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## Accelerating Infrastructure Development In Post-Pandemic Era

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## **ACCELERATING INFRASTRUCTURE DEVELOPMENT IN POST-PANDEMIC ERA**

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COVID-19 outbreak has contributed a negative effect on the infrastructure sector worldwide. Infrastructure projects need to shut down and put on hold for an unspecified time, as this sector required a high number of workers prone to the virus transmissions. However, the degree of slowdown between countries varies and depends on the severity of pandemic and lockdown conditions. Many countries are having a slowdown in economic growth. This condition has greatly affected the supply and demand sides, making it difficult to predict recovery timelines of on-going and future project development.

In response to the COVID-19 pandemic, many governments worldwide launched stimulus plans to recover their economies. The severe impacts of the outbreak need to be addressed through international cooperation. During the pandemic and recession, government expenditure is crucial to driving the economy. Infrastructure projects have been argued as a way to accelerate economic recovery, considering the infrastructure industry is absorbing many workers and driving other supply chain industrial sectors. Therefore, green investment in renewable energy, clean transportation, advanced technologies, and other low-carbon infrastructure projects can stimulate the economy during pandemics and recession.

Despite playing a pivotal role in coping with current challenges, not all countries have financial freedom and supporting policies enabling them to invest in infrastructure heavily. Therefore, these countries must prioritize projects that significantly boost income per capita, livelihood improvement, and employment opportunities, particularly for mid to lower-income households. The government is encouraged to pursue the construction of social infrastructures such as healthcare, education, public facilities, and transportation. This attempt is expected to facilitate quick recovery from the pandemic and maintain public services.

Most stakeholders associated with the infrastructure sector that suffered from the crisis attempted to create a roadmap, quick wins, and strategic actions to prepare challenges they might face for the next normal. Related stakeholders are highly encouraged to consider digital technology adoption, supply chain redistribution of products and materials, resource allocation of company assets and portfolio, organization restructuring, identification of alternative market opportunities, and collaboration with other parties, including the government, to rebuild the industry. These actions aim to maintain businesses from a growing debt and high-cost recovery during the pandemic.

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Remote working has catapulted the need to utilize technology further to accelerate infrastructure development and gain maximum benefits for participated stakeholders. The fourth Industrial Revolution (Industry 4.0) enables automation and data exchange within a cyber-system. Digital transformation through big data, machine learning, cloud computing, and other artificial intelligence domain has facilitated real-time working condition between office and site. Advanced technologies also offer a vast potential to improve project performance and increase construction workers' productivity compared to the business as usual approach. We believe that the pandemic urged the utilization of a robust technological innovation in developing infrastructure projects in the post-pandemic era.

### **Innovation in Infrastructure-related Research**

Innovation provides alternative ideas to cope with the global crisis and increase urban development challenges and economic growth. In this edition of the CSID Journal of Infrastructure Development, nine papers dedicated to innovation studies are presented.

The first paper, written by N. Handika, B.F. Norita, E. Tjahjono, and E. Arijoeni, evaluates the homogeneity of Recycled Aggregate Concrete (RAC) to gain a relationship between compressive strength and ultrasonic wave velocity in concrete. The findings show that the wave propagation velocity through RAC and the concrete compressive strength relationship demonstrates a similar pattern as concrete with GFC (Gypsum-free-cement) performed by previous research development.

The second paper, written by C. Adindu, A. Musa, U. Nwajagu, S. Yusuf, and S. Yisa, elaborates the level of SC awareness, examines the sources of SC knowledge, and determines ways of improving SC applicability in Nigeria. The results of their research indicate the characteristic low knowledge level of SC amongst BE professionals are institutionally based, and therefore, recommends adoption of global sustainability standards, increased sensitization of SC techniques via seminars and training workshops, the inclusion of SC in tertiary education curriculum, and in the certification programs of BE professional institutions, amongst others.

The third paper, written by C. Wimordi, D. Yudianto, and G. Yiqing, discusses the water quality's consistency in the Duriangkang Dam by considering the WASP model. The simulation suggests the objective functions provide satisfying findings, which means that the predicted BOD and TP loads for Duriangkang Dam during that time are accurate.

The fourth paper, written by E. Eze, O. Sofolahan, and L. Siunoje, exposes the perception of construction tradespeople on the health and safety management on the construction site. Their findings show a low level of implementation of health and safety management practices on construction projects site by construction organizations. Rewards for safety compliance and penalties for HS deviant workers should be put in place by the management of construction sites.

The fifth paper, written by O. Onyeagam, W. Nwaki, B. Obonadhuze, and M. Zakariyau, investigates the impact of knowledge management practices on construction organizations' survival and sustenance. The authors argue that knowledge management is a tactical and strategic competitive tool for surviving high competition in the construction industry. To ensure knowledge exchange between the locals and expatriates, the government should make a 'knowledge management plan' an essential part of the contract documents for pre-qualification and selection criteria.

The sixth paper, written by R.G. Kusuma and R. Rachmawati, discusses the modes of transportation used by students to campus, factors that influence transportation modes' choice, and the needs of student transportation modes. Their findings indicated factors that influence the choice of modes of transportation consist of private vehicle ownership, driving license

ownership, monthly allowance, residence, frequency of use of transportation modes, time of movement, distance traveled, transportation modes changing, travel time, transportation costs, security/safety, timeliness, and speed. The result also shows that the modes of transportation needed by students are motorbikes and online transportation/ride-hailing service. They prefer these modes due to the characteristics of fast, cheap, and comfortable.

The seventh paper, written by A.A. Bamgbade, R.A Jimoh, L.O. Oyewobi, and M. Anifowose, investigates the factors contributing to the organizational culture capability and to determine the organizational culture characterization of construction firms in Nigeria. This paper shows that organizational culture is a vital aspect of construction firms, and each firm should improve its culture to better its organizational performances. It is recommended that family and work policy be given preference in the organization; besides, supervisors should be trained in relevant skills to aid their commitment to their workforce diversity.

The eighth paper, written by A.B. Koesalamwardi, S.F Rostiyanti, and R.T. Reksapernata, analyzes LVC instruments that are feasible from the perspective of the Indonesian government agency. The result shows that density bonuses and joint development instruments are applicable as LVC schemes for Indonesia. However, these instruments are better prepared due to the availability of mutually beneficial regulations for both the government and the private sector and have a more straightforward bureaucratic process.

The ninth paper, written by A.E. Husin, S.A. Sihombing, B.D. Kussumardianadewi, and D.I. Rahmawati, evaluates the application of BIM 5D to estimate and improve the cost performance of MEP work in high-rise hotel buildings. The results show that influential factors for BIM implementation, namely 2D Drawings, BIM 5D implementation, specification and technical plan, operator experiences, BIM 5D models, individual selection model, estimating, calculation process, cost database, and operator education. This research's findings also show a cost efficiency of 3.56% from the BIM 5D implementation to the high-rise hotel building.

We hope that this edition may convey new insight and knowledge that bring benefits to our readers. We welcome any comments or inquiries that you may have concerning the direction and the content of this journal. We also invite you to join our venture by sending your work for future consideration.

Warmest regards from Editorial Office,



Dr. Mohammed Ali Berawi  
Editor-in-chief



Perdana Miraj  
Managing Editor



Mustika Sari  
Managing Editor