

Selected Abstracts for ICCASU3

Updated to 2019-04-10

1. Examining the Negatively Affecting Factors in Urban Green Spaces Supply to Measure Level of Accessibility in Bahir Dar City, Ethiopia

Abegaz, Fentaw

Kassahun, Samson

Ethiopian Civil Service University, Ethiopia

Registration Code: **E840F**

Urban green spaces are beneficial natural elements that assist sustainable development of the urban centres. Researches ascertained that green spaces faced different problems from plan preparation to their development and management. This study was designed to investigate negatively affecting factors in supplying urban green spaces and measure their level of accessibility. A sequential explanatory mixed design was employed to examine the problems of green spaces in Bahir Dar City, Ethiopia. Data were collected through spatial data manipulation, questionnaires of 305 households' responses and 30 officials' interviews. Factor analysis and ArcGIS-10.3 were used for analysis. The study showed that there is a scarcity of green spaces. They are not accessible with nationally and internationally set standards and are unevenly distributed due to prominent factors like the pressure of urbanization, the malfunction of urban planning regulations, the inefficiency of responsible organizations and the socio-economic challenges. Besides, the depletion of green spaces was aggravated by inferior priority for green spaces by the general public and the urban authorities. Hence, to redress those factors, appropriate strategies are suggested namely regulating green spaces encroachment, incorporating green spaces based on standards at the planning stages and properly functioning of collaborative planning and management.

2. Informality Meets Formality: Luanda's Urban Transformation

Anderson, David

Carleton University, Ottawa, Canada

Registration Code: **GCCV6**

Global urbanization is occurring at an unprecedented rate. While the West is mostly urbanized, the majority of urban growth in the upcoming decades will occur in Africa and Asia. In Sub-Saharan Africa, where 72% of urban dwellers already live in informal settlements, it is crucial that continued urbanization be managed with effective urban planning. In Luanda, Angola - designed for a population of 500 000, home to 6.5 million and set to accommodate 13 million by 2030 - the

consequences of rapid, unplanned urban growth are already acute. Over 40 years of conflict have pushed people from rural to urban areas. Most residents of Luanda lack basic services and title to their properties, most of which are self-built, one-story structures. In the absence of effective public transportation, the city is clogged with cars and roads are in awful shape. Informed by a range of local stakeholders, “Informality Meets Formality” offers an architectural response to address Luanda’s extensive slums. Focusing on the transition from lower- to middle-class households, prototypes for low-rise, higher-density housing were developed to accommodate the evolving needs of individuals and families (e.g., flexible unit layouts, shared public space, self-building, direct street access, reduced common circulation, etc.) Drawing on case studies, built projects, and failed attempts of social housing in Luanda and elsewhere, the project provides an economically and socially sustainable roadmap for the phased redevelopment of Luanda’s Cazenga district.

3. Vernacular Re-Urbanization: Morphological Exploration of Redeveloping Informal Settlements in Sub-Saharan Africa

Atias, Etai

Carleton University, Ottawa, Canada

Registration Code: **MU65Q**

The world is urbanizing at unprecedented rates, fundamentally, due to stark population shifts from rural to urban cities. These cities have become important drivers of development and poverty reduction in both areas, as they concentrate much of the national economic activity, while providing crucial links with rural areas, between cities, and even across international borders. Rapid and unplanned urban growth threatens the world’s sustainable development as a result of the necessary infrastructure not being properly developed or policies not being appropriately implemented to ensure that the benefits of city life are equitably shared. Such is the case with many Sub-Saharan African countries, namely Angola. A decade removed from civil war, Angola is reeling to respond to the growing informal population of Luanda—a city originally planned for half a million—currently hosting. Partnering up with local NGO’s and research teams, extensive research has aided in examining the prospects of slums in areas of Luanda and methods of pursuing a redevelopment strategy. This dissertation addresses the current urban and social issues and what policies must be assimilated to ensure an appropriate re-urbanization proposal to uplift the current living conditions. A consideration for the socio-economic and transformative lifestyle of Angolans has helped cater a design proposal that addresses the hardships typically associated with shifting a population from informal settlements to improved urban conditions.

4. Practices of Private Rental Housing and Its Policy Implication for Public Savants in Ethiopia: the case of Addis Ababa City Administration

Baraki, Goitom

Kassahun, Samson

Ethiopian Civil Service University, Addis Ababa, Ethiopia

Registration Code: U122C

The study investigates the practices of private rental housing and its policy implication for public servants in Ethiopia: the case of Addis Ababa City Administration. Specifically, the study takes a firm look the relationship between the homeowner and renter; the actual practice of private rental housing in the city, and the government policy options available to improve the private rental segment of the housing market to the public service employees in Addis Ababa City. In this effect, the research employed cross-sectional survey design with the use of concurrent triangulation mixed research method, which combines both quantitative and qualitative research methods. Quantitative data were collected through questionnaire from 422 respondents. In addition, qualitative data were gathered through in-depth interview, key informant interview and focus group discussion. The qualitative data was categorized manually according to the most salient themes, and then analyzed and interpreted thematically. The result shows that majority of the respondents do not have written contractual agreement with the homeowners. However, there is oral agreement between the homeowner and renter. Public servants faced discrimination based on their level of income, having children; due to household size; due to gender; religion and discrimination based on their ethnicity. There are no specific laws that specify or determine the scale of house rent.

5. Rural-to-Urban Migration, a Key Adaptation Strategy in the Face of Globalized Agriculture: The Case of Vietnam

Beaulieu, Antoine

Université Laval, Québec, Canada

Registration Code: FJPYS

Extreme poverty on a global scale persists, despite the many economic development efforts dedicated to fighting this problem. Agricultural intensification was supposedly encouraged to ensure food security for all, though several studies show its harmful nature in a context deeply marked by the search for growth and competitiveness, capitalism and productivism. Faced with challenges like overproduction and waste, many farmers around the world are struggling to safeguard the continuity of their agricultural production. In such contexts, farmers are showing

different ways of coping with the strains of globalized agriculture, for example employment in urban and industrial areas, a fact linked to urban and industrial growth. Such actions enable the multigenerational consolidation of land, a process that can help ensure the endurance of rural income-generating activities capable of absorbing shocks. However, there remains a need to assess the capacity of small-scale agricultural productions, particularly those that have experienced or are currently experiencing accelerated integration into the global agricultural market since the 1990s, such as Vietnam, to adapt to the compression of globalized agriculture. A doctoral study in progress has, among others, an objective of contributing to the verification of the hypothesis according to which migration from agricultural areas to industrial and urban areas, constitutes a new key strategy for Vietnamese farmers to increase their ability to cope with the pressures of global agriculture.

6. “Stuck in Freedom Park”: Youth Transitions and Social Inclusion amongst Coloured Youth in Tafelsig, Cape Town in South Africa

Brown-Luthango, Mercy

University of Cape Town, Cape Town, South Africa

Registration Code: **K8Z1P**

South Africa is experiencing a youth bulge, with much public debate about whether this spells success or disaster for the country's future. Some of the critical debates highlighted in the literature on youth, centre on youth transitions to adulthood, socio-economic and spatial mobility linked to issues of identity, inclusion and citizenship as well as agency and negotiation of alternative transition pathways. This article explores some of these issues by tapping into the literature on youth transition pathways, and linking them to Castel's notion of disaffiliation. In addition, interviews were conducted with 10 out-of-school, unemployed young people who reside in Tafelsig, Mitchells Plain in Cape Town, South Africa. The article argues that these sources of data allowed the author to describe and make sense of the different dimensions of “stuckness” experienced by the youth, and of the impact that being stuck has on their sense of belonging, inclusion and notions of citizenship. The study's findings were that short-term interventions might facilitate a slight shift in Castel's continuum from disaffiliation to integration for at least some of the youth. However, in the long run, significant improvements in the education system, a restructuring of the economy to address unemployment, and a spatial reconfiguration of South African cities to reduce poverty and inequality will have a meaningful impact on the lives of young people in South Africa. These improvements must be accompanied by a broad range of social and cultural program.

7. Women's Tenure Rights and Land Reform in Angola

Cain, Allan

Development Workshop, Luanda, Angola

Registration Code: **K6JUJ**

Current Angolan municipalisation reforms present a unique opportunity to affect local practice on how community and individual land-holder tenure is administered and to protect women's equitable rights to land. Angola is a post-war country, with weak land tenure legislation and limited local government management capacity. The post-socialist inheritance has left the State as the formal owner of all land. In practice however there is an active informal land market, large scale-land grabs by urban elites, and increasing conflicts affecting communities, small holders and families, particularly those headed by women. Customary traditions are practiced in the various regions of the country do not respect women's rights of ownership and inheritance. More than 62 percent of the population live in informal settlements with insecure land tenure under the threat of forced evictions. Families living in poor communities affected by the expansion of cities and towns are particularly vulnerable. Of these, families lead by women are the most at risk. Securing rights to land and housing assets are important to livelihoods of women headed households by permitting access to financing that they require to grow their enterprises as well as upgrading their housing. The strategy to support women's rights to land should be linked with institutional capacity building for the new municipal administrations. It is hoped that women's participation in municipal elected decision-making bodies will support efforts to strengthen their tenure rights.

8. The Inspiration Effect of the Policies and Regulations of Jiangsu Industrial Park on the Development of Ethiopian Industrial Park

Chen, Xiao

Wang, Xingping

Southeast University, Nanjing, China

Registration Code: **U15E8**

In the development process of industrial park, policies and regulations play an important role in promoting the development of industrial park, and also function as the important factors for the success of the industrial parks in China. As one of the provinces in China to establish a national-level development zone in the earliest stage, Jiangsu has always been in a nationwide leading position in terms of the development of industrial park, and consequently the "Jiangsu Model" featuring the unique integration of investment, planning, management and innovation has formed. In Ethiopia, the rapid maturity of the parks are promoted by various laws and regulations on construction and investment. However, the parks have also encountered several problems. This

paper conducts an analysis on the development of the industrial parks from the types, themes and function of the regulations. Based on this, a comparable study would be performed on the background environment and development stage of the China's and Ethiopia's parks to explore the reference effect of the "Jiangsu Model" on the "Ethiopia Model". Furthermore, suggestions for the innovation and improvement of the management system of the Ethiopian industrial parks would be put forward from the aspects of legislation of parks, management system and platform construction. [Foundation]: Research on Development Model and Planning Guidance Mechanism of Jiangsu Overseas International Cooperation Parks (No. 17EYA001)

在工业园区发展的进程中，法规政策起到规范和调整工业园区规划、保障和促进工业园区发展的作用，也是中国工业园区成功的重要因素。江苏省作为中国最早设立国家级开发区的省之一，其园区及相关法规的发展一直处于国内领先地位，形成了具有特色的投资、规划、管理、创新合一的“江苏模式”。埃塞俄比亚作为非洲国家中较早重视工业化的国家，在全国范围内规划布局了 21 个不同类型的产业园区，并出台了《工业园区法案》等多部法规，对园区投资、建设等多方面进行了规范要求。园区的发展带动了其国家工业体系的快速建立，改善了国家整体投资环境并创造了大量就业，但也面临着管理体制粗放、平台建设不完善、产业发展不协调等问题。本文从江苏园区政策法规的类型、主题、功能进行梳理总结，并从中埃园区的背景环境、发展阶段进行对比研究，探讨“江苏模式”对“埃塞模式”的借鉴意义，从园区的立法、管理体制、平台建设三方面提出对埃塞产业园区管理体系创新与完善的建议。致谢：本文由江苏省社科基金：江苏境外国际合作园区发展模式与规划引导机制研究（编号：17EYA001）支持。

9. The Role of Special Economic Zones in Nigeria's Urban Transformation

Danja, Isah Ibrahim

Southeast University, Nanjing, China

Registration Code: VWJ2Z

According to the United Nations (UN) projections, developing countries in Africa and Asia will have a majority of urban residents in the next 20-30 years. This brings a challenge to developing countries like Nigeria. In 2009, consultation was carried out between the Ministry of Commerce of China (MOFCOM), the World Bank Group (WGB) and the governments of Nigeria, Ethiopia, and Mauritius on learning from the Chinese experience on Special Economic Zones (SEZs) initiatives as well as exploring the prospect of Tripartite collaborations. It was agreed that all three stakeholders share similar objectives in promoting the development of SEZs to support Africa's industrial development and export growth by manufacturing and other investments from China as well as from domestic and other foreign investors. Since its introduction in 2009, the development of the

SEZs in Nigeria has faced many challenges in the areas of Legal and Institutional Framework, Resettlement, Infrastructure (on-site and off-site), environmental, Management and Operational Know-how experience, and Government ownership and continuity. The paper shall aim to examine the role of Special Economic Zones (SEZs) in Nigeria's urban transformation. Reviewed literature will be used to identify and discuss some of the existing SEZs in Nigeria and the roles they will play in Nigeria's quest for urban and economic development. The result highlights some of the challenges and constraints faced by the SEZs in Nigeria.

10. Project Professionals Perspectives on Effective Delivery of Belt and Road Infrastructural Projects in Nigeria's Built Environment

Gidado Dalibi, Salisu (Gombe, Nigeria)

HeHai University, Nanjing, China

Ali Kumo, Hassan

Muhammad Kabir

Abujia, Nigeria

Registration Code: **GKKOL**

Nigeria's recent inclusion in the belt and road initiative (BRI) is welcome within Nigeria's construction industry. Each BRI participating country has its priorities and Nigeria's purposes include bridging its infrastructural deficit as its population is growing rapidly. Such infrastructural development projects (IDPs) includes roads, railways lines, bridges, tunnels, ports, dams and water projects, power generation plants and distribution grids, information, and communication technology (ICT), etc. However, delivering such IDPs have not been smooth; comes with challenges from within and outside the project; frequent delays and abandonment thereby affecting all the stakeholders involved. Hence, the study aims to identify and assess the factors that impacts and affects the effective delivery of IDPs in Nigeria's Built Environment from project professionals' views and perspectives. The study adopts secondary and primary sources of data by laying more emphasis on Nigeria's cases. The results outline the impact of various internal, external and project related factors that will have significant impacts on effective delivery of BRI infrastructural projects within Nigeria's built environment and the strategies that are needed to solve and overcome Hindrance factors to ensure effective delivery of such projects. Key Words: BRI, Built environment, Development, Factors, Hindrances, Infrastructure, Nigeria, Project Professionals.

11. Spatiotemporal Patterns and Characteristics of Construction Land Change in China during 2009-2017

Guo, Xudong

Chen, Yuqi

Xiao, Yu

China Land Surveying and Planning Institute, Beijing, China

Registration Code: **GHPJR**

The construction land scale and pattern change is not only an important theme of urbanization and industrialization, but also a key factor affecting the sustainable development of cities. By using of the data of the 2nd National Land Use Survey in 2009 and its update database from 2010 to 2017, this study analyzed the spatiotemporal patterns and characteristics of construction land during 2009-2017. The results indicated that: (1) in 2017, the construction land area in China was 39.57 million hectares; with 81.19% of it is urbans, villages, industrial and mining land. The transportation area was account for 9.69%. (2) During 2009-2017, the total amount of construction land expanded continually with the average annual increase of 0.51 million hectares. The increasing construction land mainly comes from cultivated land, forest land and grassland, with the proportion of 50.79%, 14.94% and 11.58 respectively. However, the increasing rate slowed down these years. (3) The construction land was mainly distributed in eastern and central areas. During 2009-2017, the construction area in eastern and middle provinces increased rapidly, while the increasing rate was higher in western area than other regions. (4) As to the internal structure changes of construction land in different provinces, the increased urban and village land area were mainly distributed in eastern and middle area. The increased town area was mainly in middle and western area. The mining area was mainly increased in middle, western and northeast area.

12. Land Misallocation and Productivity Differences between Manufacturing and Services in High-tech Industry

Han, Lu

Zhejiang University of Finance & Economics, Hangzhou, China

Registration Code: **ESGJR**

In this paper, land misallocation and productivity differences are explored between manufacturing and services in High-tech industry by using Cobb-Douglas production function model. The purpose of the study is to provide theoretical reference for optimizing land allocation in high-tech industries and providing differentiated allocation strategies of industrial resource elements. The results show that: 1) different sectors of high-tech industries depend on different investment of resources elements, and there are differences in TFP among different sectors. In general, manufacturing industry mainly depends on capital investment and land investment, while service industry mainly depends on labor investment. However, the TFP of service industry is significantly

higher than that of manufacturing industry. 2) The land allocation between manufacturing and services in high-tech industries is insufficient and unbalanced, and there is land misallocation between manufacturing and services in high-tech industry. 3) Land misallocation have different effects between manufacturing and services in high-tech industry. The study concludes that the key to rectify the land misallocation of high-tech industry lies in how to balance the allocation of land among industries. It is suggested that the government should adjust the orientation of industrial structure, resource allocation among industries, scientific land use planning, and layout adjustment for High-tech industries.

本文采用 Cobb-Douglas 生产函数模型方法，探索高技术产业中制造业和服务业不同类型产业的用地错配程度及其影响效应，为优化高技术产业用地配置和提供差别化的产业资源要素配置策略提供理论参考。研究表明：（1）不同类型高技术产业对投入资源要素依赖不同，行业间全要素生产率存在差异性。总体上制造业主要依赖于资本要素和土地要素的投入，而服务业主要依赖于劳动力要素投入，但是服务业的全要素生产率明显高于制造业的全要素生产率。（2）不同类型高技术产业用地配置不充分与不均衡，行业间用地存在错配问题。（3）不同类型高技术产业用地错配的影响效应不同。研究结论：纠偏高技术产业用地错配问题关键在于如何平衡产业间的用地配置问题。建议调整产业结构和资源要素在产业间配置方向，科学合理进行高技术产业用地规划与布局调整等。

13. Urban Sprawl from Another Perspective: Interpreting Seattle's 3D Landscape with Lidar

Han, Rui

University of Maryland, College Park, United States

Registration Code: ZU0JW

Landscape models have been widely used to study urban landscape patterns and urban dynamics. However, studies have been limited to surficial aspects to examine urban development patterns, and a vertical view of the urban landscape is often overlooked due to lack of data or a systematic quantitative model to depict the 3D dynamics. By incorporating a DTM model from Lidar data of Seattle, this paper develops a 3D Landscape Model to evaluate the urban growth of the region in both 2D and 3D perspectives. Socioeconomic variables are included in the model to interpret the surficial and vertical urban dynamics in the metropolitan area.

14. To Get Rich, Build a Road First? Infrastructure and Urban Development in Africa

Huang, Zhengli (Nairobi, Kenya)

University of Sheffield, England

Registration Code: XQ16P

China contributes to a large proportion of the infrastructure development in Africa. Yet behind the headlines there is still little research on who drives these projects forward, what their temporal horizons are, and how they reshape the territories and communities around them. It is very clear that an infrastructure-led development model is being transmitted through the engagement of competitive Chinese contractors in African infrastructure projects, but whether the model will work in the new context remains a question. Most importantly, the form of such a model is rarely explored in existing literature, leaving a huge gap between different understandings towards China's investment and efforts in Africa's infrastructure development. In this paper three projects in Uganda and Ethiopia are studied at both urban and regional level: the Light Rail Transit in Addis Ababa, the Djibouti-Addis SGR, and the expressway linking Kampala to Entebbe airport. These projects are highly significant because they showcased the missing links between the Chinese model of infrastructure-led urban development and the practices in Africa. The profit-seeking Chinese contractors themselves play a key role in driving infrastructural modalities, engaging opportunistically with African national governments whose agendas are inconsistent and malleable. The infrastructure-based local financial platform and the ownership of land as a government asset, key elements at play in the Chinese urban development model, are absent in the African context.

15. An Assessment on Management of Capital City Relocation and Rehabilitation: The Case Study of the Capital City of Tanzania

Ishenda, Doris

HoHai University, Nanjing, China

Registration Code: **C832G**

Tanzania has recently moved its capital city from Dar-es-salaam to Dodoma. Looking at this problem from a global perspective; countries have relocated their capital cities whereby major policy considerations for justification have been centrality, national cohesion, avoiding congestion of large cities and planning anew. Such projects have been creating a special purpose vehicle to steer the planning, financing and building. Laws have also been put in place. The purpose for this study is to understand and assess full operations of the capital systems, function analysis, rehabilitation approach and the management of all policies, planning, implementation, monitoring and compliance of the project. The general objective of this study is to develop knowledge that involves capital city relocation and rehabilitation and to ensure that the best model is used to make this process effective and efficient. The main problem discussed is the inconsistency of the whole process and how projects like these should follow a "one-systematic engineering approach" that means following specific steps in order to make sure that all important areas were covered.

Methodology used will be non-probability sampling (Interviews, questionnaires and focus groups will be used to get results from the “selected” stakeholders). Finally, the plan is to come up with a constructive practical model and develop a theory analysis framework to be adapted by others in order to ensure a “full run system” is generated to help Governments and any other stakeholder.

16. The Future African Market: A Mall in Yaoundé between Legacy, Trend and Modernity

Kenfack Zankia, Winnie Audrey

LTC & partners (Architecture firm), Douala, Cameroon

Registration Code: **Z29XY**

The theme « A mall in Yaoundé between legacy, trend and modernity » is an area of research on the future of African markets, regarding to the rapid population growth. The main preoccupation we appropriated was to know which development models were to be adopted for urban markets. The answer to this question implies that one should take into consideration the different logics of existing designs and of modern trends in order to generate the most adapted modern trade form for our future market areas. The mall, consistent set of trade and leisure. It is designed to make the purchasing pleasant by guarantying the best possible conditions of security, hygiene and comfort that traditional markets nowadays barely afford to offer. Integrating the concept of market in a mall helped us to experiment the concept of flexibility in the project, which avoids to freeze the usage by giving the possibility to later modify it. Other principles, notably the sustainability and the monumentality have been settled as basis for a real integration of the project in its urban context. The project of mall so far presented reflects a capital city abler to emphasize and promote the Cameroonian economy. Key words: mall, legacy, trend, modernity, market, trade, flexibility, sustainability, monumentality.

Le thème intitulé « un mall à Yaoundé entre héritage, tendance et modernité » est un pan de recherche sur le devenir des marchés africains face à la croissance démographique galopante. Une question principale a porté notre réflexion, celle de savoir : quel modèle d'aménagement pour les marchés urbains ? La réponse à cette question a induit la prise en compte des logiques d'aménagement existants ainsi que les celles des tendances modernes afin de ressortir la forme de commerce moderne adaptée pour nos lieux de marchés futurs. Le mall, ensemble cohérent de commerce et de loisir. Il est conçu pour rendre agréable l'acte d'achat en offrant les conditions de sécurité, d'hygiène et de confort que les marchés traditionnels au jour d'aujourd'hui peine à offrir. Intégrer le concept de marché dans un mall, nous a permis d'expérimenter dans le projet le concept de flexibilité, qui évite de figer l'usage en permettant un possible changement. D'autres principes, celui de la durabilité et celui de la monumentalité ont été les bases d'une intégration

réelle du projet dans son contexte urbain. Le projet de mall ainsi proposé est le reflet d'une cité capitale plus à même de rehausser et de promouvoir l'économie camerounaise.

17. Sustainable Energy Transition in Cities

Kitio, Vincent

UN-Habitat, Nairobi, Kenya

Registration Code: **9MX5W**

As the world struggles to address today challenges of rapid urbanisation, increase poverty and the devastating effect of climate change, global efforts are required to enact the transition to sustainable energy and resources. Cities represent more than 70 per cent of global energy demand. They also contribute equally to greenhouse gas emission. Cities hold the solution to most of the challenges of the 21st Century, starting from adopting and implementing the sustainable energy agenda. The current global share of renewable energy supply is 11 per cent. The diversity of renewable energy resources is vast, and research indicates a potential contribution of renewable energy reaching 60 per cent of total world energy supply by 2050 if the current trend of adoption of renewables continues. For cities to become sustainable, the transition toward sustainable energy use will require major interventions in the following sectors: 1- Urban planning, designing and implementation of densely, compact and accessible cities with plenty of green areas; 2- Designing of clean, efficient and affordable public transportation options; 3- Designing new buildings with green building and resource efficient principles and retrofitting old buildings; 4- Generating energy from local clean energy sources; 5- Adopting efficient municipal waste management system with resource recovery; and 6- Promoting efficiency in the use of resources (energy and water) in commercial and industrial sectors as well as in the generation and transportation of energy.

18. Exploring the Challenges of Implementing Inclusionary Housing in City of Johannesburg, South Africa

Letsoko, Vuyiswa

Mokoena, Baleseng

University of Johannesburg, Johannesburg, South Africa

Registration Code: **R2B0Q**

Rapid urbanization has resulted in an increase in the demand for low-cost housing in cities around the globe. Inclusionary housing is increasingly being employed as a response to this by encouraging developers to include affordable units in otherwise market-rate projects. The City of Johannesburg (CoJ) adopted an inclusionary housing policy in February 2019 which mandates private developers

to provide affordable housing in their residential developments. The policy is a response to the low-income housing demand and subsequently as a mechanism for reshaping and redressing the spatial inequalities in the City. This paper seeks to critically explore the key challenges of the inclusionary housing in the City of Johannesburg and evaluate the potential for the policy to contribute to spatial transformation in the City. The paper reveals the following challenges: i) resistance to the policy from middle/high income property owners on the basis of NIMBYism, desire for exclusivity and property values, ii) private property developers/ investors are reluctant to adhere to the inclusionary housing policy on the basis of profitability, iii) the ability of the policy to foster social cohesion amongst mixed income groups is flawed and iv) high costs in the housing market versus the high inequality gaps in South Africa. The paper also indicates that the success of inclusionary housing is limited to the ability for CoJ to provide stimulating incentives to private developers and investors for adhering to the policy.

19. Deep Shanghai Project: A Resilient Strategy for Infrastructure Integration

Li, Amy Huanqing

Associated research Centers for the Urban Underground Space (ACUUS), Montreal, Canada

Registration Code: **M7QPY**

Shanghai, as the most populated megacity, is facing challenges due to more frequent flooding occurrence, a five-time higher freight transport growth than rail transit passenger growth, and the controversial waste management issue. While shallow underground space in Shanghai city has been approaching its saturation degree, the use of Deep Underground Space (DUS) is under a forward-thinking planning initiative from 2016, aiming to scale up its infrastructure stock to meet future demand. Exploring deep infrastructure functions will also help to deal with industrial land scarcity and to generate consolidation effects with an infrastructure integration strategy. Emphasizing three priorities “Security, Resiliency and Ecology”, this article will start from addressing a “Depth-scape” planning concept based on vertical zoning and a development potential evaluation process, followed by discussing three functional schemes below 50 meters deep. Three categories of DUS spatial networks are presented, indicating benefits on service performance enhancement.

20. Research on Urban Functional Area and Mixing Degree Recognition Based on POI: Taking Chongqing as an Example

Li, Xiaolong

Zhejiang University, Hangzhou, China

Registration Code: **K30SK**

With the continuous advancement of global urbanization, urban development has entered a new era. The rapid development of information technology has made cities more intelligent, dynamic and efficient. Based on this background, the era of big data came into being, and urban development and planning disciplines are paying more and more attention to the application and research of emerging data technologies. The widely distributed POI data in urban space has important reference significance for urban spatial analysis due to its massive and accurate characteristics, and also provides a new perspective for urban land use and functional identification evaluation. This paper uses Baidu map POI big data to take the core city of Chongqing as the research object. Based on the screening and classification of POI data, the "space-influence" binary weight calculation model is constructed to quantify the POI attribute. Combined with the street data, the area is divided to identify the main functions of each block. The functional mixture degree is calculated at the refined grid scale, and the analysis results are compared with the current situation. The feasibility of the research method is demonstrated, which has certain theoretical and practical value for urban spatial planning and policy formulation.

大数据时代的来临，使得城市发展也越来越关注新技术应用与研究，城市空间中广泛分布的 POI 数据（point of interest）由于其海量且精确的特性，对城市空间分析具有重要参考意义，也为城市土地利用和功能识别评价提供了新的视角。本文采用百度地图 POI，以重庆市核心城区为研究对象，对 POI 数据进行筛选与分类的基础上，构建“空间—影响力”二元权重计算模型以量化 POI 属性，再结合街道数据对区域进行划分，识别各街区主体功能，并在精细化网格尺度下对功能混合度进行计算，将分析结果与现状进行对比评价，论证研究方法的可行性，对城市空间规划与政策制定具有一定的理论和实践价值。

21. Urban Resilience: A Critical Nexus between Climate Change and Rapid Urbanization

Li, Yangfan

Xiamen University, Xiamen, China

Registration Code: **9T1MG**

Humans are facing high risks in terms of extreme climate events and rapid urbanization, especially in coastal regions worldwide. Improving the urban resilience is one of the critical mechanisms to help people better adapting to the climate change and rapid urbanization. This study proposes a critical nexus between climate change and rapid urbanization to enhance the urban ecological resilience in the coastal area. Our group had explored the resilience mechanism of the coupled human-environment systems in some coastal regions; and we had also applied the concept of land-water-biodiversity nexus in Xiamen to explore the resilience mechanism in the typical coastal city. Most of the previous works focused on the urban-ecological system and did not combine the

climate change with rapid urbanization in the nexus perspective to realize the land-sea connection. A new framework of “climate change-rapid urbanization” nexus is established in this study highlighting the resilience by systematically integrating the water, land (soil), air (climate), biodiversity, human components in the coastal rapid urbanization regions of China. Simultaneously, we apply the spatial systematics dynamics method to detect the complex multi-factor, multi-process and multi-scale nexus of the coupled human-earth system and to achieve sustainable development goals. The future study provides a scientific basis for enhancing the resilience and land-sea connection in the integrated coastal landscape (watershed, coast and offshore marine area) of China.

22. Research on the Present Situation and Social Effects of Ethiopia’s Industrial Park Construction

Liu, Kai

Wang, Xingping

Southeast University, Nanjing, China

Registration Code: K1IXU

Since the establishment of the first industrial park in Ethiopia in 2007, more than 20 industrial parks have been planned and constructed in the whole country up to 2018, including the Eastern Industrial Park, Bole Lemi Industrial Park, Huajian International Light Industrial Park and the Hawassa Industrial Park. Due to the rapid development of industrial parks, Ethiopia's economy has developed rapidly, and the average growth rate of GDP has remained above 10%, far higher than the average growth rate of Africa in the same period, and the per capita GDP has also risen from \$184 in 2006 to \$754 in 2017; the industrial structure has been continuously upgraded and optimized, and the proportion of secondary industry in GDP has increased from 10.4% to 24.0%; Foreign direct investment also increased from \$100 million in 2008 to \$3 billion in 2016. At the same time, the construction of industrial parks has also promoted the progress of industrial technology and the increase of skilled workers. From the perspective of the garment and textile industry, which is the dominant industry in most industrial parks, Ethiopia's exports to the European Union and the United States totaled about \$5 million worth of clothing in 2007. In 2016, this figure has increased to more than \$70 million.

埃塞俄比亚自 2007 年设立第一个工业园区以来，截至 2018 年全国规划建设工业园区已累计超过 20 个，其中包含东方工业园、博莱莱米工业园、华坚国际轻工业城、哈瓦萨工业园等大型工业园区均投入运营。得益于产业园区的快速发展，埃塞俄比亚经济快速发展，GDP 平均增速一直保持在 10% 以上，远高于同期非洲的平均增长率，人均 GDP 也由 2006 年的 184 美元上涨至 2017 年的 754 美元；产业结构不断升级优化，第二产业占 GDP 比重则由 10.4% 上升至 24.0%；外国直接投资也由 2008 年的 1 亿美元增加至 2016 年的 30 亿

美元；同时工业园区的建设也促进了工业技术的进步和技术工人的增加，从大多数工业园区的主导产业服装纺织业来看，2007年，埃塞俄比亚的出口到欧盟和美国的服装总额约为500万美元，2016年，这一数字已增加至7000万美元以上。

23. Analysis on Land Ecological Status of Yangtze River Delta Urban Agglomeration

Lyu, Chunyan

Wang, Xiaofan

China Land Surveying and Planning Institute, Beijing, China

Hao, Jikun

Hebei Institute of Land Resources Utilization and Planning, Shijiazhuang, China

Registration Code: 808LX

Land ecological status is an important aspect of sustainable utilization of land resources. With the continuous advancement of the construction of ecological civilization, the overall ecological environment in China generally stable and good, but the ecological problems in some areas still exist. Land ecology has attracted the attention of government and scientific researchers. Based on the data of multi-source remote sensing images, the second national land survey and land use change survey, this study used statistical analysis and mathematical models to analyze the changes of land ecological status in the Yangtze River Delta urban agglomeration from 2010 to 2016. The results showed that the area of water and vegetation increased, bare land decreased, and vegetation coverage increased in the built-up area. In the whole Yangtze River Delta urban agglomeration, the area of ecological land decreased, while the area of construction land, traffic land and other land increased, the leaf area index decreased, also the net primary productivity of agricultural land decreased. The rapid development of cities has affected the land ecological condition to some extent. Therefore, in the process of urbanization, we should optimize the pattern of land spatial development, pay more attention to the monitoring and evaluation of land ecological status, and strengthen the protection and restoration of land ecosystem.

本研究基于多源遥感影像、全国第二次土地调查、土地利用变更调查等数据，采用统计分析和数学模型等方法，分析了2010-2016年长三角城市群土地生态状况变化。结果表明，建成区水体和植被面积增加，裸地面积减少；植被覆盖度增加。长三角城市群生态用地面积减少，建设用地、交通用地、其他用地面积增加；叶面积指数降低，农用地净初级生产力减少。城市快速发展在一定程度上影响了土地生态状况。因此在城市化进程中，要优化国土空间开发格局，加强土地生态状况监测与评估，以及土地生态系统的保护与修复。

24. Local Traditional Knowledge and its Urban Context: A Case Study of Bai Ethnic Minority in Dali, China

Ma, Huier

University of Ottawa, Ottawa, Canada

Gao, Song

Yunnan University, Kunming, China

Cao, Huhua

University of Ottawa, Ottawa, Canada

Registration Code: **NOCQ8**

In the rapidly urbanizing China, local traditional knowledge (LTK) has been brought to the public's attention as a significant feature of cultural identity and inclusiveness. Especially in the ethnic minority areas, LTK may be marginalized as urban planners employ Western scientific thoughts extensively during the urbanization processes. However, it is important to respect the LTK, so that the cultural identity and social cohesion of ethnic minorities can be transmitted in the trend of modernization. The objective of this research is to explore the role of LTK in urban development in China's ethnic minority regions from the perspective of local residents within the City of Dali. In order to examine how the Bai's LTK is impacting the urban landscape in Dali, this study will employ a mix-mode methodology: a questionnaire survey, focus group discussion and participatory mapping task. The study results will shed light on the interplay of the Bai LTK and the urban landscape in Dali, and assert a better understanding of Bai LTK from the perspective of Bai people in Dali.

25. Intensive Planning of Land Value Increment and Urban Growth Space along Pan-Asia Railway (Laos Section)

Ma, Ling

University of Toronto, Toronto, Canada

Registration Code: **G29IF**

The construction of Pan-Asia Railway Network has brought economic growth to the development of countries along the route. Starting from the relationship between the change in land price and urban growth, this report studies the growing and changing processes of the cities around the newly constructed Mowan railway section in Laos. The result shows that the development of Laotian cities has a corresponding and comparative relationship with the different levels of cities in Yunnan, China. A reference system can be established through the corresponding process of historical stage to simulate the future expectation. Remote sensing analysis can be used to find the variables of urban premature movement caused by psychological expectation. Since there are more mountains and less plains along the route, and the urban expansion space is limited, this

paper puts forward some suggestions of intensive planning and utilization for the future regional space development.

泛亚铁路的修建，给沿线国家的发展带来了经济增长动力。城市地价上涨，也导致沿线节点城市进入快速增长阶段。本报告从地价变化和城市增长过程协调性关系入手，研究老挝新建磨万铁路节点城市的生长空间和变化过程。研究发现老挝城市的开发与我国云南不同级别的城市有对应比较关系，可以通过历史阶段相应过程建立参照系，对未来预期进行模拟。通过遥感分析可以寻找由于心理预期而引发的城市早动变量。针对沿线山地多，平原少，城市扩展空间局促的现实，对未来区域空间发展提出集约规划利用的建议。

26. The Effects of Trade Globalization on China's Urbanization and Carbon-Dioxide Emission

Ma, Sicong

Kang, Yifan

University of Ottawa, Ottawa, Canada

Registration Code: **NH4DN**

This paper examines changes in per capita carbon dioxide emissions in China after China joined the World Trade Organization (WTO) on December 21st in 2001. Synthetic Control Method generates a synthetic control group that accurately reproduces per capita carbon dioxide emissions in China before China became a WTO member. A common trend in per capita carbon dioxide emissions in China and the weighted average emissions in the synthetic control group confirms that a Difference-in-Differences regression of China and the synthetic control group estimates a causal effect of joining the WTO on per capita carbon dioxide emissions in China. Becoming a WTO member increased per capita carbon dioxide emissions in China by 2.61 metric tons. The result supports the hypothesis of the pollution haven model. As a result, this paper concludes that the environment in China suffered from trade liberalization.

27. An Analysis of Urban Land Use/ Land Cover Change Using Remote Sensing Data in Blantyre City, Southern Malawi

Mawenda, John (Likoma, Malawi)

Hokkaido University, Sapporo, Japan

Registration Code: **7JIPV**

The aim of this study is to analyzed urban land use/land cover (LULC) change in Blantyre city, southern Malawi using the Geographic Information System (GIS) and Remote Sensing (RS) in order to support sustainable urban planning. Landsat Thematic Mapper (TM) satellite imagery of 1994

and Landsat Operational Land Imager (OLI) satellite imagery for 2018 were used to create two LULC classification maps. The two maps were compared to produce transition matrix with the goal of identify dominant signal of change in the landscape. The classification maps were generated with overall accuracy of 90 and 86 percent for 1994 and 2018, respectively. Our results show that built-up class increased from 8.10% (19.28 km²) in 1994 to 18.75% (44.61 km²) in 2018. Bare land decreased from 78.51% (186.75 km²) in 1994 to 70.87% (166.84 km²) in 2018 and vegetation class decreased from 13.24% (31.49 km²) in 1994 to 10.14% (26.08km²) in 2018. The post-classification result revealed a systematic transition of vegetation to bare land (8.07%) and bare land to built-up (12%) during the study period. The information generated in this study revealed the pressure of human activities and urban developments on land. Therefore, future land use policies need to consider such prominent signals of LULC change in order to plan an integrated approach to safeguard the fragile landscapes and ecosystems in the city.

28. To Build Smart Cities: What Tools for Sub-Saharan Africa? Answers Based on the Ngaoundéré GIS Data Base, Cameroon

Michel, Tchotsoua

University of Ngaoundere, Ngaoundere, Cameroon

Registration Code: **GMVGA**

The global population is growing rapidly: from 2.5 billion in 1950 to 7.3 billion in 2015. The average growth was about 83 million in 2017. The urban population increased from 30% of the total population in 1950 to 54% in 2016. This strong growth in the urban population results from natural population growth, migration flows and rural exodus. It is accompanied by a strong demand for urban needs in various fields. Spaces that fulfill urban functions must adapt to meet the multiple needs of this population. This is why the concept was created in the 1980s. Dupuy (1982) stated that "a smart city is one that is connected to the ICT network". For the majority of authors, it is the one that uses and inserts new information and communication technologies into its various management processes in order to optimize the use of existing infrastructures on the basis of intelligent governance. Smart city governance aims to solve the current situation in a city that remains very opaque, both in terms of geolocation of infrastructure and interrelations between stakeholders. With the support of the World Bank, we have begun to transform Ngaoundere into an open and intelligent city (<http://acager.org/portalgis/> or <https://www.openstreetmap.org/search?query=Ngaoundere#map=15/7.3550/13.5743>) with free tools such as Essential GPS, Qfield, Google Earth, Earth Explorer, QGIS, Qfield, Essential GPS, JOSM. We would like to share this experience with ICCASU3 participants).

La population mondiale augmente rapidement: de 2,5 milliards en 1950 à 7,3 milliards en 2015. La croissance moyenne était d'environ 83 millions en 2017. La population urbaine est passée de 30% de la population totale en 1950 à 54% en 2016. Cette forte croissance de la population urbaine résulte de la croissance démographique naturelle, des flux migratoires et de l'exode rural. Elle s'accompagne d'une forte demande de besoins urbains dans divers domaines. Les espaces qui remplissent les fonctions urbaines doivent s'adapter pour répondre aux multiples besoins de cette population. C'est pourquoi le concept a été créé dans les années 1980. Dupuy (1982) a déclaré qu'«une ville intelligente est celle qui est connectée au réseau des TIC». Pour la majorité des auteurs, c'est celle qui utilise et insère les nouvelles technologies de l'information et de la communication dans ses différents processus de gestion afin d'optimiser l'utilisation des infrastructures existantes sur la base d'une gouvernance intelligente. Une gouvernance de ville intelligente a pour objectif de résoudre la situation actuelle dans une ville qui reste très opaque, à la fois en termes de géolocalisation des infrastructures et d'interrelations entre les parties prenantes. Avec le soutien de la Banque mondiale, nous avons commencé à transformer Ngaoundéré en une ville ouverte et intelligente (<http://acager.org/portalgis/> ou <https://www.openstreetmap.org/search?query=Ngaoundéré#map=15/7.3550/13.5743>) avec des outils gratuits tels que GPS Essential, Qfield, G.

29. Access to Land in Urban and Rural Areas of Botswana: The Issue of Inclusivity

Mosha, Aloysius

Ba Isago University, Gaborone, Botswana

Registration Code: **D5T0I**

It is commonly assumed that Botswana's land resources, (amounting to over 500,000 km² but with a population of just over 2million today), are abundant, but over the years it has become evident that some definite limits will be widely experienced quite soon. Most visibly, the increasing shortage of land manifests itself both in the rural and urban areas. In the rural areas there are households, both female headed, male-headed and even the youth, are experiencing problems accessing land; pasture land is deteriorating and access to arable land has also become seriously limited in several areas. In the urban areas too, in spite of many strategies that have been adopted over the years, access to land for housing and commerce is a major challenge, with the main issue being affordability and lack of finance. In this paper we cover the main the issues related to accessibility to land including: legislative aspects; past and present land management aspects; the major ways of accessing land in both urban and rural areas; and challenges faced in striving for equity and inclusiveness. The paper concludes by putting forward possible strategies to make land available to all groups of society in Botswana.

30. Hasten Sustainable Urban Development in Africa: The Inclusive Urban Renewal Approach

Ngomsi, Claude

Balagizi Asipingwe, Joel

UN-Habitat, Kenya

Africa is the region of the world with the fastest speed of urbanization; the continent accounted for 11.3% of the global urban population in 2010. With its extremely high annual growth rate compared to the world's 2.0%, Africa is expected to account for 20.2% of the global urban population by the year 2050. The continent's urban centers are characterized by low inclusiveness with high rate of unemployment among the youth, women and disabled leading to precarious living conditions. While urban centers are to play a key role in the structural transformation of national economies, creation of decent jobs, and thus maintain of economic growth of the continent; they are mostly marginalized and underdeveloped, with obsolete urban infrastructures and poorly managed and inappropriate access to basic services. The mushrooming of unplanned peri-urban areas, the use of deleterious lands and the existence of dangerous structures lead to urban unsafety, health hazards and exclusion from formal economic development opportunities. The solution as per the New Urban Agenda is to promote inclusive, innovative and integrated urban development including urban renewal projects. These projects will create new opportunities to improve livelihoods, living conditions, tourism and economic well-being of the continent's urban population, while preserving urban identity, environment and culture of urban centers as well as improving access to basic services. Urban renewal will thus promote sustainable urban redevelopment across the continent.

31. Municipal Governance and Innovation: New Information Technology and Optimization of Urban Planning Services to Citizens in Gatineau–Quebec, Canada

Noubouwo, Antoine

City of Gatineau, Gatineau, Canada

Registration Code: **8RXF8**

The smart city is a city that relies on information and communication technologies (ICT), as well as mechanisms for collecting and managing data to ensure a context favorable to its urban, economic, urban development, tourism, security and social (UN, 2008, Goin, 2017, and UMQ, 2018). This innovative procedure, which aims at the efficiency and the optimization of the urban infrastructures, as well as the quality of life of the citizens, requires commitments and participation of the different actors who are: the public service, the private partners and the citizens (Goin, 2017). According to the Union of Quebec Municipalities (UMQ, 2018), a smart city seeks to

increase its attractiveness by reducing its ecological footprint and offering a better quality of life through the fluidity of its services and shared governance. Since 2016, Gatineau's urban planning service in Canada has focused on a strategy aimed at rethinking the service offer in a more coherent, integrated way, better adapted to the culture and priorities of citizens and companies in its territory. This strategy aims to improve the way to optimize the services offered in urban planning, in particular, the process of issuing building permits. As part of this communication, we will present the process of designing, planning and implementing tools to improve the service to citizens regarding urban planning in Gatineau.

La ville intelligente est une ville qui s'appuie sur les technologies de l'information et de la communication (T.I.C.), ainsi que les mécanismes de collecte et de gestion de données pour garantir un contexte favorable à son développement urbain, économique, urbanistique, touristique, sécuritaire et social (UN, 2008; Goin, 2017, et UMQ, 2018). Cette procédure innovatrice, qui vise l'efficacité et l'optimisation des infrastructures urbaines, ainsi que la qualité de vie des citoyens, nécessite des engagements et une participation des différents acteurs qui sont : le service public, les partenaires privés et les citoyens (Goin, 2017). Selon l'Union des municipalités du Québec (UMQ, 2018), une ville intelligente cherche à augmenter son attractivité en réduisant son empreinte écologique et en offrant une meilleure qualité de vie à travers la fluidité de ses services et une gouvernance partagée. Le service de l'urbanisme de la ville de Gatineau au Canada, s'est orientée depuis 2016 vers une stratégie visant à repenser l'offre de services de manière plus cohérente, plus intégrée et mieux adaptée à la culture et aux priorités des citoyens et entreprises de son territoire. Cette stratégie vise à améliorer la façon d'optimiser les services offerts en urbanisme, notamment, le processus de délivrance des permis de construire. Dans le cadre de cette communication, nous présenterons le processus de conception, de planification et de mise en œuvre des outils visant à améliorer le service aux citoyens concernant l'urbanisme à Gatineau.

32. Analysis of Social Capital in the Municipality of Inhambane

Nunes, Alice

Eduardo Mondlane University, Maputo, Mozambique

Registration Code: **OECE2**

Social capital has the capacity to foster the development of regions through networks. Social capital can create networks of trust, a mutual aid relationship between individuals that otherwise could not be achieved by increasing synergies and productivity in the activities in which people are involved. The objective of this article is to analyze the level of social capital in the Municipality of Inhambane (MI) and identify the indicators that may further promote social capital. To reach this

goal, the index of social capital was calculated in 11 neighborhoods of MI using seven main indicators. The Mann-Whitney U and Kruskal-Wallis test were then applied to compare if the characteristics such as the individual's sex, educational level and age would have some weight in the variation of some. As a result, it is concluded that although there are associations, networks in the MI, the index of social capital is average and consequently, there is no effective participation of the interviewees in the programs that could somehow benefit them. There is a weak incentive for communities to associate themselves to common goals. Strengthening the existing social structure (greater participation in associations or networks, greater participation in common activities) may in some way stimulate activities such as agriculture and tourism, provided that the interventions made have as main target the strengthening of social capital.

O capital social tem a capacidade de fomentar o desenvolvimento das regiões através das redes. O capital social pode criar redes de confiança, relação de ajuda mútua entre os indivíduos que de outra forma não seria possível alcançar aumentando sinergias e produtividade nas actividades em que as pessoas estão envolvidas. O objectivo do presente artigo é analisar o nível de capital social no Município de Inhambane (MI) e identificar os indicadores que poderão fomentar mais o capital social. Para o alcance deste objectivo fez-se o cálculo do índice do capital social em 11 bairros do MI usando sete indicadores principais. Em seguida aplicou-se o teste de Mann-Whitney U e Kruskal – Wallis test para comparar se as características como sexo do indivíduo, nível de escolaridade e idade teriam algum peso na variação de alguns. E como resultado, conclui-se que apesar de existirem associações, redes no MI, o índice de capital social é médio e consequentemente, não existe participação efectiva dos entrevistados nos programas que de alguma forma poderiam os beneficiar. Há um fraco incentivo para as comunidade associarem-se para objectivos comun O fortalecimento da estrutura social existente (maior participação em associações ou redes, maior participação em actividade comuns), poderá de alguma forma dinamizar actividades tais como a agricultura e o turismo, desde que as intervenções feitas tenham como alvo principal o fortalecimento do capital social.

33. A New Approach to Human Settlements Development in South Africa: Mixed Income Housing Development Framework

Onatu, George

Thwala, Didibhuku

University of Johannesburg, Johannesburg, South Africa

Registration Code: **MP14C**

The debate on informal settlements is gradually shifting from that of 'bad image' of the city landscape to places of residence and socio-economic activities, in which the inhabitants pursue a

variety of livelihood strategies. This paper looks at an attempt by the City of Johannesburg Metropolitan Municipality and eThekweni Metropolitan Municipality to coopt residents of informal settlement into formal neighborhood through mixed income residential development strategy. Although the term 'mixed-income housing development (inclusionary housing)' is becoming widely used and popular, there remains certain gap and many open questions that need additional research about how best to implement it and what are the expected outcomes as well as can it improve the quality of life and prospects of low-income families? Despite the importance and popularity of the concept of mixed-income housing in national housing policy circles, it is noted that very few studies have attempted to evaluate the conditions under which programs have succeeded or failed and the implication for future programs. This calls for an investigation. The research methodology will be Delphi approach. Conclusion drawn from this research shows that for mixed-income to be sustainable and meet the current urban development agenda there is need for Public-Private Partnership and intersectoral cooperation. The debate around the implementation strategy and the nature of "mix" in any given housing development project is still open for more investigation.

34. The Revolution of Wetland Landscape Disturbance in Jiaozhou Gulf from 1980 to 2017

Qin, Peng

Qingdao Agriculture University, Qingdao, China

Registration Code: **QLNOV**

As an important ecosystem, wetland is affected by human activities. The trend of area reduction and functional degradation is more severe. Its landscape pattern and ecological environment can respond quickly to external disturbances. The zone of Jiaozhou gulf was selected as the study area. Anthropogenic disturbance index and landscape transformation method were used to analyze the evolution of wetland disturbance in Jiaozhou Bay from 1980 to 2017. The type of disturbance dynamic change was identified. The results show that the conversion mode of landscape disturbance types was different, wetland landscape pattern presents fragmentation trend, because of the divisions of artificial wetlands and other land. Human disturbance landscape continues to increase, the landscape of man-made non-recycling type increase more than that of man-made recycling type. The river estuary is the most active region of strong disturbance. The conversion rate with the area of 96.22km² is highest between 1990 and 2000. With the method of K-Means clustering algorithm, the change tendencies of transition coefficient were grouped into four categories: enhance and then weaken, overall weakening, weaken and then enhance and overall stable. The area with deteriorating trend accounts for 88.77% of the total area of the entire area. Based on the natural geography condition, the wetland of Jiaozhou gulf is susceptible to human disturbances, industrial policy and economic development enhanced this process.

湿地作为重要的生态系统，受到人类活动的影响，面积减少、功能退化等趋势较为严峻，其景观格局及生态环境可对外界扰动做出迅速响应。本文选取胶州湾为研究区域，利用人机交互遥感解译，提取胶州湾海岸线 30km 范围内湿地信息，运用人类扰动指数和景观转换方法对 1980—2017 年胶州湾湿地景观扰动演变情景分析，对胶州湾湿地的景观干扰类型的数量和空间变化进行分析，并对这种变化进行了聚类归并，总结研究区的干扰动态变化类型。结果表明：不同时段湿地干扰类型转换模式不同，自然湿地景观被越来越多的人工湿地和其他土地分割，湿地景观格局呈现破碎化趋势；扰动景观类型中人为再生利用和人为非再生利用景观持续增加，特别是人为非再生利用类型面积增加最多，说明人类扰动持续增强，其中，河流入海口是人类干扰最为活跃的区域；干扰转换幅度随时间变化明显，转换幅度在 1990—2000 年间最高，达到 96.22km²；根据干扰转换幅度的变动趋势，利用 K-Means 聚类算法把干扰转换的动态特征分为先增强后减弱型、总体减弱型、先减弱后增强型和总体稳定型四类，其中干扰呈现增强趋势的面积占到全域总面积的 88.77%；优越的自然地理条件，使得胶州湾湿地更容易受到人类活动的干扰，与此同时国家级产业政策及经济社会发展等也起着加剧干扰的作用。

35. Changes in Spatiotemporal Patterns of Urban Forest and its above-ground Carbon Storage: Implication for Urban CO₂ Emissions Mitigation under China's Rapid Urban Expansion and Greening

Ren, Zhibin

Northeast Institute of Geography and Agroecology,

Chinese Academy of Sciences, Changchun, China

Registration Code: **G8BXB**

Urban forests (UF, >0.5ha) in China experienced a dramatic change due to urbanization. Understanding spatiotemporal dynamics of UF and its above-ground carbon storage (CS) is important for mitigating urban CO₂ emissions in planning of UF space. The objective was to explore temporal changes in the spatial pattern of CS by UF and the role of CS changes in mitigating the urban CO₂ emissions. This research used statistical models to evaluate spatiotemporal changes of CS by UF from 1984 to 2014. We estimated spatiotemporal changes in CS by combining multi-temporal Landsat TM imagery with field survey data of the city of Changchun, China. Normalized difference vegetation index (NDVI) data obtained from TM image and CS derived from field-based surveys were amalgamated to develop a regression model to predict spatiotemporal patterns of CS. NDVI correction model was established by normalizing previous imagery (1984, 1995, and 2005) to 2014 image data. Both UF area and its CS increased gradually from 1984 to 2014, especially in outer rings of the city. CS showed a definite decreasing trend from outer rings

to downtown. Due to urban greening policies, landscape patches of UF or CS by UF recently became larger and more aggregated. It was estimated that the average annual increase of CS by UF could offset 3.9% of the average annual increase in urban carbon emissions. Our study proposes that spatiotemporal changes in UF patterns dramatically affected the amount of CS and carbon capture.

36. Gamification of Mobile Application in Raising Eco-Awareness amongst Youth in China

Rosmadi, Amalia

Zhou, Wuzhong

Shanghai Jiaotong University, Shanghai, China

Registration Code: **H7JRL**

Ecological problem is widespread and exceptionally severe in China. Despite ongoing efforts on various platform in spreading ecological awareness (eco-awareness) worldwide, there is still space to improve youth's familiarity and understanding of sustainable behaviours, especially using element of technology, which in this case the gamification principles as a tool of mediator in the country where 98% of youth are using smartphone in their daily life. This pilot study will investigate whether by applying gamification principles in a mobile application to encourage sustainable behaviour towards recycling, would aid to behavioural change in raising eco-awareness amongst youth in China. This pilot study will be conducted involving measures to capture deep understanding through unstructured interviews, questionnaires and experiment to investigate the occurrences from the youth's point of view. Relevant data will be analysed using Interpretative Phenomenological Analysis, where result will give the base of understanding the current situation amongst youth in China. The research results are valuable to various stakeholders in China, empowering them to utilise gamification to educate youth users on the ecological risk and further create a society with sustainable behaviour attitude.

37. Greens Urban Spaces in Shanghai and the Role of ICT's in User Behaviour

Sant'Anna, Marcus

Federal University of Viçosa, Brazil

Zhou, Wuzhong

Shanghai Jiao Tong University, Shanghai, China

Registration Code: **CB25K**

A key issue in architectural and landscape design research is to understand how to engage users with the designed object. In the case of open public spaces, many researchers have been

conducting behavioural studies about the relationship between space affordances and users in order to improve design effectiveness and space appropriation. Another issue to consider is the social morphology of our current society, where the overall activities are organized around information networks. In this sense, everyday life is intertwined with all sort of ubiquitous systems or combined into smart gadgets. We can consider that, if the previous spatial experience was defined by topological attributes of a given space, now, under the rise of urban computing, it is established by a hybrid space where Information and Communication Technologies (ICT's) mediates the gap between the user and the physical space. The main objective of this paper will be to present results from of an ongoing pilot test being conducted in urban green areas in Shanghai, China. We aim to highlight the role of ICT's in the process of user engagement within a defined number of settings within three urban parks in the downtown area. Behaviour mapping, a technic to conduct systematic observation that follows user's behaviour within the built environment is being applied to collect and demonstrate how daily use of ICT's in open public spaces are related to the design of such spaces and how we can stablish the use pattern of hybrid spaces in Chinese urban green areas.

38. Urbanization and Natural Risks: Contribution to the Sustainable Security of the Urban Space around Mount Cameroon, Case of Limbé

Stephane, Sonkin Temkeng

GEFA & Engineering, Yaoundé, Cameroon

Registration Code: SCFPF

The site and situation of the town of Limbé at the foot of Mount Cameroon, constitute an undeniable economic asset but also and above all a constraint as far as human settlement is concerned with regard to the high susceptibility to landslides. Thus, its urban development policy convokes the ingenuity of the stakeholders taking part to the construction of the town. This is the framework of the following study which main aim is to contribute to the securing of the urban space around the mount Cameroon in general and more specifically in Limbe city. What it is here all about is to generate an urban development formula taking into consideration natural risks, habitat and economical potential. The project "Live and dwell safer in Limbe" aims at making Limbe for 2028: a more compact eco city, territorially equilibrated, guarantying a safer and appropriate framework to its communities and investors. Therefore, measures planned are centred upon the concept of urban "Deconstructivism", consisting in deconstructing unsustainable practices and to gradually replace them with more long-lasting ones. So far presented, the concept is made up of three main articulations: 1) De-urbanise risk areas and promote passive activities in those areas; 2) Increase the density of safe neighborhoods of the old town while preserving the CDC plantations; 3) Relieve the principal centrality of Beach by

secondary stronger ones. The projects realisation involves a true sensitization of the communities for the acceptability of the dense and collective habitat. Moreover, informing and educating the public about natural risks is indispensable to reduce the impact of natural hazards. Furthermore, the installation of an urban observatory in the different municipalities seems worth to get a real-time monitoring of the territory. This project, completing reflexion works initiated by the GRINP study, stands for an urban planning more adapted to sloping reliefs in a context strongly characterized by major climate changes.

39. The Paradox of Security Planning in Sub-Saharan Africa: Challenges and Perspectives of the Implementation of Smart Technology Systems

Tchinda, Paul Emile (Seoul, South Korea)

Urban and Rural Land Development and Equipment Authority (MAETUR), Yaoundé, Cameroon
Registration Code: **8PUT5**

Most studies highlighting the link between the urban environment and safety have focused on vacant spaces in urban areas, Petherick, A., Fraser, R., (1992), Tom McKay (1994). Thus, by concluding that the absence of activity and people in space makes it potentially dangerous, these studies implicitly state that the presence of activities and people in space makes it more secure. However, is this reciprocal still true? The objective of our communication proposal is to highlight the paradox of security planning principles in the context of sub-Saharan Africa. More specifically, it is a question of establishing the causal relationship between traffic congestion and overcrowding in terms of activities and people and the safety of intersections. This work is an emerging research project based on exploratory hypotheses. The example of downtown Yaounde is used to show how a space that meets the principles of security planning, such as visibility (see and be seen), traffic (hear and be heard) and formal surveillance and access to assistance (escape and rescue), remains highly exposed to the risks of insecurity. By drawing a parallel between the introduction of video surveillance in this environment and the persistence of the insecurity phenomenon, we wish to contribute to a better understanding of the insecurity phenomenon in urban areas at a time when the continent is increasingly tending towards the creation of smart cities. This also allows us to offer applications that can be adapted to the local context.

La plupart des études mettant en exergue le lien entre l'environnement urbain et la sécurité ont porté sur des espaces vacants en milieu urbain, Petherick, A., Fraser, R., (1992), Tom McKay (1994). Ainsi en concluant que l'absence d'activité et des personnes dans un espace le rend potentiellement dangereux, ces études affirment de façon implicite que la présence des activités et des personnes dans un espace le rend plus sécurisant. Cependant cette réciproque est-elle toujours vrai ? L'objectif de notre proposition de communication est de mettre en exergue le

paradoxe des principes d'aménagement sécuritaire dans le contexte d'Afrique subsaharienne. Il s'agit plus spécifiquement d'établir la relation de causalité qui existe entre les phénomènes d'embouteillage et de surpeuplement en termes d'activités et des personnes et la sécurité des carrefours. Ce travail est un projet de recherche naissant qui se base sur des hypothèses exploratoires. L'exemple du centre de la ville de Yaoundé est pris pour montrer comment un espace répondant aux principes d'aménagement sécuritaire, demeure fortement exposées aux risques d'insécurité. En faisant un parallèle entre l'introduction de la vidéo surveillance dans ce milieu et la persistance du phénomène d'insécurité, nous souhaitons contribuer à une meilleure compréhension du phénomène d'insécurité en milieu urbain au moment où le continent tend vers la création des villes intelligentes. Aussi, ceci nous permet de proposer des applications pouvant être adaptées au contexte local.

40. The Stakes of a Transformed Colonial Heritage in Yaoundé

Togolo, Jean Pierre

University of Yaoundé 1, Yaoundé, Cameroon

Registration Code: **1LVHS**

In the aftermath of independence, African countries face a dilemma. On one hand, they show the desire to get rid of colonial rule in symbols of the nation-state building process, on the other hand wants to keep certain symbols (monuments, buildings, streets, etc.). This article aims to revisit the issues of some changes made to the German, the British and the French colonial heritage in Yaoundé, the capital city of Cameroon. In a multidisciplinary approach, this article intends to identify first few symbols of German and French colonization in Yaoundé, then understand their importance in the colonial context using the historical method, then show the political and ideological issues in their postcolonial transformations.

Au lendemain des indépendances, les pays africains sont confrontés à un dilemme. D'une part, ils manifestent le désir de se débarrasser de la domination coloniale et ses symboles dans un processus de construction de l'État-nation, d'autre part, ils souhaitent conserver certains éléments de leur passé (monuments, bâtiments, rues, etc.). Cet article a pour objectif de revenir sur les changements apportés au patrimoine colonial à Yaoundé, au Cameroun. Dans une approche pluridisciplinaire, cet article vise à identifier les premiers symboles de la colonisation allemande, et française à Yaoundé, puis à comprendre leur importance dans le contexte colonial à l'aide de la méthode historique, puis à montrer les enjeux politiques et idéologiques de leurs transformations postcoloniales.

41. Addressing Rapid Urbanization Challenges through Industrial Parks and Agro-Processing Zones in the Belt and Road Initiative: The City of Durban in Perspective

Vhumbunu, Clayton Hazvinei

University of KwaZulu-Natal, Durban, South Africa

Registration Code: **VF9G6**

The experiences of China have proven that different forms of Special Economic Zones (SEZs) such as Export Processing Zones (EPZs), Industrial Parks (IPs), Economic and Technology Development Zones (ETDZs), Science and Innovation Parks (SIPs), and Agro-Processing Zones (APZs) can collectively present valuable instruments for promoting not only foreign direct investments and industrialization but also the means to address emerging challenges of rapid urbanization and foster smart urban development in African cities. With the Belt and Road Initiative (BRI), unveiled by China to foster trans-continental economic cooperation and connectivity, there is an opportunity for African countries to address rapid urbanization challenges through China-Africa partnerships around different forms of Special Economic Zones (SEZs). Using a case study of South Africa's third largest city of Durban, this paper explores the various opportunities, approaches, modes and methods, challenges as well as prospects of China-Africa cooperation in addressing rapid urbanization and urban development challenges along Belt and Road Initiative (BRI) projects and programmes. Findings of the study assist in drawing measures and interventions that are critical in improving urban spaces, promoting smart urban development and consolidating urban prosperity in African cities within the framework of the Belt and Road Initiative (BRI).

42. Urban Growth and Fuelwood Distribution in Dry Tropical Africa: The Next Challenge for Sustainable Management of Protected Areas

Wafo Tabopda, Gervais

Georgia Institute of Technology, Atlanta, United States

Registration Code: **3AIWX**

Protected areas in arid tropical Africa appear to be excellent support structures for the sustainable management of natural resources and essential tool for climate change mitigation. However, they are increasingly subject to the dual factor of urban growth and domestic energy needs. It is the case of the Laf-Madjam Forest Reserve (5000 ha) in Cameroon, located sixty kilometers from the city of Maroua (350,000 inhabitants). Since the late 1970s, this forest reserve has become the central area for household fuelwood origin in the town. The remote sensing data enabled us to highlight the dynamics of vegetation cover in this reserve between 1976 and 2017, using GIS analysis. We performed a rigorous Multidate Hybrid Classification (MHC) of the Landsat images,

and four land use/land cover classes (forest, woody savanna, wetland and grass, crops, and bare soil) were derived. The results obtained highlight a vegetation dynamic that alternates phases of increase and phases of decrease. This research shows that the woody savanna, which constitutes the primary source of fuelwood, is the element of land use that is experiencing the most significant decline. It loses 1000 ha between 1976 and 2017, which is equivalent to 1/5 of the total area of the reserve, or 25% of all vegetation cover. On the other hand, when we compare evolution trends and changes in land cover, and the interannual rainfall plots, it appears that periods of reduced vegetation cover correspond to periods of drought.

43. Toward More Sustainable High-Rise Building: A Case of Shanghai Center

Wang, Hong

Shanghai University, Shanghai, China

Registration Code: **570WZ**

With the aim at investing in infrastructure far across the distant spaces in continents, the One Belt, One Road (OBOR) initiative has the potential to transform urbanization, architecture, and technology from East Asia to North America, Africa and beyond. Greening the OBOR is China's response to the 2030 Sustainable Development New Agenda set by the United Nations. Now, China is marching on the way of ecological civilization with the basic national policy to control greenhouse gas emissions, conserve resources and protect the environment. Taking Shanghai Center for an example, this paper discusses its innovative practice of sustainable development in architectural energy-saving design, intelligence system and humanistic care. Firstly, Shanghai Center has adopted a series of energy-saving measures, such as heat recovery and utilization technology, rainwater collection, treatment and reuse technology, the glass curtain wall and indoor air garden. Secondly, the building intelligent system of Shanghai Center concerns intelligent lighting technology, multi-energy management system, and lean management based on BIM technology. Thirdly, its human care is reflected from the building structure, nine vertical communities, "a sky lobby" for recreation, and other multi-functions. In 2015, Shanghai Center won the LEED platinum award, showing its outstanding responsibility in environmental value, economic value and social value. As the highest green building in the world, Shanghai Center sets up a fantastic model for the construct.

“一带一路”倡议的目标是在各大洲进行远距离空间的基础设施投资，这一倡议具有将城市化、建筑和技术从东亚转移到北美、非洲和其他地区的潜力。“绿化一带一路”是中国对联合国 2030 年可持续发展新议程的回应。现在，中国正以控制温室气体排放、节约资源和保护环境为基本国策，在生态文明的道路上阔步前进。本文以上海中心为例，探讨其在建筑节能设计、智能系统、人文关怀等方面的可持续发展创新实践。首先，上海中心采取了

热回收利用技术、雨水收集、处理再利用技术、玻璃幕墙、室内空中花园等一系列节能措施。其次，上海中心建筑智能系统涵盖了智能照明技术，多能源管理系统，以及基于 BIM 技术的精益管理。第三，上海中心的人文关怀体现在建筑结构、九个垂直社区、“空中走廊”等其他多功能方面。2015 年，上海中心荣获 LEED 白金大奖，体现了其在环境价值、经济价值和社会价值方面卓越的责任贡献。作为世界上最高的绿色建筑，上海中心大厦为“一带一路”沿线国家的建筑行业树立了一个极好的典范，这些国家的人民在气候变化时代将受益于节能减排、环境改善和社会进步。

44. Correlation between Block Layout and Wind Environment

Wang, Huaming

Xi'an Jiaotong University, Xi'an, China

Registration Code: WSV6U

With a rapid urbanization in China, the high-density new urban-center districts have already changed the microclimate in the city. Because of the using characters of building the commercial pedestrian streets which have emerged massively making a large number of pedestrians appear in there, pedestrian comfort in the commercial streets of the new urban-center districts requires more attention. Different street spatial layout will change the wind environment in the street and then influence the pedestrian comfort. We take the Xi'an area as typical, computational fluid dynamics (CFD) models are used to study the correlation between the street layout and wind environment, under the simulation with relevant weather conditions. The results show that the wind speed in the city streets is inversely proportional to the block layout, and the north-south street temperature is lower than the East-West Street. The conclusion will provide an evaluation basis for urban planners and architects at the beginning stage of the design to effectively avoid the potential poor physical environment.

在中国快速城市化，高密度的城市新中心区已经在改变城市的小气候变化。由于城市商业步行街的大量使用，使得大量的行人出现在街道上，城市中心区商业街的行人舒适度需要更多的关注。不同的街道空间布局会改变街道的风环境，进而影响步行者的舒适度。利用计算流体动力学（CFD）模型，以西安地区为典型，研究了在相关天气条件下，街区的空间布局与风环境的相关性。结果表明，城市街道风速与街道纵横比成反比，且南北走向街道温度低于东西走向街道。这一结论将为城市规划师和建筑师在设计初期阶段提供有效的评估依据，有效地避免潜在的恶劣的物理环境。

45. Understanding the Politics of Sino-Africa Infrastructure Development

Wang, Yuan

University of Oxford, Oxford, United Kingdom

Registration Code: **NFCH4**

Why foreign-sponsored projects that are similar in nature present very different trajectories in different African states? Through explaining this puzzle, this research contributes to the debate on the debate among the neoliberal school and African developmental states thesis domestically, and the dependency theory and the African extraversion theory internationally, on explaining the variance in African development. This research closely examines the politics of three Chinese-funded and constructed railway projects: The Benguela railway in Angola, the Standard Gauge Railway in Kenya, and the Addis-Djibouti Railway in Ethiopia. The case studies are investigated using within-case process tracing and cross-case comparison. This research heavily relies on first-hand, empirical data collected during field research in the three case countries from 2014-2018, relying on over 100 interviews. This research finds that it is the primacy of African domestic politics, rather than the 'Chinese-ness', that is critical to the railway development. The more competition and less cohesion among African ruling elites, the higher likelihood for the international-sponsored railway to be politicised — i.e. dragged into the domestic electoral competition — and the more likely the incumbents attach higher commitment to the project, and the better railway development. In the railway politicisation process, the Chinese construction enterprises are socialised through interaction with African domestic politics.

46. Study of Urbanization, Ecosystem Services Alteration and Human Wellbeing in the Great Rift Valley Region of Eastern Africa; a Perspective from Land Use/Land Cover Dynamics

Wu, Wei

Nanjing Agricultural University, Nanjing, China

Abiyot, Legesse

Dilla University, Dilla, Ethiopia

Registration Code: **6A5UX**

Land use is one of the most closely associated links between human and nature. The relationship between urbanization, ecosystem services and human wellbeing from the perspectives of land use changes is an important cross topic in research concerning natural, socioeconomics and biophysical environment to sustain regional development. Apparently, urbanization alters the structure and function of both natural and agro-ecosystems with subsequent deterioration of the services they provide to the society causing livelihood crisis. The current global and regional trend of urbanization shows a massive expansion of urban areas, this growth being actually generated

by the numerical population growth and migration. Obviously, urban development determines changes regarding the organization of places, economic and social changes but these effects exceed the territorial barriers and generate a broad impact. Urban growth in Ethiopia has both positive and negative impacts. When the growth is unplanned and unregulated, the impacts would inflict serious damages such as loss of biodiversity, social and economic crisis. This study aims to emphasize on the analysis of the effects of both urban and rural land use dynamics on major aspects of ecosystem services pertaining to human well-being, particularly in terms of livelihood and food security in the Great Rift Valley area of the eastern Africa. The results may provide new insights into achieving regional sustainability with adaptive land use usage and protection.

47. Social Sustainability of Urban Regeneration in Historic Community: Case of Suzhou Pingjiang Road

Wu, Yaojun

Shanghai Jiaotong University, Shanghai, China

Registration Code: **DU9XG**

Sustainable community has been advocated as a remedy to cure the negative impacts of urban regeneration on historic communities. Pingjiang Road regeneration project in Suzhou old town (covers 116 hectares area) which was carried out 15 years ago has been widely studied by scholars on historic buildings conservation and local tourism development. However, its social impacts on local communities were generally ignored. This study applied the connotation of social sustainability from sustainable community perspective to explore the social sustainability of this regeneration activity and its social impacts on local historic communities. To achieve the research aim, four aspects of social sustainable community, namely, social cohesion, social justice, community empowerment and culture vitality were surveyed in the local communities. 80 participants from local communities, including residents, businessmen and tourists, participated in the questionnaires and interviews. It is found that this regeneration project actively promoted culture vitality, which means the traditional cultures and local culture characteristics have been strongly protected. However, it failed on social cohesion, social justice and community empowerment aspects. The conflicts between residents and businessmen increased, economic benefits generated by the regeneration activities were unfairly shared between residents and businessmen, and the community members were nearly excluded from the decision making of community affairs. Suggestions were finally proposed.

历史街区的更新往往会给当地社区带来一系列社会问题，“社会可持续性社区”的提出则为解决这些问题提供了新的思路。本文以苏州平江路历史街区更新为例，通过引入“社会可持续性社区”的概念，从社会融合、社会公正性、公众赋权、和文化活力四个方面探讨平

江路更新的社会可持续性，以及给社区带来的社会影响。通过对当地社区居民、商家、和游客的实地访谈及调研，研究认为这一更新活动在社会融合、社会公正性、和公众赋权方面缺乏可持续性，但却促进了文化活力的再造。文章最后提出了增强历史街区更新的社会可持续性的建议。

48. Cooperation or Capital? Sino-African Special Economic Zones as both Government Programmes and Business Investments

Xu, Jiabo

Wang, Xingping

Southeast University, Nanjing, China

Registration Code: LP6CA

These overseas SEZs are, according to MOFCOM guideline, supposed to be run by enterprises based on business principles aiming at facilitating the win-win relationship. Therefore, decisions in Sino-African SEZs should be made by enterprises given the market, investment environment, and policies in the holding countries. By establishing such kind of cooperation zones, the holding countries will be able to attract more firms and investment which would increase the employment, tax revenue, exports, and foreign exchange. Chinese overseas SEZs thus are both capital investment (as they are company-led which means they are supposed to be profitable) and development cooperation (as they are government-initiated which means they are supposed to produce positive effects beyond profits or even without profits like the current situation in most overseas SEZs cases). Understanding this dual-character is important when assessing whether these SEZs are successful or not, as the government willingness sometimes might not be completely consistent with business profits.[Foundation: The National Key R&D Program of China (No. 2016YFE0201000) Research Cooperation and Exemplary Application in Planning of Overseas Industrial Parks][Foundation: Research on Development Model and Planning Guidance Mechanism of Jiangsu Overseas International Cooperation Parks (No. 17EYA001)]

49. Research on the Spatial and Temporal Differentiation of Industrial Agglomeration and Urbanization Coupled Coordination in Africa

Yan, Yiran

Wang, Xingping

Southeast University, Nanjing, China

Registration Code: UMVUC

By using data of industrial output, manufacturing output, mining output and population urbanization rate of 53 African countries (regions) in 2009 and 2016 to evaluate coupled coordination features and geographical changes. The conclusions are as follows: The degree of coupled coordination of countries (regions) with a high degree of manufactural agglomeration is generally sounder than countries (regions) dominated by mining industry; The coupled degree of industrial agglomeration and urbanization in most countries (regions) is gradually increasing; The correlation between industrial agglomeration and urbanization is relatively low in African countries (regions), and the phenomenon of informal employment is prominent in some countries. Acknowledgment: This research is supported by the National Key R&D Program of China (No. 2016YFE0201000): Research Cooperation and Exemplary Application in Planning of Overseas Industrial Parks.

采用 2009 年和 2016 年非洲 53 个国家（地区）的工业部门产值、制造业产值、采矿业产值和人口城镇化率等指标评价非洲国家（地区）两个年份的产业集聚与城镇化的耦合协调特征和变化情况。结果表明：制造业集聚程度较高的国家（地区）的耦合协调程度普遍较采矿业的主要集聚国家更加良性；多数国家（地区）产业集聚与城镇化的耦合协调度逐步提高；非洲国家（地区）产业集聚与城镇化进程的相关性较低，非正规就业现象在部分国家比较突出。

50. Urbanization and National Development Planning

Yemeru, Edlam

United Nations Economic Commission for Africa, Addis Ababa, Ethiopia

Registration Code: **6T694**

As a growing share of Africa's population becomes urbanized, the fight against poverty and inequality through structural transformation is to be won or lost in cities. The ability of African economies to achieve structural transformation and broad-based economic growth depends on their capacity to create high productivity jobs, which are located largely in urban areas. Both historical and empirical evidence confirm the link between urban agglomerations and economic growth. Yet, many African cities are not realising their productive potential, due to a myriad of constraints, including infrastructure gaps, inefficient land use, disconnected sprawling development, and mobility barriers. At the same time, however, cities contribute more than 50% of national GDP in many African countries. Despite this enormous economic weight, cities are often an afterthought in national economic planning in Africa. African national development plans do not set a strategic, cross-sectoral vision of urbanization as a necessary driver of economic growth. National development planning rarely prioritize urban jobs, a prerequisite of structural transformation. Agriculture is prioritised over urban economic productivity, even in countries with

more than 50% urban population, and cities drive GDP growth. This results in urban underinvestment, with significant consequences for the economy in the long term. This paper presents a unique model to integrate urbanization in national development planning so that cities drive structural transformation.

51. The Splendors of Informal Settlement in Cameroonian Cities

Yemmafouo, Aristide

University of Dschang, Dschang, Cameroon

Registration Code: **7B19G**

Informal settlement is 70% of urbanization in Africa and since and for more than half a century we have been trying in vain to reduce it. So, we have to ask ourselves differently: What is good in informal settlement so that it perpetuate itself so much? The study is looking for the amenities offered by informal settlement to their inhabitants in Cameroonian cities. These amenities can justify the fact that these neighborhoods do not break up, but evolve into a social diversity and identities affirmed by the solidarities attached to the places. Urban planning approaches to the reforms of these settlements are often too prescriptive and focus on technical functionality, including infrastructure, street calibration, building standards, etc. Beyond informal settlement, there are amenities of spontaneous environments that studies do not often address. However, it is the starting point for the success of any intervention project in these environments. However, it is the starting point for the success of any intervention project in these environments. The study analyses the positivity of the forms of sociability, the socio-spatial mixity underlying the solidarity and lifestyles that inspire living - together while different that is now being sought in Cameroonian cities. This approach through the amenities of informal settlements is a starting point for sustainable reforms.

L'habitat informel ou spontané c'est 70% de l'urbanisation en Afrique, et depuis plus d'un demi-siècle, on cherche en vain de le résorber. Alors, il faut s'interroger autrement : Qu'est-ce qu'il y a de bien dans les quartiers informels/spontanés pour qu'ils se pérennisent autant ? L'étude est à la recherche des aménités qu'offrent les quartiers informels à leurs habitants dans les villes camerounaises. Ces aménités peuvent justifier le fait que ces quartiers ne se disloquent pas, mais évoluent en mixité sociale et en identités affirmés par des solidarités attachées aux lieux. Les approches urbanistiques des réformes de ces quartiers sont souvent trop normatives et mettent l'accent sur la fonctionnalité technique, notamment les infrastructures, le calibrage des rues, les normes des constructions, etc. Au-delà des paysages spontanés, il y a des aménités des milieux informels que les études n'adressent pas souvent. Pourtant, c'est le point de départ de la réussite de tout projet d'intervention dans ces milieux. L'étude analyse la positivité des formes de

sociabilité, des mixités socio-paysagères sous-tendant les solidarités et les modes de vie inspirant le vivre-ensemble différents que l'on recherche aujourd'hui dans les villes camerounaises. Cette approche par les aménités des quartiers informels est un point de départ pour y engager des réformes durables.

52. Enhancing Land Tenure Security in Informal Settlements to Address the Challenges of Rapid Urbanization: Lessons Learnt from Case Studies in Kenya, Uganda and Zambia

Yu, Jianhua

UN-Habitat (Global Land Tool Network)/ Wuhan Planning and Designing Institute, Wuhan, China
Schlimmer, Sina

UN-Habitat (Global Land Tool Network)/ Science Po Bordeaux

Sylla, Oumar

UN-Habitat (Global Land Tool Network)

Registration Code: **57M6W**

Unprecedented urban growth in Sub-Sahara Africa presents a major socio-economic challenge. African cities are currently accommodating 40% of the continent's population and it has been prospected that by 2050, about 68% of the world's population will be urban (United Nations, 2018). As the demand for land in urban and peri-urban zones will increase significantly, experts and policy-makers are keen to define solutions for land-related problems in urban settings, especially the risk of expanding informal settlements and growing informal land markets. This paper aims at identifying land-related challenges in rapidly urbanizing African cities and taking stock of existing policy-responses both at the global and at the national levels to tackle them. Whereas physical planning and slum upgrading projects are among the most prominent tools to regulate the outcomes of urbanization, insufficient attention has been paid to the role of land tenure security as a pillar for sustainable urban growth. Based on the results of the land-tenure security enhancing projects supported by the Global Land Tool Network (GLTN) in Kenya, Uganda and Zambia, this paper demonstrates that good land governance is key for regulating the impacts of urban sprawl. It highlights experiences and lessons learnt on the implementation of affordable geo-spatial solutions and participatory approaches, which are facilitated in these countries by the GLTN, provide solid approaches to strengthen access to land rights in rapidly expanding cities.

53. Monitoring Urban Land Sprawl for China Mega-Cities and Policy Implication

Yue, Wenze

Zhejiang University, Hangzhou, China

Registration Code: **GQRQE**

Since mid-20th century, urban sprawl has been a prevalent problem across the cities of North America, attracted particular interests. Urban sprawl has often been criticized because of its negative impacts on open spaces, energy consumption, air quality, ecosystem service, physical health, poverty and inequity, and intergenerational mobility. Understanding the forms and process of the urban sprawl has significant implications to land policies and urban management. We developed a China urban sprawl index from population density, spatial form and economic efficiency dimensions and measured the urban sprawl for over 100 Chinese mega-cities. We established a government-leading, land-based capital accumulation framework to explain the special driving forces on China's urban sprawl. And at final, from the perspective of land policy we discussed the relevant policy implication.

20 世纪中叶以来，城市蔓延已经成为北美城市化的普遍现象，引起广泛关注。城市蔓延因为对开敞空间、能源消费、空气质量、生态服务、身体健康、贫困与不平等，以及代际流动性等都具有显著的负面影响，因此广受批评。深入理解城市蔓延的形式、过程对于土地政策制定与城市管理都具有重要的启示意义。本研究首先从人口密度、经济效率、空间形态等三个维度开发了一个城市蔓延指数，对中国 100 多个大城市蔓延现状进行了定量表达；然后，建立了一个政府主导、以土地收益为中心的资本累积的框架，以解释中国城市蔓延的内在驱动机制；最后，从土地管理的角度讨论了相关的政策涵义。

54. Urban Development Outcomes of High-Speed Rail Development

Zacharias, John

Peking University, Beijing, China

Registration Code: JOFHO

This paper is an analysis of multiple, separately reported development outcomes of high-speed rail (HSR) development as revealed in recent published papers. A review was undertaken of 232 papers published in SCI or SSCI with empirical contribution to the link between high-speed rail infrastructure and increased investment in urban development. Of these, 18 offer specific insights into the development effects of high-speed rail at intra-urban, inter-urban and long-distance scales. The papers draw on a growing international literature on HSR in China, but also with findings from Europe and Japan. It is clear that HSR supports higher levels of local economic investment, including urban development in cities served by HSR. City-pair linkages via HSR take a number of different forms, in accordance with city strengths, proximity and linkage with other transport modes. At the macro-scale, disparities can be reduced through HSR implementation. At the regional scale, disparities may increase between the rail transport node areas and peripheral zones increasingly dependent on road infrastructure. Local integration also has proven important

in generating synergies that raise ridership and increase local investment. A track record of land development associated with HSR provides the evidence for general guidance on optimizing urban development outcomes while building up HSR. This presentation ends with a summary of what we know about rail system development thus far that is most associated with favourable urban development outcomes.

55. Design and Development of Field Survey and Verification System Based on Internet+

Zeng, Jue

China Land Surveying and Planning Institute, Beijing, China

Registration Code: **3JJBH**

Land field survey and verification is an important means to understand the status quo of land, and the basis and necessary link of land management. How to realize the technological progress of land survey and verification and meet the need of land management is an urgent problem to be solved in current land management. In this paper, we used the integration technology of mobile Internet, cloud services and 3S technologies to design and develop the field survey and verification system based on Internet+, and introduced the practical examples.

外业调查与核实是了解掌握土地实地现状的重要手段，是土地管理的基础和必要环节。在原国土资源部每年一次组织开展的全国土地遥感监测、土地变更调查和土地执法检查等土地管理工作中，组织了大量的人力物力进行土地外业调查与核查工作，如何实现土地调查和核实的技术进步，满足土地管理的需要是当前土地管理需要迫切需要解决的问题。本文讨论了集成移动互联网、云服务和 3S 一体化技术，设计开发互联网+外业调查及核查系统并开展实际应用实例。

56. Research on Urban Resilience Planning System Based on Risk Assessment and Resilience Evaluation: A Case Study of Beijing

Zhao, Dan

Yang, Bin

Beijing Municipal Institute of Urban Planning and Design, Beijing, China

Registration Code: **YGV75**

Urban resilient planning is an important means to deal with urban risks and ensure urban security. In this study, a theoretical system of urban resilient planning integrating "risk - vulnerability - resilience" is constructed. Taking the mega-city Beijing as an example, a risk database was established; the comprehensive risk assessment of "total factors, total space and the whole

process" was carried out, and a comprehensive risk map of the whole city and the central city was drawn. In order to effectively evaluate and scientifically quantify urban resilience, a resilience city evaluation index system consisting of 12 aspects and 83 performance indicators was constructed from the two dimensions of urban system and resilience management, and the resilience index was used to measure the current situation of Beijing and the planning resilience level after the implementation of the master plan. On this basis, the paper further clarifies the goal and path of Beijing's resilience urban planning, and puts forward countermeasures and suggestions for improving resilience.

韧性城市规划是应对城市风险，保障城市安全的重要手段。本研究构建了集“风险-脆弱性-韧性”为一体的韧性城市规划理论体系。以特大城市北京为例，建立风险数据库，开展“全要素、全空间、全过程”的综合风险评估，绘制全市及中心城综合风险地图。为有效评价和科学量化城市韧性，从城市系统和韧性管理 2 个维度出发，构建了包含 12 个方面、83 个绩效指标的韧性城市评价指标体系，并利用韧性度指数对北京市现状及总规实施后的规划韧性水平进行测算。在此基础上，进一步明确了北京韧性城市规划的目标和路径，提出韧性提升的对策建议。

57. Reflections from Industrial Perspective on the Transformation of Urban Villages in China: An Empirical Study of Jiangwanying in Hefei City

Zhao, Shengbo

Southeast University, Nanjing, China

Wu, Huijun

Hunan University, Hunan, China

Registration Code: **TJP4C**

The urban villages are the product of urbanization process. Its formation could be attributed to the expansion of urban space and the attribute conversion of rural settlement surrounded by the urbanized area, thus has the characteristics of urban and rural duality. The function of China's urban villages now is mainly to carry the living of local & non-local populations and various informal economies. The urban villages gradually marginalized in the urbanization were not only driven by external forces from government, commercial projects, etc., but also because the space format and value were no longer adapt to the rapid urbanization. Promoting the transformation of urban villages with industrial development is a rational path to realize spatial value-added and escape from decline. The industrial development of urban villages in China faces problems such as weak foundation, lack of characteristics, poor environment and insufficient transformational motivation. Based on the problems, this paper proposes four development principles "converting driving force, adapting to local conditions, regional integration, and gradual progress" to strengthen the

industrial foundation, highlight the characteristics and optimize the environment. Taking Jiangwanying in Hefei City as empirical case, the research believes that the industrial revitalization and self-sustainability could be achieved by promoting informal economy specialization, developing local historical resources rationally and optimizing the community's living environment.

城中村是城镇化发展进程中的产物，其形成归因于城市空间的不断蔓延以及被城市化区域包围的乡村聚落空间的属性转换，兼有城乡二元的特征与属性。当前中国城中村的功能以承载本地和外来人口的居住生活以及各种非正式经济为主。城中村在城镇化进程中被边缘化，不只受政府、商业开发项目等外力推动，也是由于其自身空间形式及价值难以适应快速发展的城镇化。以产业发展推动城中村转型是其实现空间增值、逃离衰败宿命的可行路径，回顾中国城中村发展现状，其产业发展面临发展基础薄弱、发展特色缺乏、发展环境不优、转型动力不足等问题。基于城中村产业发展问题与困境，研究提出“转换动能、因地制宜、区域融合、循序渐进”四大发展原则，以强化产业发展基础，凸显产业发展特色，优化产业发展环境，保障产业发展动力。以合肥市姜万郢进行实证分析，研究认为可通过推动非正式经济专业化、合理开发地方历史文化资源、优化社区居业环境，促进产业振兴并推动姜万郢实现自生性发展。

58. Bike-Sharing in The Smart City Era: Post-Automobility In Canada And China

Zhao, Yawei

Eliot Tretter

University of Calgary, Calgary, Canada

Registration Code: **BW9DE**

The Smart City has since the 2010s been described as a new favourable and ambitious urban imaginary, with a wide variety of Smart projects being premised on promoting a healthier and more socially and ecologically sustainable urban future. Yet many critics have noted that the Smart City, despite its utopian vision, is dominated by private for-profit companies that benefit from the uncommoning of the urban spaces via smart technologies across the world. This paper explores the rollout of urban smartness in Canada and China with a comparative study on a newer generation of bike-sharing schemes in the Canadian city of Calgary and the Chinese city of Wuhan. Bike-sharing as a Smart mobility technology has offered the promise of post-automobile centric urbanism for both cities, but posed different challenges to socio-spatial equality in these two cities.