

TOPICAL REPORT

CITIES

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FUTURE CITIES



Turning Cities Into Sponges to Save Lives and Property

"Engineers, architects, urban planners and officials around the world are seeking ways to retrofit or reconstruct cities to better deal with water — basically, to act more like sponges. While water management has always been an essential service in cities, climate change, combined with urban expansion into wetlands and floodplains, is making flooding and drought worse at the same time."

Source: New York Times

How Can Cities Keep Water Clean Now and in the Future?

"As the crowds come, so does the demand for clean water. Urban areas internationally are rapidly increasing in size, population, and space, and to assure clean water for these urban populations on a long-term basis, cities will need to prioritize management that incorporates environmental sustainability."

Source: JSTOR Daily

With new industry, a new era for cities

"As Ben-Joseph and Hatuka also emphasize, the pursuit of industry to help rebuild cities does not have to focus strictly on high-tech firms. In Los Angeles' Garment District, as the book also details, changes in zoning threatened to disperse a thriving, century-old cluster of

SMART CITIES



Where do Smart Cities grow? The spatial and socio-economic configurations of smart city development

"We investigate 22 Swiss cities with smart city projects and use fuzzy-set Qualitative Comparative Analysis to determine the configuration of conditions that make some cities more advanced than others in their smart city development."

Source: Sustainable Cities and Society

A review on deep learning for future smart cities

"The advancements in Information and Communication Technologies (ICT) made the concept of Smart Cities into reality. In a smart city several Internet of Things (IoT) sensors are deployed across several locations to collect the data about traffic, drainage, mobility of citizens etc. and the insights gained from these data are used to manage resources, assets etc. effectively. Deep Learning has been used extensively on the data generated by IoT sensors in a smart city by several researchers. In this article an attempt is made to survey several state-of-the art on usage of Deep Learning on Smart City data. Several future research directions are suggested at the end of the article."

Source: Internet Technology Letters

Urban Open Platform for Borderless Smart Cities

CITIES



Shaping the Future of Small and Medium-Sized Cities: A Framework for Digital Transformation

"Digital transformation is becoming a crucial support mechanism for countries as they respond to the COVID-19 pandemic and undergo economic rebuilding and sustained development. For small and medium-sized cities (SMCs), digital transformation can disrupt traditional business models, breakthrough geographical and spatial boundaries, and create new ways to live in the digital era. However, the digital transformation of SMCs presents challenges such as insufficient digital talent, funds, and resources, poor understanding and application of digital technologies, and a lack of intercity interaction and cooperation mechanisms. This report analyses the challenges, needs, and concerns of SMCs undergoing digital transformation in China, Japan, Brazil, and Singapore, proposes a methodological reference model, and suggests actions for various urban stakeholders."

Source: WEF

manufacturers.”

Source: MIT News

Online Shopping Is Reshaping Real-World Cities

“The rise of dark stores directly parallels the acceleration of ecommerce as a whole, especially in the grocery industry. Online sales represented 13 percent of all grocery spending in 2021, a new high, and dark stores are designed to make the delivery process smoother.

But as they spread across the country, they also might reshape the design—and the feel—of the neighborhoods they enter.”

Source: Wired

COVID - 19



Post-Covid Cities Need To Be Smart Cities

“As we consider our post-Covid future, there is a strong argument that the smart city technologies that have been so vital in tackling the pandemic may also be vital in ensuring that cities retain a vibrant future. Indeed, the University of Dortmund's Klaus Kunzmann argues that the pandemic has been a boon for the smart city movement.”

Source: Forbes

SUSTAINABLE CITIES



China turns cities into sponges to stop flooding

“Yu says tropical cities were mistaken in implementing the same water-management systems that were developed in the mild climates of Europe, arguing they can lead to catastrophic damage.

His ultimate vision is a city devoid of gray infrastructure, with wetlands, green areas, permeable surfaces, widespread vegetation, winding creeks, open areas next to roads, and floodplains.”

Source: DW.com

6 innovative schemes helping cities to become more sustainable

“From redesigning planning norms to re-greening the heart of cities and

“The aim of an Urban Open Platform (UOP), introduced in this paper, is to support not only data acquisition but also various types of data processing: data is aggregated, processed, manipulated and extended within the city context. Conceptually, special attention has been put on scalability, roaming and reliability in urban environments. This article introduces the UOP uniquely in the cross-border data exchange context of two European capital cities, Helsinki and Tallinn”

Source: AGRIS

Smart Cities as a Solution for Mega Capital Cities

“This paper discusses the strategy for transferring the old Cairo capital to the new administrative capital (NAC), which is intended to be a smart capital city. It also discusses smart city dimensions, smart city performance evaluation criteria, and smart city technologies such as implementing smart applications in various city sectors, all of which contribute to the city's continued development.”

Source: Heliyon

Using 5G in Smart Cities: A Systematic Mapping Study

“The scenarios of using 5G include enhanced Mobile Broadband (eMBB), massive Machine Type Communications (mMTC), and ultra-Reliable and Low-Latency Communications (uRLLC). 5G is expected to support a wide variety of applications, such as city management, healthcare, transportation, agriculture, and energy management.”

Source: Intelligent Systems with Applications

Smart cities: worldwide smart urban transportation's scenario and importance

“a qualitative and descriptive study is developed with examples of the main smart urban transportation means present in the world and how countries should fit themselves to the construction of smart cities, promoting life quality to people and adequate surveillance of sustainable development.”

Source: Revista Nacional De Gerenciamento De Cidades

Alternatives to smart cities: A call for consideration of grassroots digital urbanism

“This article contributes to the emerging body of urban digitalisation scholarship concerned with alternative practices at the grassroots level by reviewing and structuring the literature in relation to the production of urban space and governance. By drawing a conceptual framework for grassroots

tackling emissions from real estate head-on, there's been a flurry of new initiatives and policies aiming to make urban areas more sustainable and resilient in both the shorter- and the longer-term."

Source: JLL

Could cities hold the key to accelerating net-zero progress?

"The need to do something impactful about the climate crisis is well known and widely discussed. At COP26 last year, businesses and governments came together to pledge their commitment to net-zero and most organizations recognize that having sustainability policies in place is almost non-negotiable. Increasingly, customers, suppliers and investors are focusing on green targets and plans, so not only are these policies important morally, but also commercially. However, without considerable intervention net-zero policies could fail."

Source: WEFForum

How Cities Became Accidental Wildlife Havens

"The resiliency of coyotes is recounted in Alagona's new book, *The Accidental Ecosystem*, which retraces the land use decisions that have, intentionally or not, allowed some wildlife species to proliferate across the the U.S. even after they'd been deliberately targeted to make way for cities. It's not just coyotes and commonly sighted critters like squirrels black bears, foxes and even pumas have been spotted wandering the streets of crowded metro areas."

Source: Bloomberg

COASTAL CITIES



Coastal Cities Are Drinking Themselves Underwater

"Rising seas threaten to consume the coastal areas of major metropolises around the world. Now those risks are compounded by an accelerating danger: Most of those cities are also sinking.

That means flooding and other disruptions sharpened by future sea-level rise could hit those urban centers far sooner than expected, according to a study in *Geophysical Research Letters*."

Source: Scientific American

digital urbanism, the paper first brings the ongoing discussions around the smart city and platform urbanism into critical conversation through the lenses of right to city and platform capitalism discourses."

Source: Digital Geography and Society

Building Smarter Smart Cities for Sustainable Development through Artificial Intelligence

"This paper is an effort to showcase in a combined manner, the AI based solutions, aimed at smartifying the smart cities, through focusing on enhancing the sustainable development."

Source: IEEE

A vision for smart and sustainable cities

"Our built environment is characterized by large, ever-expanding and highly complex cities. The spatial extent of the interconnected systems that serve these cities leads to higher vulnerability to disruption. On the other hand, climate change and political instability have noticeably increased the frequency of natural and human-induced hazards. Recalling that risk is the product of vulnerability and hazard, it is evident that large cities are experiencing unprecedented levels of risk."

Source: IET Smart Cities

SUSTAINABLE CITIES



Tracing the boundaries between sustainable cities and cities for sustainable development. An LDA analysis of management studies

"The study has revealed eight different trends concerning sustainable cities research, involving topics such as urban development, public management, environmental issues, and cultural impact on citizens."

Source: Technological Forecasting and Social Change

Future air temperature projection in high-density tropical cities based on global climate change and urbanization – a study in Singapore

"This study conducted projections, which are based on global/regional modelling results and associated closely with urban planning. Projection results indicate that pre-



Why Cities Want Old Buildings Taken Down Gently

“Deconstruction, as Christensen has found, is a pleasant idea. Using old materials to make new things feels meaningful. It helps, too, that reclaimed wood tends to be very pretty. But a growing number of US cities think the idea makes good policy too. In the past five years, cities as disparate as Baltimore, Cleveland, Boise, and San Jose and Palo Alto in California have adopted their own deconstruction policies; San Antonio has been working on one for four years.”

Source: Wired

The Problem With Building a New City From Scratch

“From California to Miami and points in between, housing costs in the U.S. are skyrocketing, bringing bidding wars in hot markets and fears of a fresh surge in homelessness as renters scramble for an affordable place to live.

The deepening housing crunch — and the intractable resistance that residents often put up when the prospect of new housing emerges nearby — has led some observers to ask: Why don't we just make new cities?”

Source: Bloomberg

What climate choices should cities make? A Princeton data tool helps planners set priorities.

“A new tool for city planners helps them design a portfolio of actions that encompasses compact development, smart electric mobility, electric heating systems, mass timber construction, urban reforestation, and technologies that allow resources to circulate efficiently through the food, waste and energy sectors.”

Source: Princeton University

The pivotal role of cities in the sustainability transition

“Cities are in a unique position when it comes to the climate crisis. On the one hand, they are a key contributor to climate change. At the same time, they have the unique ability to address the sustainability challenges that we are facing today.”

Source: SEI

emptive urban planning and design strategies are needed at the districts with potential heat risk and enables urban planners to make evidence-based decisions.”

Source: Urban Climate

Livable neighborhoods for sustainable cities: Insights from Barcelona

“The paper proposes a reflection on the superblock model - or supermanzana, in its well-known Spanish application - in the context of the debate on the 15-minute city and on the functional reorganization of mobility and public space to improve the quality of life, health and accessibility in urban areas.”

Source: Transportation Research Procedia

The potential of autonomous and connected sweepers for smart and sustainable cities

“The current study examines the idea of replacing manned service vehicles by autonomous sweepers in urban areas. Autonomous sweepers could be operated from a control room to perform planned and on-demand cleaning tasks. Tests were carried out with the s100n spring developed by the chinese company idriverplus Technology co., ltd. The sweeper performance and efficiency have been evaluated (1) with gravel, leaves, pine cones and rubbish in a closed test area and (2) in real conditions, on two pavements in Kongsberg (norway). The results from the cleaning tests and the interactions with vulnerable road users are presented. challenges and limitations of the technology are discussed.”

Source: International Journal of Transport Development and Integration

Sustainable urbanisation: An ecosystems approach towards future cities

“Cities are dynamically changing with the rapid pace of urbanisation. India being a developing nation has an ever-increasing number of mega cities. What follows this unprecedented rate of urbanisation is not only economic and industrial growth but also deteriorating urban quality of life. Thus, emergence of sustainable urbanisation in cities is an extreme requisite in order to gain environmental equity. Ecosystems approach allows restoring of the ecosystem component within cities and embedded with the urban planning process yields sustainable urbanisation. The research paper develops an urban sustainability evaluation framework to guide sustainable urbanisation and assists the decision-making process.”

Source: Universidad Politécnica de Cartagena

URBAN TRANSPORTATION

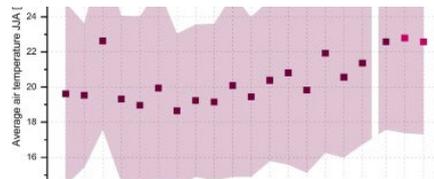


Shared mobility: Shaping the future of cities

“Lucía Chávarri, Vice President of New Business at Cabify, addresses the need to re-think current mobility models as cities battle congestion, carbon emissions and inefficient travel, and explains how shared mobility can act as an enabler for such change.”

Source: Intelligent Transport

URBAN PLANNING

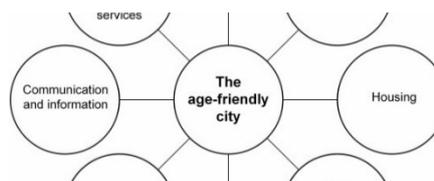


Planning Innovation or City Branding? Exploring How Cities Operationalise the 20-Minute Neighbourhood Concept

“This paper reports on a content evaluation of how the 20-minute neighbourhood concept has been operationalised in planning documents of the 33 cities worldwide that have adopted or are considering the concept. A general lack of implementation with measurability nor statutory policy weight to support planners to enact the concept in practice was found.”

Source: Urban Policy and Research

INCLUSIVE CITIES



Which mental model for inclusive cities that are learning

“The article discusses a different approach to the crucial concepts of learning, intersubjectivity, and the relationship between our body and the environment of which it is part. The objective is the formulation of a definition of the concept of mind different from those still dominant, which can support new mindfulness of the range of problems affecting urban territories and the type of solution that needs to be adopted.”

Source: City, Territory and Architecture

URBAN TRANSPORT



How cities can drive the electric vehicle revolution

“Transportation accounts for 23% of global energy-related carbon dioxide emissions, and 80% of this is due to road transport¹. Road transport is thus a key area in attempts to reduce emissions. Substantial change — including the widespread electrification of the

sector — is though needed to meet the carbon reduction targets². And at the heart of this required electric revolution are cities. Considerable uptake of electric vehicles has already begun in certain cities across the world, but what is driving this change and what can cities do to encourage wider adoption?"

Source: Nature Electronics

Modeling and optimization of electric vehicle networks in future sustainable cities

"This thesis develops three distinct real-time decision-making models and algorithms to handle the two basic problems in practical scenarios of EV networks. In the first technical chapter, we investigate a network of battery swapping stations (BSSs), where battery swapping is considered as a more time-efficient method for EV refueling compared to plug-in charging."

Source: HKUST

Autonomous vehicles in sustainable cities: Reclaiming public spaces for people

"The advent of autonomous vehicles (AVs) may directly affect current trends in sustainable urbanism based on recovering the urban space for people, active mobility (walking and cycling) and chrono-urbanism. How will AVs affect the urban space and the mobility? How will they change the strategies of street and public space design? are relevant questions that need to be answered to prevent AVs ruling the city as the car has done. Decisions such as setting urban goals and planning ahead and encouraging shared used over ownership, will be crucial in guiding the AVs implementation and achieving the most desirable cities."

Source: Universidad Politécnica de Cartagena