

Sustainable Urbanization of Rural Villages in A Smart City Pattern

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Abstract: This paper aims to analyze scientific and experiential studies focusing on both environmental sustainability and smart city concepts to understand the relationship between these two. In order to do so the study identifies information about researchers, models, frameworks and tools focused on the chosen themes. This research uses a qualitative methodology, through a systematic review of the literature, and previous project which examines the terms, 'smart city' and 'sustainability', aimed at sustainable development of smart cities. For this, three databases were used: Scopus, Science Direct, and Emerald Insight. This paper provides detailed information on the most recent tools and concept involved on the smart cities. The paper can serve as a basis for researchers seeking background information for further investigations. The findings provide invaluable insights for scholars researching on the subject, and public managers considering applying those into practice in their cities. The development on the world nowadays has led the natural calamities and the whole globe to some sort of climatic change issues and global warming due to a lot of emitted gases and harmful activities.

whether these activities comes from industries, manufacturing companies or from the resources human being use nowadays to create a suitable living standards regardless of considering the consequences on the environment and Here it comes the concept of the self-sustainable smart cities by using the new technologies and natural resources more effective urban organization with a systematic way to improve quality of living ,promote sustainability and more cautious to the harm on the environment .



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I. INTRODUCTION

A smart city is an urban area that uses different types of electronic methods and sensors to collect data. Insights gained from that data are used to manage assets, resources and services efficiently; in return, that data is used to improve the operations across the city.

This includes data collected from citizens, devices, buildings and assets that is then processed and analyzed to monitor and manage traffic and transportation systems, power plants, utilities, water supply networks, waste, crime detection, information systems, schools, libraries, hospitals, and other community services.

It's also defined as the ability to integrate multiple technological solutions in a secure fashion to manage the city's assets—the city's assets include, but not limited to, local departments information systems, schools, libraries, transportation systems, hospitals, power plants, law enforcement, and other community

Services. The goal of building a smart city is to improve the quality of life by using technology to improve the efficiency of services and meet residents' needs.

Business drives technology and large-scale urbanization drives innovation and new technologies. Technology is driving the way city officials interact with the community and the city infrastructure. Through the use of real-time systems and sensors, data are collected from citizens and objects—then processed in real-time. The information and knowledge gathered are keys to tackling inefficiency. Technology can be used as an enabler to tell what is happening in the city, how the city is evolving, and how to enable a better quality of life.

A smart city uses information and communication technologies (ICT) to enhance quality, performance and interactivity of urban services, to reduce costs and resource consumption and to improve contact between citizens and government.

Sectors that have been developing smart city technology include government services, transport and traffic management, energy, health care, water, innovative urban agriculture and waste management. Smart city applications are developed with the goal of improving the management of urban flows and allowing for real time responses to challenges.

OBJECTIVES

- Improve quality of living to its citizens
- Ensure economic growth with better employment opportunities;
- Improve well-being of its citizens by ensuring access to social and community services;
- Establish an environmentally responsible and sustainable approach to development;
- Ensure efficient service delivery of basic services and infrastructure such as public transportation, water supply and drainage, telecommunication renewable energy and other utilities;
- Ability to address climate change and environmental issues, and;
- Provide an effective regulatory and local governance mechanism ensuring equitable policies.

LITERATURE REVIEW

YIGITCANLAR, T., & LEE, S. H. (2014). Korean ubiquitouseco-city: A smart-sustainable urban form or a branding hoax? *Technological Forecasting and Social Change*, 89, 100–114. The paper aims to put the premise of u-eco-city into a test and address whether u-eco-city is a dazzling smart and sustainable urban form that constitutes an ideal twenty-first century city model or just a branding hoax.

KRAMERS, A., HÖJER, M., LÖVEHAGEN, N., & WANGEL, J. (2014). Smart sustainable cities—Exploring ICT solutions for reduced energy use in cities. *Environmental Modeling & Software*, 56, 52–62. This paper explores the opportunities of using ICT as an enabling technology to reduce energy use in our cities.

LEE, J. H., HANCOCK, M. G., & HU, M. C. (2014). Towards an effective framework for building smart cities: Lessons from Seoul and San Francisco. *Technological Forecasting and Social Change*, 89, 80–99. This paper develops a conceptual framework to examine and analyze two leading cases from the US and Asia. Through the lens of this new framework the paper identifies heterogeneous and heterogeneous characteristics in the process o

JOSS, S. (2015). Eco-cities and sustainable urbanism. In *International Encyclopedia of the Social & Behavioral Sciences*, pp. 829–837. This paper focuses on the eco-city and related concepts and the practices of sustainable urbanism that have since the early 2000s gained

growing international popularity and entered mainstream policy as a consequence of the forceful combination of global climate change concerns and a rapidly urbanizing world population.

BAYULKEN, B., & HUISINGH, D. (2015). Are lessons from eco-towns helping planners make more effective progress in transforming cities into sustainable urban systems: a literature review (part 2 of 2). *Journal of Cleaner Production*, 109, 152–165. This paper summarizes and systematizes the insights that have been obtained from eco-town based urban developments implemented in the North-western Europe with particular emphasis given into the examples from the Netherlands, Sweden and Germany.

MARSAL-LLACUNA, M. L., & SEGAL, M. E. (2016). The Intelligencer Method (I) for making “smarter” city projects and plans. *Cities*, 55, 127–138. This paper proposes a first-of-its-kind method for the design of truly smart city projects and the elaboration of smarter urban planning. The Intelligencer Method is based on the innovative idea of collaborations discovery in urban systems.

TSOLAKIS, N., & ANTHOPOULOS, L. (2015). Eco-cities: An integrated system dynamics framework and concise research taxonomy. *Sustainable Cities and Society*, 17, 1–14. This paper addresses the problem of the eco-city paradigm assessment with a multi-method approach. It grounds three research questions with focus to eco-cities and applies alternative methodologies in an attempt to answer them.

ANGELIDOU, M. (2015). Smart cities: A conjuncture of four forces. *Cities*, 47, 95–106. This paper aims to identify the forces shaping the smart city conception and, by doing so, begins replacing the currently abstract image of what it means to be a smart city.

YIGITCANLAR, T., (2015). Smart cities: an effective urban development and management model? *Australian Planner*, 52(1), 27–34. This paper aims to firstly, investigate the role of smart urban technologies in the progress of smart city formation, and thus providing conceptual clarity on smart cities, and; secondly, undertake a critical review of application attempts of the smart city model by looking into emerging practices of ubiquitous eco-cities as exemplar smart city initiatives from Korea.

NEIROTTI, P., DE MARCO, A., CAGLIANO, A. C., MANGANO, G., & SCORRANO, F. (2014). Current

trends in Smart City initiatives: Some stylized facts. *Cities*, 38, 25–36. This paper provides policy makers and city managers with useful guidelines to define and drive their smart city strategy and planning actions towards the most appropriate domains of implementation.

METHODOLOGY

The methodologies of smart cities aim to reflect different aspects which are intended for both city leaders employee and GOV and that helps to organize the building in the smart city.

The literature review is the basis for scientific writing. It is in the review that the researcher becomes familiar with the texts, identifies the eminent authors who have been writing on the topic (FERENHOF AND FERNANDES 2016) as so there are certain methodologies to be evolved in order to obtain the smart city such as.

ORGANIZATION;

- ❖ Political commitment.
- ❖ Organization and responsibilities.
- ❖ Strategy and action.
- ❖ Cooperation and long term partners.

COMMUNITY ;

- ❖ Activities and connects for ideas to improve the city.
- ❖ Space for self-development and create communities such as sport place and education centers.
- ❖ Collaborative economy.
- ❖ Cultivates the public space.

1. INFRASTRUCTURE;

- ❖ Covering the whole city tech and citywide regulation data collection and use of smart sensors IOT and ICT.
- ❖ Multipurpose solution as investment tech.
- ❖ Integrated solution.
- ❖ Open solution.

THE RESULTING QUALITY OF LIFE AND ATTRACTIVENESS OF THE CITY;

- ❖ An open cooperative city.
- ❖ Healthy, clean, cultivated city pleasant to live in.

- ❖ And economically interesting and attractive city.

SMART ECONOMY;

- ❖ Entrepreneurship & innovations.
- ❖ Productivity.
- ❖ Local and global. Interconnectedness.

SMART PEOPLE;

- ❖ 21 century education.
- ❖ Inclusive society.
- ❖ Embrace creativity.

SMART LIVING;

- ❖ Health.
- ❖ Safety.
- ❖ Culture vibrant.

SMART GOVERNMENT;

- ❖ Enable supply and demand side policy.
- ❖ Transparency and open data.
- ❖ ICT, IOT and e-government.

2. SMART ENVIRONMENT;

- ❖ Green building.
- ❖ Green energy.
- ❖ Green urban planning.

IN SUMMARY;

The methodology addresses the following core area of the smart cities technology;

- ❖ Infrastructure.
- ❖ Mobility.
- ❖ Energy and services.
- ❖ Information and communications technologies.

DISCUSSION AND CONCLUSION

Environmental externalities mainly generated from population increase, rapid urbanization, high private motor vehicle dependency, deregulated industrialization, and mass livestock production have placed serious concerns for the future of our wellbeing, and even our existence in the long run. Realization of the fact that urgent measures must be taken to combat environmental externalities responsibly, effectively, and effigycogently have resulted in the rediscovery of the need for more eco-friendly practices. Subsequently, during the last few decades, sustainability and sustainable development have become popular topics not only for scholars, particularly in the fields of environmental economics, technology and science,

urban planning, development, and managemant, but also for urban policy makers and professional practitioners.

Over the past decade smart urban technologies, as part of the smart and sustainable city agenda, have begun to blanket our cities with an aim of forming the backbone of a large and intelligent infrastructure. Along with this development, dissemination of the sustainability ideology has had a significant imprint on the planning and development of our cities. Today, the smart city concept is viewed as a vision, manifesto or promise aiming to constitute the twenty-first century's sustainable and ideal city form. In other words, smart city is an efficient, technologically advanced, green and socially inclusive city.

This is to say, smart city applications place a particular technology focus at the forefront of generating solutions for ecological, societal, economic, and management challenges. This paper presented a theoretical and practical estimations basis on the concepts of smart city and sustainability through a thorough review of the literature and requirement of smart cities. It generated some insight for to understand the relationship between the concepts of sustainable urban development and smart cities. The challenge of making cities more attractive to people brings the need for clarity in terms and concepts, unfortunately it is not the case with smart cities although it is seen as a city that uses technology to generate environmental gains and sustainable outcomes. On the other hand, different than smart cities sustainable cities refer to the commitment to sustainable urban development. Moreover, despite their promise to deliver sustainable outcomes with the aid of advanced technology, smart cities are heavily criticized as being just a buzz phrase that has outlived their usefulness. The provocation of this paper is, therefore, whether smart cities concept and practice can bring sustainability to our cities. The paper points out the need for prospective studies in answering this critical issue, where the review provided here could be a stepping stone for future studies.

The paper aims on studying all smart city elements along with their estimation and costing as a practical part.

- Calculation and estimation of quantities based on IS codes and previous studies in most of the smart city

elements posted in the reports

- Technical advantages of planned smart city over and unplanned cities such as.

Planned (poor urban dwellers often lack access to health services, exacerbated communicable diseases water borne and food borne diseases, overpopulation problems, haphazard housing services, urban poverty, increase the possibility of crimes as it lacks safety, weak social community lack of education)

On the environment unplanned cities causes (degradations, inadequate solid waste disposal, lack of adequate public water supply, traffic congestion, water logging, increase in air pollution and noise pollution).

In planned cities we find that there is

- ❖ Efficient distribution of resources
- ❖ Seamless communication with the help of systematic sensors
- ❖ Speed of implementation.
- ❖ Better transport services.
- ❖ Safer communities.
- ❖ Efficient public services.
- ❖ Reduction on the environment risk by managing the waste disposal and recycleation methods.
- ❖ New economic development opportunities.
- ❖ Infrastructure improvement.

- The medical advantages and disadvantages

Coming to the disadvantages of and unplanned city loss of lives can accrue due to some traffic jam, the lack of sewer and disposing system of night soil can cause water borne disease, lack of waste management can cause food bone dieses.

The medical advantages of planned city can be such as. As vice versa of the above mentioned disadvantages the ease accessibility of road and identifying the faster rout can help in saving lives and reaching in the minimum time, solid waste and wet waste management can help in reducing the borne disease and protect the land for getting degraded, treatment water plant help in providing a clean domestic water to its citizen and so on.

- Cost saving advantages as dependency of natural resources energy will reduce the cost imposed on the environment as well as the citizen.
- Advantages and downfall of ICT and IOT.

The advantages of using the ICT on smart cities is the main objective for naming it smart city and that is such

as

- ❖ Traffic management and parking solutions.
- ❖ Waste management.
- ❖ Security systems.
- ❖ Smart energy consumption.
- ❖ Heath services

But the IOT and ICT also has some downfall such as

- ❖ Privacy for personal data which are not encrypted it can be reached out.
- ❖ Complexity is another issue as a downfall of one server can affect the others.
- ❖ Implementing the right assessment of infrastructure and capacity to stop the interference.

- Disaster management advantages can be managed by the sensors used in the city and the new technologies.
- Waste management of the planned city.
- Use of renewable sources of energy and their estimation and calculation are as well being kept on the report.

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