelationship between physical setting, climate, and culture, which will assert in understanding how physical patterns can enhance the users' comfort. The findings of this research involve the development of sustainable waterfront design principles based on bioclimatic and cultural criteria, aiming to create livable, comfortable and sustainable urban environment. The outcome should contribute to the Saudi 2030 vision as follows: 1) Enhancing livability of Saudi Cities through improving the landscape and facilities of Jeddah urban waterfronts. 2) To encourage citizens to exercise at least once per week through enhancing the microclimate condition of waterfronts open spaces.

*Keywords:* Urban waterfronts, Urban Climatology, Jeddah, KSA

## **Rethinking Urbanization: Cultural Mobility and Social Change**

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*Abstract*— The article presents sociology of literature- a sometimes overt and sometimes implicit comparison of how the process of change has been viewed by various disciplines with the approaches of various writers who articulate the human response.

The writers have been preoccupied with the complexity of this process over a wide span of time. Writers have been selected on the basis of how they evaluate rural and urban experiences and expectations of various ethnic groups. The writers confirmed how firmly linked to urbanization and modernization with changes in social mobility, race and class relationships, and the cultural orientation of individual and society. The quest for cultural mobility invariably leads to urbanization or spread of social changes and cultural mobility in the name of modernization.

Urbanization itself threatens cultural enclavism and ultimately demands social changes parallel to cultural mobility. It was found that there has been an evolving and cumulative urbanization with the dominant appearance of social changes and cultural mobility. It was also seen these social changes linked with urbanization are well indicated for the treatment of perennialists with some side effects in this regard.

*Keywords: urbanization, social change, modernization, society, cultural mobility*

## Energy efficiency of existing buildings in hot and dry climate with reference to the city of Riyadh

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*Abstract*— The issue of energy conservation is becoming more critical and alarming people globally. Buildings are responsible for considerable amount of heat consumption for much daily use such as heating and cooling. One of the most important aspects to achieve the vision of Saudi Arabia 2030 is to provide more energy efficient buildings which consume less energy. Most of research carried out aiming to improve building which is designed from the first stage. However, the dominant amount of energy is consumed by the existing buildings which are built without guide for energy efficiency. The aim of this research is to provide solutions for building which have been built, and try to minimize the amount of energy consumed. The research will use one of the most powerful energy simulations (TAS EDSL) which is used globally to predict energy efficiency in buildings. In addition to that the research will focus on the buildings which are located in the microclimate of Riyadh. It is expected that the size of glazing system is the leading variable which can be modified in the existing buildings.

*Keywords:* Buildings; energy saving; energy performance; thermal analyses; numerical technique; Riyadh of city.

## **Zero-Acreage Farming (Zfarming) as a Strategy for Fostering Urban Resilience**

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*Abstract*— Rapid urbanization is causing rapid depletion of agricultural lands in urban areas of many developing countries. This trend is undermining the quality of biodiversity and terrestrial ecosystem services and is likely to expose urban areas to extreme climate events. In order to strengthen urban resilience, researchers and practitioners have recently advocated the use of some adaptation strategies such as roof top gardens (RTGs) and vertical green walls which fall under Zero-acreage farming (Zfarming). The current study explores the potentials of Zfarming in boosting urban resilience in the fast urbanizing economies. In order to understand options for supporting future resilience, the study relied two rounds of the Delphi technique to measure opinions of experts from disciplines of Architecture, Estate Management and Valuation, Environmental Management, Geography, Quantity Survey and Agricultural Economics. The experts' views were analyzed using Totalizer software which highlights the key issues that the experts endorsed. As a whole, the experts overwhelmingly endorsed Zfarming as a workable strategy that can create breakthroughs in enhancing urban food security, microclimate, air quality, as well improving family incomes and generating jobs for the urban population. The findings of the study elucidate that interdisciplinary perspectives are essential building blocks of urban resilience.

*Keywords*-Urbanization; Climate change; Adaptation; Vulnerability; Interdisciplinary

## **Improving Classroom Energy Efficiency and Thermal Comfort with Natural Ventilation in University Classrooms, Case Study Lecture Halls Complex at JUST**

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*Abstract*— Building sector is constantly expanding, and more dependence is occurring on methods that relied on energy consumption to provide the best indoor environment for occupants, especially on the service sector. Considering the whole life cycle of a building, the main part of the total energy is consumed during its occupancy for heating, cooling and lighting demands. The current research studies how applying different means of natural ventilation affects three performance indicators; indoor air temperatures (C°), CO<sub>2</sub> concentration levels (ppm), and the percentage of people dissatisfied (PPD). The aim of this study is to investigate the effect of applying natural ventilation on occupant's comfort: how it will enhance their satisfaction to the indoor environment, and how it will improve thermal comfort, enhance indoor air quality (IAQ), and therefore promote their performance. This study hypothesizes that applying natural ventilation on buildings in hot climates reduces air temperatures in summer and improves indoor air quality and user's satisfaction. This study is conducted on a lecture hall located in the southern wing of the lecture halls complex of JUST campus. Within a framework of experimental design research, the IES-VE computer simulation tool is used to prove what had been assumed. It also included providing CFD analysis to assess research outputs. The results showed that natural ventilation cannot only improve the indoor environment quality but can also be an efficient replacement to active systems in the lecture halls complex at JUST.

*Keywords:* Natural Ventilation, Thermal Comfort, Indoor Air Quality, Computational Fluid Dynamics (CFD), IES-VE.

## Public Space and Urban Resiliency in Developing Countries

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*Abstract*— With the dramatic increase of world population in the last few decades, urgent calls for more sustainable and resilient urban approaches have taken place around the world. Especially when taking in consideration that ninety percent of world population growth is in the less and least developed regions where many people are living under the poverty line in densely populated informal sectors that lack essential infrastructures and are prone to natural / man-made hazards. This paper focuses on Public Spaces and their importance in creating more sustainable and resilient urban settlements in less and least developed countries. Public space is a major key player in urban development. It helps to provide a better quality of life and participate in urban prosperity. In developing and least developed regions, Public spaces have multi-layered functions. They work as pathways of transportation and basic infrastructures. They support most of the informal trading sectors and are major centers for religious/ social and cultural interactions. The Paper will discuss different urban design approaches that use public spaces to enhance urban sustainability. It will use an analytical approach to analyze different types of public space projects in developing countries. These projects would be discussed through a certain set of criteria to evaluate their success in achieving their goal of improving urban resiliency and the quality of life of those communities.

*Keywords*— *Public Space, slums, Urban Development, social participation, Informal sectors.*

## Coastal City resilience: A case study of Chennai, India

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*Abstract*— In the past two decades, India has been on a growth path economically. This growth also saw major developments in real estate with almost all the cities ever expanding and exponentially growing beyond the limits which caused unexpected physical changes to the natural topography. During the first ten days of December itself, the city received 539mm of rainfall as against the monthly average of 191mm. On 1<sup>st</sup> December, Chennai received 272mm of rainfall in a span of 12 hours. The floods of 2015 in a few days caused havoc to the environment, ecology and to the citizens of the city. The government agencies were unprepared to handle the problem and the citizens themselves tackled the situation saving lives and properties. The cities like Chennai is just a tip of an iceberg. Many cities in India have faced similar situations of flooding, the country has a particularly bigger challenge as most of the major cities are on the coastline of India which is 5700Kms long. The city of Chennai especially is significant as it was one of the most affected cities during 2004 Tsunami that hit the state of Tamil Nadu. Hence the dangers are from both internal and external sides, from within due to floods and from outside due to the Tsunamis. There is also a fear of climate change and the rise in sea levels which may affect the city in future. This paper will look at Chennai from both scenarios and discuss the way the resilient community responded in the absence or the ineffectiveness of the government machinery. It will further, deliberate the need for a change in the attitude of the people towards these recurring disasters and the way to mitigate them through urban design that responds to the very life of the people who would build their resilience in facing these disasters.

*Keywords*— *floods, tsunamis, the coastal community, urban design, rainfall, topography*

## استخدام حاويات الشحن فى الإسكان المؤقت

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### الملخص:

تعانى الكثير من الدول حالياً من مشكلة الإسكان نتيجة للكوارث الطبيعية مثل حرائق الغابات والفيضانات والزلازل وفى ظل الأزمة التى تواجه الدولة يجب عليها التفكير فى حلول بديلة للمساكن الخرسانية عالية الثمن، ومهددة الوقت، والتى تحتاج إلى أعداد كبيرة من العمالة، فإتجهت بعض الدول لإستخدام حاويات الشحن التى أصابها الإهمال بسبب إرتفاع تكاليف شحنها من الميناء، ربما يكون هو البديل الجديد؛ حيث قامت بعض الدول مثل الصين والمكسيك واليابان والهند باستخدام الحاويات لما تتميز بها من سهولة ومرونة وسرعة تركيبها فى الموقع مباشرة بفضل هيكلها الفولاذي، وتتناول الورقة البحثية إلقاء الضوء على حاويات الشحن كحل من الحلول المرنة والسريعة للإسكان المؤقت، وتقييم مدى ملاءمة المسكن للاجئين وتتلخص إشكالية البحث فى إيجاد حلول سريعة وغير مكلفة ومرنة وملاءمة للموقع لحل الأزمة ومدى إمكانية إستخدام حاويات الشحن كأحد الحلول، وعرض بعض النماذج من بعض الدول التى نالت نجاحاً كبيراً، وتستند الدراسة على رصد وتحليل النماذج القائمة من ناحية الوقت، المرونة، ومدى ملائمتها بالنسبة للاجئين الجدد. ودراسة إمكانية تنفيذها ومدى ملاءمتها على أرض الواقع مع رصد عيوبها ومميزاتها، ويلخص البحث فى نهايته الى النتائج والتوصيات المرتبطة باستخدام حاويات الشحن كبديل للطرق التقليدية لتوفير المساكن الجاهزة والسريعة فى حالة الأزمات.

**الكلمات المفتاحية:** حاويات الشحن، إعادة استخدام، المباني المرنة.



## **Investigate a Proposal for Green Urban Sustainable System The Case of Jeddah City**

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*Abstract-* Contemporary cities continue to face significant environmental challenges, due to constant rapid urbanization. Furthermore, the governments of cities around the world are taking into consideration the green city approach by, converting their cities' weaknesses into opportunities. The 2030 Saudi vision continues to support the concepts of smart growth, with a vision of fostering economic growth and development. While ensuring that natural assets continue to provide the resources and environmental services that strengthen the country's foundation. This paper presents the results of the first part of ongoing master research by the first author under the supervision of the second and the third authors. The research aim is developing a Green Sustainable Urban Tool for Jeddah City. This paper is benchmarking sustainable urban tools to choose the most suitable tool that could be applied in Jeddah city to help it converting into a green city. The paper reviews the concepts and principles of green cities. It shows how cities can play an essential role to reduce the environmentally harmful effects on global in general and on urban spaces in particular. The paper reviews sustainable key performance indicators and benchmarking urban sustainable tools to identify the best suitable sustainable tools that could be applied in Jeddah city. The analytical literature review method and the assessment matrix evaluation are employed in the current research to achieve its goals. The findings of this research will identify the appropriate tools to be developed to meet the conditions of Jeddah City and will identify the key performance indicators of each tool.

*Keywords—* Key performance indicators – green city - framework- sustainable tools - Jeddah

## Design Guidelines for Health-Based Promenades in Jeddah

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*Abstract* —Due to the increased diseases spreading worldwide due to sedentary life, promenade designs are now being more popular and receiving attention to increase the physical activity of people and improve their health. This paper presents the results of the first part of an on-going master research by the first author under the supervision of the second and the third authors. The main research aims at setting and investigating new health-based design guidelines for the promenades in Jeddah. This paper aims at building the theoretical framework for these guidelines. The analytical literature review and the precedents analysis are the two main methodologies that have been employed to achieve the goal. Results showed that simple considerations should be taken into account to assure and maintain a health-based promenades in Jeddah that can affect positively people health and performance. The next part of the research will highlight the current situation in Jeddah, validate the accuracy and investigate the applicability of the proposed guidelines in Jeddah.

*Keywords-* Healthy City, Promenades, Jeddah, Design guidelines, KSA

## **Resilient Social Housing projects in Egypt, Is it Livable or Leavable?**

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*Abstract*— Social housing is one of the newest housing approaches that applied now in Egypt to provide low-income housing, Egypt, as most countries in the developing world, witnesses an enormous deficit in the housing units needed for low-income groups. As the provision and management of social housing to those who are unable to access the housing market is ` Since the mid-Nineteen Seventies, the Egyptian government implemented a variety of low-cost housing development polices and strategies including site and services schemes, core housing projects, partially completed housing units in apartment blocks, and totally finished housing projects and finally social housing This paper discusses and analyzes the recent Egyptian experience in applying the social house concept in providing low-income housing.in 6 October city by using conventional SWOT analysis to analysis economic, social, administrative and urban dimensions. Finally, The paper derives the implications that could be learned from this experience towards better application in the future.

*Keywords*— *Resilience - Social housing - Housing Policies - Sixth of October City-convention SWOT- quantitative SWOT*

## Vertical City Key for Land Uses Problems Solving Case of: Al Manama, Kingdom of Bahrain

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*Abstract*—Urbanism is building structure and spaces, which fits the human scale with different facilities and needs for the social and the residence. The Kingdom of Bahrain, as many other countries suffering from land scarcity, caused by the overpopulation. The overpopulation is rapidly increasing which consequently leads to physical expansion of towns caused by the urban growth. Government tend to do land reclamation upon the surrounding Gulf water to have enough land for the urban development.

However, vertical buildings are one of the solution in accommodating large amount of inhabitants, saving and building on much smaller lands vertically. Consequently, it will save the marine life and preventing the reclamation of land by constructing sustainable and affordable vertical buildings that accommodate large numbers of families rather than horizontal ones.

The concept of sustainability applied to different professions and majors, such as sustainable architecture. Due to the overpopulation, designers have think about a sustainable urban solution. This directed them to alternative solution to cities, which are vertical and sustainable. Therefore, the idea of this research is focus upon building communities vertically following the sustainable vision issues.

No doubt, that constructing such buildings will consider many issues for example environmental in term of climate and noise matters, social needs in term of privacy and safety and engineering subjects in term of services, structure system, that face the hazards of earthquakes and fire protection.

The research will explain and talk about the roots of the problems; such as suburbs, in addition to, urban spaces have tended to treat the horizontal extension of cities, with the ignorance and overlooking to it as vertical extensions. Moreover, the principles, pillars, technicalities and needs in building a vertical sustainable building with the human needs within a vertical environment will be within the context of the report.

*Keywords:* vertical city, land scarcity, overpopulation, sustainable, human needs

## Public Transportation System in Jeddah City

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*Abstract* — The purpose of this paper is to discuss the issue of lack of public transportation system in Jeddah city. The research starts with a reflection of Jeddah history in order to investigate the origins of the problem. Dubai public transport system is studied in the paper as a successful case study. This method is effective because Jeddah and Dubai are similar metropolitan coastal cities in terms of history, urban development, culture and climate. A comparison is made between Jeddah future public transportation plan and Dubai current public transportation plan to explore the possible solutions for Jeddah. The results show that Jeddah has a strong potential in the success of public transportations system.

*Keywords:* Jeddah, Sustainable Transportation, Dubai, Public Transportation.

## **Towards Resilient City: Resilient-Oriented Post Conflict Reconstruction: Insights from Urban Planning**

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*Abstract*— the rising number of countries engaging in conflicts, concurrently with the catastrophic situation in Syria and Iraq, reveals the necessity of post-conflict research. In the same time, the number of conferences and research concerned with urban resilience increased especially after the United Nations Office for Disaster Risk Reduction (UNISDR) declares 2015, the year of resilience.

While attaining urban resilience is essential in any city planning process, it is vital in conflicts contexts to ensure the validity and sustainability of the aftermath reconstruction practices which may be described as ineffective most of the time. Several factors drive the post-conflict reconstruction practices into short-sighted efforts that solve urgent problems instantly without considering how to build sustainable community that have the potential to withstand the expected recurrent conflict.

The research will offer an interpretation of urban planning as a tool to mitigate the consequences of conflicts and produce a more withstanding city. Guidelines for rebuilding a resilient city will be introduced after setting priorities of actions to underline the best practices and procedures related to post- conflict reconstruction.

*Keywords*— *Post-Conflict- Resilient City- Resilient Urban Planning*

## استدامة للمدن من خلال تحقيق علاقة مرنة وسليمة بين التنمية الصناعية والبيئة المحيطة

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**المخلص:** ترتبط البيئة الطبيعية بتوازن قائم بين عناصرها المختلفة فأبي تأثير على أحد هذه العناصر يؤثر على البيئة الطبيعية ككل. ويعتبر التوازن البيئي أحد أسس الحياة حيث أنه يحافظ على العلاقة بين عناصرها المختلفة. يعمل مفهوم التنمية المستدامة على الحفاظ على البيئة سليمة دون تلويثها لتستفيد منها الأجيال القادمة أيضا، وقد اضاف نيجل ريشاردسون 1989 البعد العمراني ومتغيراته ضمن ابعاد التنمية المستدامة حتى تتجسد سبل الاستدامة على ارض الواقع.

يهدف تحقيق المرونة في المدينة إلى رفع قدرة هذه المدينة في مواجهة التحديات في القطاعات المختلفة (الاقتصادية والاجتماعية والعمرانية والبيئية وغيرها) ومن بين هذه التحديات التلوث من الانشطة الصناعية، لذلك تحاول كثير من المدن زيادة فاعليتها لتحقيق التكيف لمواجهة هذه التحديات وتحقيق التنمية الصناعية السليمة دون التأثير السلبي على العمران القائم والمستقبلي.

ويهدف البحث إلى الوصول لعلاقة تنموية سليمة بين كل من الصناعة والعمران والبيئة الطبيعية من خلال تحقيق اسس الاستدامة والمرونة في المدن الصناعية، وذلك في إطار ينظم العلاقة بين عناصر كل منهم لتحقيق تنمية عمرانية وصناعية مستدامة ومتوازن وتحقيق التكامل مع الأنظمة الأخرى سواء على المستوى القطاعي أو المكاني.

وسوف يتم من خلال هذه الدراسة تحديد عناصر كل من التنمية العمرانية والصناعية تحليل العلاقات الاكثر ارتباطا وتأثيرا بينهما، واستنباط كيفية تحقيق اسس كل من الاستدامة والمرونة خلال هذه العلاقات وذلك للوصول للتنمية العمرانية الصناعية السليمة تحقق الازدهار للأجيال الحالية والمستقبلية.

## Impact of Collecting Memory in Building Jeddah Identity

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*Abstract*—Jeddah went through dramatic changes in the last 70 years, after demolishing the old city wall and oil booming which affected the identity, traditions, and lifestyle. Currently, Jeddah is placing residents on globalization, and a new vision for better quality of life that may transform the urban character and the socio-culture in the future. In order to eliminate the lack of city identity and change the people attachment to Jeddah new urban development; this paper will focus on the current memory of Jeddah residence and the relation between place identity and inhabitant attachment to understand the urban memory of Jeddah. The paper objective is collecting memories related to spaces and time in the city to express the relationship between the past and present in the city. The paper is trying to find the link between social activities, interaction and, place experience by asking Jeddah society about what kind of social activities places, social interaction buildings and landmarks that enrich Jeddah residence urban memory, city identity and sense of belonging. The paper methodology will be by having an analytical review of urban memory, place identity and place attachment elements. Accordingly, the paper will start conducting questioners and surveys about people collective memories related to different physical elements landmarks, buildings and social activities and place experience to map the collective memory of Jeddah residents. After analyzing and defining the results and understand the urban memory in Jeddah society, planner and developers will benefit from the results consider using and respecting the community memories from the past that related physical elements and social interaction that have to express into new forms of place-making in future development to increase the identity and the sense of belonging in Jeddah city.

*Keywords-* Heritage, Collecting Memory, Cultural Identity, Jeddah, KSA.



## **Bioclimatism and Vernacular Architecture as a Pass for New Sustainable Structure**

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*Abstract-* Vernacular architecture typifies a majority of constraints from places where it belongs, where the use of local materials and techniques is one of the key features. In comparison to industrially-produced materials, vernacular materials have low ecological effects, being an alternate for sustainable construction. The expanding utilization of new industrially-produced and standardized materials resulted in the homogenization of the several used construction approaches, and spawned a universal architecture that oftentimes has gone out of the environment context and it is very reliant on energy and other resources.

Vernacular architecture predicated on bioclimatism concepts was developed and used through the ages by many civilizations around the world. Different civilizations have produced their own architectural styles predicated on the local conditions.

This paper addresses via an analytical study to indicate the relationship between vernacular architecture, locally sourced materials and structure by relating them with bioclimatic zones. To assess the contribution of these materials for sustainability, an evaluation with industrial materials at level of environmental indicators was established. This paper highlights the advantages of using local materials and techniques as a factor of local socio-economic development. Also, indicating different solar passive features that are available in Vernacular architecture, related to temperature control and promoting natural ventilation by using locally available materials in their construction. Through this methodology, this study will introduce a new approach Bioclimatism and Vernacular architecture as a pass for new sustainable structure.

**Keywords-** *Bioclimatism, Vernacular architecture, of local materials and techniques, Sustainable Structure*

## Negative Effects of Human Activities on the Environment Nigeria A Case Study of Sokoto Metropolis

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*Abstract*— The paper stresses that environment is the total surrounding of man and other living organisms as well as the reservoir of natural resources upon which man directly or indirectly depends for his existence, support and comfort, which provide conditions for development and growth. In Nigeria as a result of rapid population growth in conjunction with poor planning, poor management and infrastructural decay the environment both physical and social suffers a great deal of set back and deterioration leading to low productivity and sustainability to human life as well as other living organisms due to negative effects of human activities. As such therefore, these will reduce the capacity of the environment to meet its social, ecological objectives and needs, there by affecting the presence and the availability of resources, economic growth and development of the Sokoto metropolis and Nigeria as a whole. It is on the above light, the paper is intends to examine the negative effects of human activities on the both physical and social environment with reference to Sokoto metropolis. In this paper observation and interview method where used collect and data collected where analyzed using basic descriptive statistic such as percentage, chart and table. The major finding of this paper, the environmental problems experienced in the study area, the result reveals that flooding which constitutes 46.2% of the total respondents is the common disaster in the study area due to human activities, the study also indicate that flood occurred in Sokoto metropolis along the Rima river valley as worst because of its damaging effects on the roads, submerged human settlements, destroy crops, wash away small farm lands, destruction and loss of live stocks, loss of human and properties as well as fisher men and herders were hit in the flood in 2010, this also show clear example of climate change within the study area. It indicates that the second environmental problem in the study area is pollution which constitutes 25% of the total respondents. This implies that human activities like agricultural activities, industrial activities, fishing activities, poor waste disposal, use of generators and vehicles in the study area are the major causes of pollution in area. However, soil erosion that constitutes 12.5%out of the total respondents is the third environmental problem in the study area due to excessive agricultural activities and cutting down of trees for fire woods, roads constructions and building constructions in the study area. Finally, the lowest environmental problem in the study area is desertification which account for only 2.5% of the total respondents. This shows that there is evidence of desert encroachment within the study area due to many negative human activities on the environment. Therefore, some recommendations are made; Proper land development policies and their implication, adopting correct solid waste disposal techniques like composing, sanitary land filling and incineration as well as waste minimization, recycle and reuse will pay rich dividends in this regard, there is a need for rational utilization of all non-renewable resources like wood and renewable resources like forest, air and water etc. And population control should be considered as a global problem instead of specific to a particular country. Since is the major factor that led to so many social environmental problems. Key words: Environment, Sokoto Metropolis, Human Activities, Natural Resources, Deterioration.

*Keywords-* Human activities, Nigeria, Sokoto metropolis, Environment.

## Detecting Egyptian New Cities Obstacles

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*Abstract*— Egypt is a desert country with more than 100 million inhabitants. Urban planning in old Egyptian cities was depending on the Nile valley, based on the old standards and codes of urban planning. In 1896 after Suez Canal drilling, deserts cities idea starts with Suez, Ismailia, and Port Said. In 1977, Egyptian government started launching new desert cities approach beginning by 10th of Ramadan city. New cities of Egypt divided into three generations according to their date of construction. Their main target of constructing these cities is to decrease the population pressure on old cities which give a chance to develop old heritage cities and save them for the longest possible period of time. After these new cities launched. There are some challenges and obstacles appear that faces these cities and disrupt reaching the main target and make them failed to accomplish their sustainable objectives. Nowadays, Egypt new vision 2030 has been launched from the governmental organization of planning to cope with the sustainability international standards. This research main aim is to know the current situation of the new cities in Egypt, to study the obstacles that face the cities, to detect the causes of these obstacles or problems which lead to the remarkable decrease in the number of citizens in new cities, and finally, try to help with few recommendations that help the urban planners being on the right way to solve these problems and give the chance to start developing and constructing new cities using sustainable principles. Accordingly, the research is going to help in delivering new vision to upgrade the new cities in Egypt and reach its main targets. Research results will be delivered through comparative analytical studies of international and national case studies and this will be linked with Egypt new vision 2030 urban development and high economy, and has a positive effect on it.

*Keywords*- *New cities, Egypt, Housing policy, National Planning, Regional planning.*

## Integral Design Approach to Architectural Education

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*Abstract*— Today’s fragmented world is leading to increasingly fragmented educational system to meet its demand. This results in reducing resiliency of youth’s ability to cope with constant change of their city and to comprehend creative ways of resolving its problems. Disciplines are expanding in their specialization, as they move away from each other resulting in losing the connections that make sense of the world to young generation. Architectural education, known since Vitruvius to encompass many fields of knowledge, such as philosophy, music, medicine, astronomy, and law (Vitruvius, 1960), has been subject to loss of holistic approach to gaining architecture knowledge. The architectural studio, where all various disciplines converge for the realization of the architectural solutions, has been reduced to a few concerns, such as form generation, enabled by information technology. While all digital tools and technological means, remain devices to support architectural realization for the well-being of society, the education of architects lost its ability to integrate the purpose of architecture, as a human social artifact, with all other material and non-material manifestations of the urban context. The purpose of this research paper is to suggest an alternative approach to architectural education based on a higher consciousness that transcends, yet aims to integrate and includes all aspects of natural, artificial and social realities. The research is based on Integral Theory as a framework for integral sustainable design (DeKay, 2011) with the author’s observations from practical application in architectural pedagogy. The research shows an emerging empowering theme based on four design dimensions that encompasses all aspects of reality aiming at minimizing the fragmentation inherited in current education practices. Such approach provides a framework for thinking that is applicable not only in architectural education, but also in real life practice.

*Keywords:* Integral Design, Architecture, Education, Fragmentation.

## Resiliency of Places: An Adaptive Approach for Shaping Urban Waterfront

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*Abstract*— Resilience is a multi-faceted concept frequently used across a wide range of disciplines, practices, and sectors. Resilience of a place does not refer to contingencies or should be associated only with the level of its vulnerability to the natural or man-made disasters such as earthquakes, floods, etc. in vulnerable areas, but it also considers long-term mitigation and adaptation strategies to face social, economic and environmental challenges.

Resilience thinking adds a strategic meaning to the sense of safety, security and protection from potential threats to society, economy and the environment. In fact, resilience as an approach encompasses much more than mere responsiveness or readiness for the crises. In planning theory and practice, resilience thinking has been invoked to analyze the relationships between communities and the environment. And in order not to see the cities as complex adaptive systems, it should be considered the interdependence between communities and the environment in which cultural and social relations play important role as the local ecology and habitat do. The relationship between these social and ecological systems is presented through the effectiveness of public policy and governance, adaptive capacity of the communities, and the role of nature and the benefits it offers in terms of ecosystems services, etc.

The paper applies an evolutionary resilience framework to the case of Jeddah Waterfront as resilient places in terms of their capacity for learning, robustness, ability to innovate and adaptability to change. In conclusion, socially innovative actions and initiatives are found to be a primary source of resilience through bottom-up creativity among communities and stakeholders to help improve social relations, support socio-political empowerment and fulfil the basic needs of the people. In addition, it should be taken into consideration the place-based effects of social, economic and environmental changes in both the immediate and the longer terms.

*Keywords: Resiliency, Urban Waterfront, Adaptive Approach, Social Challenges.*

## **New Architectural Intervention in Historically Sensitive Contexts: Historic Cairo & Old Jeddah as Case Studies**

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*Abstract*— Significance of historic areas in contemporary city centers relies on its nature as a product of accumulated layers of human history with its physical and non-physical aspects. These areas especially that represent part of the Islamic Arab cities in Cairo, Aleppo, Baghdad, Jeddah and others are distinguished by recognizing the humanistic dimension with its socio-cultural implications. The humanistic dimension added to the physical and formalistic aspects value and meaning for these settings beyond superficial and materialistic aesthetics. For many reasons there is a necessity to insert new facilities within the historic context in most of the city centers in the region.

On one hand, all previous researches and studies, that dealt with the issue of inserting new architectural development in the historic areas focused on the formalistic approaches of the intervention. On the other hand, design principles and guidelines issued by local authorities to control and guide the new architectural intervention in these areas focus on character, expression and façade's detailing. Yet, the new architectural intervention in historically sensitive contexts has not been researched at the level of humanistic approach with its socio-cultural and economic implications. This research aims to tackle this issue and establish principles and guidelines for dealing with new architectural intervention in these contexts through a humanistic approach with its reflections on the physical and non-physical aspects. The research aims also to answer the question; are design guidelines issued by local authorities for historic areas adequate in capturing the difficult questions of integrating new and historic buildings.

To attain the research objectives and answer its questions, in-depth field studies carried out at MSA University and Effat University in historic Cairo and old Jeddah are analyzed, investigated and discussed. Through this analysis and investigation the intervention approaches are examined and assessed to establish principles and guidelines that could be followed in dealing with the issue of new architectural intervention. The case study analysis is guided by significant principles that followed in a relevant project in old Cairo that received the international recognition and awarded the Aga Khan Award for Architecture for its perfect integration with the historic context. The research also examines and discusses the appropriateness of the design guidelines issued by local authorities in historic Cairo and old Jeddah to deal with the new buildings. The results of this research is expected to help those involved in making decisions affecting the quality of the historic built environment at all levels.

*Keywords:* contextual architecture, architectural intervention, historic Cairo, old Jeddah, humanistic architecture.

## Identifying the Urban Factors Affecting Resilience Strategies to Withstand Sea Level Rise in Coastal Cities

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*Abstract*— Resilience is defined as the ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions. One of these upcoming changing conditions is the Sea Level Rise (SLR) in coastal cities with its severe impacts regarding coastal erosion. Several models predict an accelerated SLR after 2040–2050 in response to the increased melting of the West Antarctic ice shelf. This dramatic environmental issue necessitates adaptation strategies for waterfront areas within these cities and take a rapid action to be prepared for this future. Such strategies will help stakeholders to identify vulnerabilities, assess environmental and health risks of disasters, establish benchmarks, and track progress in improving recovery capacity. Many approaches have been proposed and discussed on the planning, urban and architectural scale in order to achieve high degrees of waterfront adaptation. These approaches can be categorized as: hard protection, soft protection, accommodation, retreat, and attack. Selection of the most appropriate and efficient approaches are related to several implications and factors. Urban factors of waterfront can be considered as key issue in directing and proceeding adaptation decisions regarding varied and different conditions related to coastal type. The research will investigate this issue using comparative analysis between three coastal waterfronts with different physical and socio-economic characteristics for each and threatened by SLR, as most of its land is low-lying. The comparative analysis will be held for these strategies with respect to the coastal waterfront zones to state which strategy is more efficient with respect to each zone conditions/constraints. A coastal development phasing proposal will be executed throughout a timeline scale to achieve and fulfill these resilient strategies for urban development within each coastal city.

*Keywords:* Urban Resilience, Urban Strategies, Sea Level Rising, Coastal Cities.

## The Urban Voids Impact on the Community Activities in Jeddah - Saudi Arabia

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*Abstract*— Urban sprawl in Jeddah city, Saudi Arabia, is considered to be a major issue due to its negative impact on the urban resilient context. The uncontrolled urban sprawl has caused an expansion of metropolis. This expansion has caused the appearance of unutilized urban voids underneath the flyover. Furthermore, it has been noticed that the decision makers are disregarding this important phenomena of utilizing the urban voids under the structure. Furthermore, the major resilience challenges of our era, such as poverty reduction, natural hazards and climate change, environmental sustainability, and social inclusion making resilience planning critically important. Therefore, the aim of this research is to explore the urban voids impacts, in Jeddah especially under flyovers, on people's behavior and the built environment of its surrounding areas. In addition, this research will also discuss and review how the impact of urban sprawl of urban voids (under flyover in Jeddah) have a great impact on resiliency. The research methodology adopted for the purpose of this research is qualitative approach emphasizing on natural settings; focusing on interpretation and meaning; and giving attention to how people—or different groups—make use of the under flyovers. By taking the case of an urban void underneath the Bicycle (Al-Darajah) roundabout flyover.

*Keywords:* Urban sprawl, underneath flyovers, users' behaviors, Jeddah



## Assessing Coastal Cities' Vulnerability to Natural Hazards The Case of Alexandria

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*Abstract*— Coastal cities are substantially stressed by the implications of Global climate change. The sea encroachment on the dryland, the incremental storms' surge frequency and magnitude, and the abnormal heat fluctuations and waves are some phenomenon, in addition to many others, that have been occupying urban experts at both international and local levels. At the urban management level, the assessment of the coastal city's vulnerability to Natural Hazards events and implications renders as a key tool to urban decision takers in the formulation of mitigation strategies and policies. The aim of this paper is to provide a model of assessment for the city vulnerability to the current and future Natural Hazards taking Alexandria as a case study. The paper assesses the present and future vulnerabilities of the coastal city's urban systems and zones based on various event-based scenarios. The paper illustrates that the interaction between the coastal management and the seashore development plans is becoming a crucial policy under some unavoidable natural conditions.

*Keywords:* Coastal Cities, Natural Hazards, Climate change, Alexandria, Egypt, Vulnerability.

## Climate Change and Water-Related Hazards Facing Urban Areas of Alexandria, Egypt

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*Abstract*— As the climate changes during the 21st century, larger cyclonic storm surges and growing populations may collide in disasters of unprecedented size, posing considerable challenges to coastal cities, especially in low-lying urban areas. The linkage between coastal areas and climate change has received increasing global attention over the last decades. Significantly, coastal communities across the world face rising sea levels, as well as changing in storm surge frequency and magnitude, which affect most infrastructure and settlements that are located near the coast line facing the threat of natural disasters. The city of Alexandria, Egypt, is facing increasing challenges with regards to hydro-climate change and problems with land subsidence. As a result, it has been classified as one of the most affected coastal cities by climate change and increasingly vulnerable to flooding over the next two decades. In this respect, the primary aims of this paper are focusing on the drivers of water-related hazards, and assessing urban areas' vulnerabilities. This will contribute in the linkage between the relevant scenarios, which are theoretically based, and their ability to adapt in real fact condition in Alexandria. This will contribute in the linkage between the relevant scenarios, which are theoretically based, and their ability to adapt in real fact extreme events in Alexandria.

*Keywords:* Climate change, Urban Planning, Natural Hazards, Alexandria, Egypt.

## **Photogrammetry as a Budget-Based Tool for Preserving Jeddah Cultural Heritage: The Case of Documenting Heritage Buildings in Jeddah**

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*Abstract*— The Term Historic Building Information Modeling (HBIM) has been recently emerged as a definition for the process of creating a prototype library based on historic architectural data and paving the way towards virtual build heritage contexts. The first stage of the HBIM process is the documentation phase using different surveying tools such as laser scanners scanner combined with digital photo modeling. The next stage involves the Design and construction of a parametric library of objects. The final HBIM product is the creation of full 3D models including detail behind the object's surface concerning its methods of construction and material make-up. The resultant HBIM can automatically create cut sections, details and schedules in addition to the orthographic projections and 3D models (wire frame or textured) for both the analysis and conservation of historic objects, structures and environments. Such process depends on laser scanners is considered an expensive surveying tool that needs an expert for handling and processing. On the other hand as a part of the running project of: Jeddah HBIM. The paper reviews the process of generating HBIM 3D digital Model for one of the old heritage buildings in Jeddah through the process of photogrammetry and discusses the frame work of generating crowd sourcing platform for documenting Jeddah cultural heritage through engaging the public within mobile application for photogrammetry.

The paper will go through a literature review about photogrammetry tools and process, available mobile applications for applying photogrammetry in addition to crowd sourcing ideas, and then the process of photogrammetry will be applied on a heritage building at old Jeddah, discussing the obstacles and the values obtained through such process.

Finally, it will provide guidelines & a frame work as pioneer project for applying crowd sourcing and photogrammetry as cheap tool for public participation in documenting Jeddah cultural heritage.

*Key words: Photogrammetry, crowd sourcing, HBIM platform*

## Conceptualizing Climate Adaptation and Building Resilience in Urban Waterfront of Alexandria, Egypt

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*Abstract-* Alexandria is considered one of the most vulnerable Mediterranean cities to marine surges, and the constructions on its waterfront in the urbanized region face severe damage during any storm due to sea-level rise. The rapid and unplanned city expansion, along with the shortage of available data and monitoring systems, are additional factors that increase the vulnerability and urban disasters of the city and reveal the need of urban adaptation. Investing in building a climate-resilient city is far more cost-effective than bearing the full brunt of urban shocks and stresses that occur when there is risk due to maladaptation. The prioritization of proactive adaptation options will help the city to combat challenges, and ensure the resilience of its projected growth, safely and sustainably, with the preservation of environmental resources and economic activities. The aim of this paper is to present a simulation modeling for proposed adaptation scenarios in order to cope with marine surges' risks on urban waterfronts of Alexandria.

*Keywords-* Marine Surges, Sea-Level Rise, Climate Adaptation Strategies, Resilient City, Waterfront, Alexandria, Egypt

## City-to-City Learning Exchange: Resilience Building for Local Governments in the Arab Region 2016 – 2017

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*Abstract-* The Sendai Framework for Disaster Risk Reduction (SFDRR) was endorsed by the UN General Assembly in 2015, as a 15-year voluntary non-binding agreement with four priorities and seven global targets, which aim to ‘increase the number of countries with national and local disaster risk reduction strategies by 2020’ (SFDRR, target E). Facing similar urban challenges against the urban refugee crisis and climate change hazards, the Arab cities of Khartoum (Sudan) and Amman (Jordan) set a great exemplary in the notion to achieve to (target E) through the implementation of the UNISDR City-to-City (C2C) Learning Exchange Program for Disaster Risk Reduction and Resilience Building for Local Governments 2016-2017, in collaboration with the Arab Urban Development Institute (AUDI). This paper will outline the methodological approach applied in partnership with the UN HABITAT to develop the cities selection criteria, and the utilization of the UNISDR Scorecard for resilience assessment, to understand the cities urban risk profile and create a dialogue among the local governments for setting their cities resilience action plans. With the lack of availability, accountability, accuracy and usability of disaster data for urban governance, the C2C program main outcomes highlighted the need shift disaster management investments from emergency response to building urban resilience capacities, and fill the gaps in the existing data institutional infrastructures, to enhance communication between disaster risk reduction local and national stakeholders. The C2C program was a great opportunity to highlight the value of co-operative learning, and develop a roadmap to establishing an Arab Community-of-Practice on urban resilience, hereby encouraging other cities to tackle urban crisis challenges and climate change environmental risks in the Arab Region.

*Keywords-* Cities, Resilience Building, Local Governments, Arab Regions.

## **Water Management in the Challenge of Arid Land: A Case study of Storm Water Management in Jeddah**

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*Abstract*—Urban growth results in the rapid development of cities' infrastructure that includes roads sewer and utilities, the resolution made toward green infrastructure and water resources management as an essential component of an environmentally sustainable city. Considering the importance of this factor in Jeddah city as a hot-aired climate where municipalities and communities are striving to create a liveable sustainable urban centre. Water management strategies and rainwater reuse have long been recognized as a potential strategy for water scarcity, however, its application is very limited. The aim of this paper is to know how water uses is related to green space management. Suggest a solution to water crises in Jeddah to mitigate the impact on disposed rainwater. Proposing storm water to reuse option on plant irrigation and wetland reclamation that will mitigate the storm water runoff, improve the water use and re-establish very important eco-system, and at the end explore the possibility of applying the proposed technique in terms of economical volubility. There must be a fundamental shift in the way we manage and deal with the water resources. This means it is an issue of integrated environmental management to avoid water losses. Following the ecological approach that uses the mitigation of impacts on the wider environment to reduce the coefficients of change at which the environment gets worse.

*Keywords-* city, resilience, rainwater harvesting, waste management, environment, reuse.

## Smart City versus Resilient City

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*Abstract-* Nowadays there are many definitions of both "smart city" and "resilient city" concepts, every concept has its supporters who are seeing it as a magic stick which can solve all problems of the cities. Both concepts have their own roots and are on their way to become meaningful for citizens in many cities all over the world. Some writers consider resilience as a characteristic of smart city, while others believe that resilience will replace smart city concept.

This paper is an attempt to discover the similarities, contradictions or overlaps between the both concepts through making a comparative analysis for them from recent literature review to investigate how these two concepts were born, how they have developed, which are the shared features and differences between them, in order to build a deep understanding about each concept, and to conduct a framework about the real relationship between smart city" and "resilient city" to help researchers, governments and citizens in dealing with these two concepts with clearer view.

*Keywords:* Smart city, Resilient city, City strategies, Urban policies

## العمارة الديناميكية

تحقيق البعد الرابع في العملية التصميمية  
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**الملخص:** إنّ الديناميكية في العمارة هي مفهوم جديد و إبداعى يستند على ديناميكية الحركة ؛ فتكون مؤشراً لعصر جديد في الهندسة المعمارية ، وأساليب تصميم بنياتها، وما قد تكون عليه عمارة ومدن المستقبل . والديناميكية بمفهومها الجمالى تمثل رؤية جديدة للإنسان من حيث دوران المباني حول نفسها لتوفير الإطلاقات المتميزة ، والإستمتاع الكامل بالمظاهر الطبيعية ، وتقديم الخدمات الجديدة ذات التقنية العالية ، حيث يؤكد هذا المفهوم على أن المساحة التي يعيش فيها الإنسان يجب أن تكون ديناميكية وقابلة للتغيير و التعديل حسب رغبات و إحتياجات الإنسان . أما الديناميكية بمفهومها التنفيذي فهي تحتاج إلى تقدم تكنولوجى هائل وتكاليف عالية التنفيذ. وبين هذا وذاك يسعى المفهوم أن يجد له مكاناً على أرض الواقع فهو يمثل فكر جديد نما وتطور مع النهضة العلمية و التكنولوجية الحادثة الآن . والمتأمل في مفهوم الديناميكية لابد له بديهياً أن يجد لها أصول واضحة في الكون و في تعقب إيقاعات الحياه ، وتجليها في خلق الله عز وجل المتمثلة في حركة المجرات و الكواكب إستشهاداً بقوله تعالى (وهو الذى خلق الليل والنهار و الشمس والقمر كل في فلك يسبحون ) ، فالأرض تدور حول الشمس لتنتج فصول السنة الأربعة ، والأرض تدور حول نفسها ليكون الليل والنهار .

يقول حسن فتحى عن مفهوم الزمن : هو الفترة بين حدثين بالنسبة لنقطة ثابتة ؛ إما بتعدد الصور المتعاقبة ، أو ما يرصده من تغيرات بالبيئة الطبيعية ، أو التغيرات الفلكية في حركة الكون ، وأن التغيرات الفسيولوجية التي يلاحظ الإنسان حدوثها في جسمه تسير في اتجاه واحد غير قابل للتغير ، في حين أن التغيرات الفلكية الدورية كتعاقب الليل و النهار وفصول السنة ، وهي التي يستعملها الإنسان في قياس الزمن . وعرف أرسطو الزمن قائلاً بأن : "الزمن هو الحركة" ، وقد اتفق كثير من العلماء على هذا التعريف .

مما سبق يتضح لنا أن مفهوم الزمن يتطلّب إعمال الفكر لى يأخذ مكانه في الصورة المتكاملة لحركة تطور الكون و العمران ؛ والذى هو أداة تشكيله . تقوم هذه الدراسة على استقراء النماذج المعمارية الحديثة التي تتخذ من الديناميكية الحركية منهجاً تصميمياً بكل أبعاده الفراغية المادية الثلاثة و الزمن كبعد رابع في العملية التصميمية .

**مصطلحات البحث :** (العمارة الديناميكية - البعد الرابع - الزمن - الحركة - التصميم)



## Vertical City Key for Land Uses Problems Solving

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*Abstract-* Urbanism is building structure and spaces, which fits the human scale with different facilities and needs for the social and the residence. The Kingdom of Bahrain, as many other countries suffering from land scarcity, caused by the overpopulation. The overpopulation is rapidly increasing which consequently leads to physical expansion of towns caused by the urban growth. Government tend to do land reclamation upon the surrounding Gulf water to have enough land for the urban development. However, vertical buildings are one of the solution in accommodating large number of inhabitants, saving and building on much smaller lands vertically. Consequently, it will save the marine life and preventing the reclamation of land by constructing sustainable and affordable vertical buildings that accommodate large numbers of families rather than horizontal ones. The concept of sustainability applied to different professions and majors, such as sustainable architecture. Due to the overpopulation, designers have think about a sustainable urban solution. This directed them to alternative solution to cities, which are vertical and sustainable. Therefore, the idea of this research is focus upon building communities vertically following the sustainable vision issues. No doubt, that constructing such buildings will consider many issues for example environmental in term of climate and noise matters, social needs in term of privacy and safety and engineering subjects in term of services, structure system, that face the hazards of earthquakes and fire protection. The research will explain and talk about the roots of the problems; such as suburbs, in addition to, urban spaces have tended to treat the horizontal extension of cities, with the ignorance and overlooking to it as vertical extensions. Moreover, the principles, pillars, technicalities and needs in building a vertical sustainable building with the human needs within a vertical environment will be within the context of the report.

*Keywords-* vertical city, land scarcity, overpopulation, sustainable, human needs

## **Integral Planning, Design and Action as an Approach to Urban and Architecture Resilience**

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*Abstract-* The world is becoming increasingly more fragmented as a result of its increasing complexity, despite highly connecting information technology. As a result, the city and its inhabitants are losing their resilience in the face of physical, natural and socio-economic disturbances. The purpose of this research paper is to suggest a sustainable integral planning, design and action as an approach to urban, architecture and human resilience. This multidimensional and multi-scales holistic approach is based on a higher consciousness that transcends, yet aims to integrate and includes all aspects of natural, artificial and social realities. The research is based on Integral Theory as a framework for integral planning, design and action. The research shows an emerging empowering theme that encompasses all aspects of reality, while minimizing the fragmentation inherited in current practices of planning, design and action. Such approach provides a framework for thinking that is applicable in both urbanism and architecture.

*Keywords:* Fragmentation, Integral Planning, Integral design, Resilience

## Evaluating the Spatial Structure Resilience of Jeddah Neighborhoods

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*Abstract*-Nowadays, cities experience severe environmental threats such as: climate change, draught, flooding and heat waves which require a different approach to resist these stresses and adapt with them. Accordingly, the concept of resilience emerged, which refers to the cities capabilities to withstand and adapt with future threats. Despite that there are various definitions for resilience concept, there is a Concorde agreement regarding its aim; to make cities - through their capabilities - enduring and fulfilling its inhabitants' needs in terms of physical, social and economic aspects with a minimum physical deformation. In this sense, identifying the cities capabilities represents an important goal to recognize their resilient capacity which represent the aim of this paper. However, the research focuses on the neighborhood scale as it is more manageable and, by nature, it reflects the city resilience as a whole. Besides, the research addresses the neighborhood spatial structure resilience capacities because of its significant role and importance to the concept of resilient cities or neighborhoods, as reported in many references in the resilience realm. Based on these references, the qualities of neighborhood connectivity - internally and externally - mobility, accessibility and legibility represent the core values for a resilient spatial structure. Thus, evaluating these core values can reflect the resilience capabilities for the spatial structure under investigation. In this regard, the paper examined these core values in several neighborhoods within Jeddah city. Using space syntax theory and techniques, a quantitative analysis was implemented to evaluate these values. The results identified the spatial structure resilience capacity of the examined neighborhoods and mapped out the necessary interventions to enhance their resilience capabilities.

*Key Words: Neighborhood Resilience – Spatial Structure – Space Syntax – Jeddah City*

## Rating sustainability at Effat University-Towards a Green Campus

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*Abstract-* Creating society that lives seamlessly with the environment is a global growing trend that enhances environmental quality and creating healthy living and learning environments. The LEED rating system helps institutions plan for the future development, and help to evaluate current campus sustainable performance. It can help colleges and universities as a valuable tool to move towards and maintain sustainability. The aim of this research is to rate the sustainability level of Effat University campus with reference to the international rating system LEED v4 for Neighborhood Development. The University buildings and Landscape would be assessed with reference to some prerequisites and credits. This research will be carried on through assessing and surveying the university buildings and landscape elements on the site, and reviewing the infrastructure documents. The results of this research encourage adopting the holistic approach for Campus design, which potentially would help Effat University to improve the campus environmental and energy performance through recommending a set of evidence-driven actions to enhance the efficiency of the university buildings and landscape. Also, this would move Effat University one step towards developing a green campus.

*Keywords-* Sustainability, LEED, green campus, rating system

## الوظيفة الجديدة للمباني التراثية ودورها في استدامة عمليات الحفاظ New function of the heritage buildings & its role on the Conservation sustainability

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### ملخص البحث:

يعتبر الحفاظ على البيئة التراثية من أهم الإشكاليات المطروحة على الساحة المعاصرة من حيث إمكانيات التعامل وأهداف التنمية والحفاظ، لما تمثله من أهمية للدولة ولقائنها مما جعل الجهات المعنية بالدولة تتجه إلى عمليات الحفاظ على هذه المناطق وإظهارها في كيانات مستقلة والقيام باستثمارها وإعادة توظيفها داخل الكيان العضوي للمدينة. وتعد استدامة عمليات الحفاظ واحدة من أهم أهداف تنمية البيئات التراثية لأنها تهتم بجميع جوانب البيئة التراثية من مجتمع واقتصاد وبيئة، ومن ثم يتم وضع معايير للحفاظ وإعادة توظيف البيئة التراثية بحيث يتم مراعاة البعد الاقتصادي والاجتماعي لعملية الحفاظ وإعادة التوظيف ويركز البحث على تنمية المجتمع المحلي للبيئة التراثية من خلال ربط الوظيفة الجديدة للمباني التراثية المعاد توظيفها بالمجتمع المحلي وأنشطته الاقتصادية ويدرس البحث هذه التأثيرات من خلال مقارنة مشروعين تم تنفيذهما في بيئات تراثية مختلفة للوقوف على مدى تأثير الوظيفة الجديدة للمباني التراثية على المجتمع المحلي ومدى استدامة عمليات الحفاظ في كل من التجريبتين. ومن ثم يمكن تلخيص الهدف من البحث في محاولة إيجاد ربط الوظيفة الجديدة للمباني التراثية بالنشاط السكاني للبيئة المحيطة لزيادة درجة الاهتمام من قبل المقيمين بالبيئة المحيطة بالمبنى المعاد توظيفه، مع التركيز على دور الشراكة المجتمعية كأحد الوسائل لتنمية الوعي الأثري وتعريف المواطن العادي بأهمية ما تحتويه بيئته التراثية من آثار. يقوم البحث على فرضية أنه إذا تم ربط الوظيفة الجديدة للمباني التراثية بالنشاط الاقتصادي للسكان بالبيئة التراثية فإن ذلك يساعد على استدامة عمليات الحفاظ بهذه المنطقة. ولتحقيق هذه الفرضية اعتمد البحث على المنهج النظري لاستعراض الخلفية النظرية لعمليات الحفاظ واستدامتها ومعايير اختيار الوظيفة الجديدة للمباني التراثية، أما المنهج التحليلي فيتم من خلاله تحليل وتقييم عمليات إعادة التوظيف التي حدثت بمدينة (قوة- القصير) ومحاولة دراسة أهم العوامل التي ساعدت على نجاح أو أدت إلى فشل عمليات الحفاظ وإعادة التوظيف بالمدينتين.

### الكلمات التعريفية:

التراث المعماري - الحفاظ العمراني والمعماري - إعادة التوظيف - استدامة البيئات التراثية.

## **Resilient Human Ecologies: The Emergence of Urban Community Garden Webs in Jeddah**

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*Abstract-* Projections of an aging demographic will reshape Saudi Arabia in the next 30 years to become a new challenge facing the Kingdom occurring in tandem with the declines in oil reserves and revenue. Current birth rates reflect a decline in future urban center footprint and population. Food security, health care and demands on Saudi Arabia's social infrastructure will require the implementation of new human ecology strategies. Today, community gardens are quietly emerging throughout the urban fabric of Jeddah. These sustainable human ecologies enables, social networking, local food production and knowledge transfer across economic spectrums. This study reports evidence from a survey of Jeddah's emerging community gardens to illustrate how these resilient human ecology webs are being established by the local population. Visual evidence is analyzed to characterize three types of community gardens in the city. Discussion focusing on the rapid development of these human ecology webs in order to advance urban resiliency for the near and long term future. Outcome targets include, improved local food security, knowledge transfer related to urban agriculture, and human development strategies for healthy aging and social resiliency.

*Keywords-* Human Resiliency, Ecology, Urban Community, aging, Jeddah, KSA.