Quarterly E-Magazine of IQSSL
Volume 19: Issue 01
January 2026

Highlights

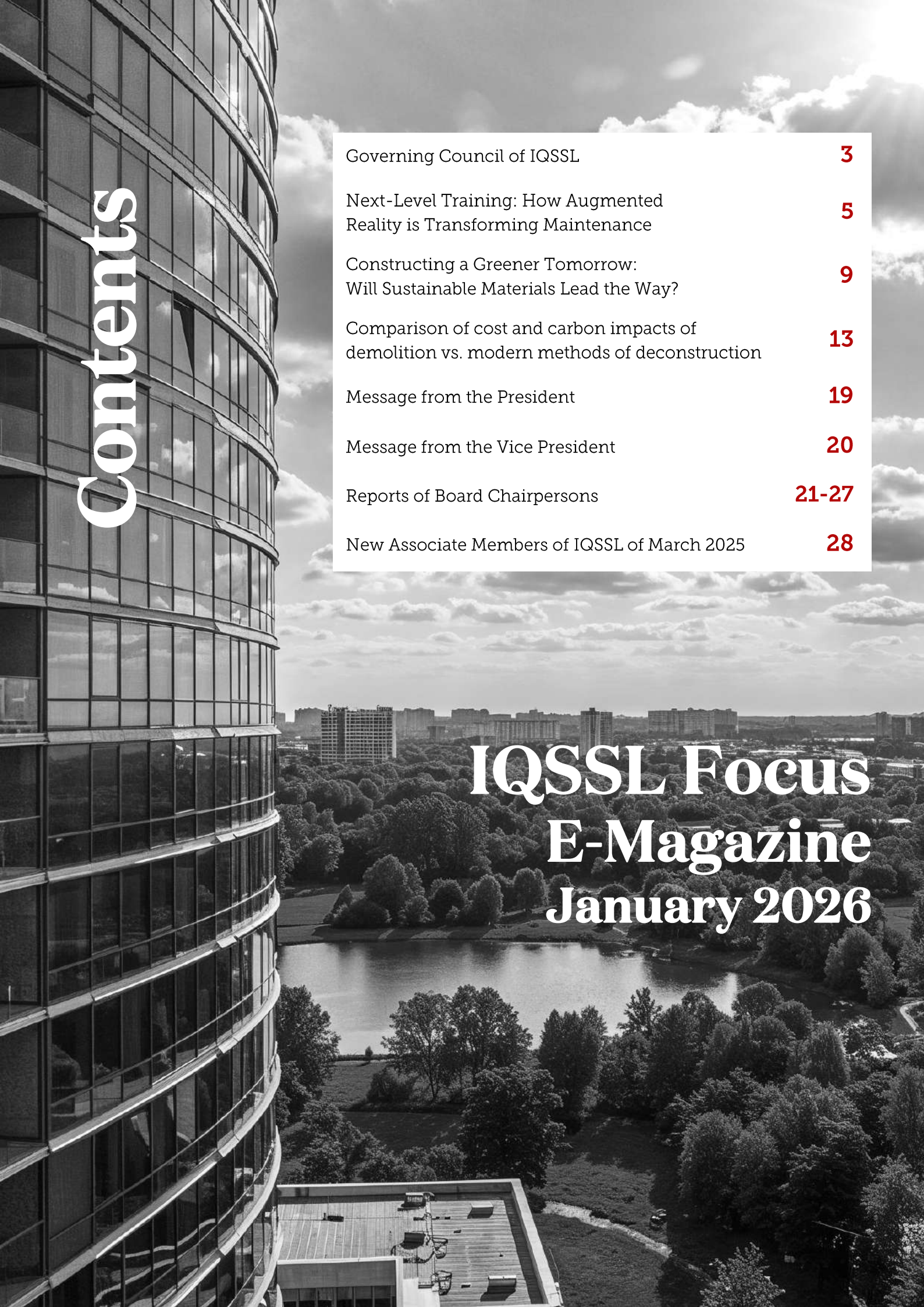
How Augmented Reality is Transforming Maintenance

Will Sustainable Materials Lead the Way?

Comparison of cost and carbon impacts of demolition vs. modern methods of deconstruction

IQSSL FOCUS

Published by the Institute of Quantity Surveyors Sri Lanka (IQSSL)



Contents

IQSSL Focus E-Magazine January 2026

Governing Council of Institute of Quantity Surveyors Sri Lanka - 2024/2025

Seated (Left to Right)
Ch.QS (Mrs.) Nisha Thambugala (Council Member), Ch.QS Dr. (Mrs.) Dilani Abeynayake (Secretary), Ch.QS Hasitha Gunasekera (Vice President), Ch.QS Indunil Seneviratne (President), Ch.QS Prof. (Mrs.) Kanchana Perera (Immediate Past President), Ch.QS Jayantha Jayakody (Treasurer), Ch.QS Prasad Dissanayaka (Assistant Secretary),

Standing (Left to Right)
Ch.QS Tilanka Wijesinghe (Council Membe), Ch.QS. Rajitha Dasanayake (Council Member), Ch.QS Sumith Lokuge (Council Member), Ch.QS Nimantha Manamgoda (Council Member), Ch.QS Duleesha Wijesiri (Council Member), Ch.QS Prasad Jasinghe (Council Member), Ch.QS Jagath Basnayake (Council Member), Ch.QS Senarath Wetthasinghe (Assistant Treasurer), Ch.QS Dr. Suranga Jayasena (Council Member), Ch.QS Nandun Fernando (Council Member),

Announcements from IQSSL

Call for Papers for PAQS 2026

PAQS Conference 2026, organised annually by the Pacific Association of Quantity Surveyors (PAQS), provides a premier platform for professionals, academics, researchers, and students in quantity surveying and the wider built environment to engage, exchange knowledge, and share best practices. Submit your papers for PAQS 2026 before the deadline (January 30, 2026) via https://paqs2026.com/call-for-papers/.

Digital Membership Application Form

You can access the digital membership application form of IQSSL via our website (iqssl.lk). Simply search for "Application Form" or visit our Publications section.

Official CPD Guide for IQSSL Members

The CPD guideline for IQSSL members is provided on the website (accessible via Resources > CPD Guide). The six categories of CPDs, necessary requirement for IQSSL membership status, competency areas, and other topics are presented.

Research Article

Next-Level Training: How Augmented Reality is Transforming Maintenance

Wijesundara W.M.I.H.
Department of Building Economics, University of Moratuwa, Sri Lanka

Keywords: Augmented reality, built environments, maintenance training

1. Introduction

The built environment sector is essential to economic development, asset longevity, and sustainable environmental development processes (Tantiyaswasdikul, 2024). Maintenance processes within the built environment sector contribute significantly to the functionality and efficiency of buildings and their systems (Jasiulewicz-Kaczmarek et al., 2020). Despite the importance, maintenance processes still encounter challenges, which may involve a dependency on on-site-expertise, reliance on tacit knowledge, poor learning processes, and increasing complexity within systems (Domènech Monfort et al., 2022).

The conventional approach for training programs to maintain the building environment was largely manual and paper-based, with text-based manuals, and oral instructions given by experienced personnel while working or operating equipment or systems (Eversberg & Lambrecht, 2023). These conventional methods are ineffective in transferring complicated spatial knowledge, dynamic procedures, and mutual dependencies between systems, resulting in errors by the user while maintaining equipment or assets, as well as ineffective asset management (Azuma, 1997; Bacca et al., 2019). Augmented Reality technology, part of Industry 4.0, has emerged as an innovative solution to improve the process of knowledge transmission related to maintaining the building environment sector (Wetzel et al., 2011).

This article comprehensively reviews the existing literature on the application of augmented reality to maintenance training, with a specific emphasis on the built environment sector. It synthesizes theoretical foundations and technological approaches to highlight current knowledge, research gaps, and future directions.

2. Maintenance training challenges in the built environment sector

Maintenance in the built environment covers a variety of tasks. For example, it includes mechanical, electrical, plumbing, heating, ventilation, and air conditioning maintenance (Bokrantz et al., 2020). The systems are also highly interconnected and technical. As a result, the personnel must be well-versed in diverse skills and follow practices accurately (Gavish et al., 2011).

Several studies have identified that conventional maintenance training methods are insufficient for addressing this complexity (Yigitbas et al., 2022). Paper-based manuals and two-dimensional drawings lack contextual awareness and are difficult to interpret during real-time task execution (Domènech Monfort et al., 2022). Additionally, the training relies on qualified individuals to train other people, thus being prone to knowledge drain resulting from employee turnover and retiring workers (Bacca et al., 2019).

However, from the literature, it is observed that there is a strong emphasis on interactive, visual, and context-based learning solutions capable of serving directly at the point of use (Azuma, 1997).

Figure 1 - A prototype system to provide workplace training using augmented reality is under development at Purdue University (Purdue University photo/Jared Pike)

3. Augmented Reality: conceptual and theoretical foundations

Augmented Reality can be explained as the ability to project digital information, which may range from text, graphics, animations, to three-dimensional models, onto reality itself, and this is done in real time (Milgram et al., 1994). Augmented Reality is rated on the Reality-Virtuality spectrum since it is used to enhance reality itself, rather than replace it, which makes it relevant in the sector that deals with managing the built environment (Berryman, 2012).

In terms of education theories, AR is significantly aided by the principles of constructivist theories of learning; that is, according to these theories, individuals constructively build their knowledge in contexts that introduce elements of the real world (Bacca et al., 2019). By using AR, learning apprentices for equipment upkeep would be able to observe the hard-to-see parts of the equipment, follow the step-by-step guide of equipment construction, and immediately get feedback on the real-world construction of buildings.

Other theories that lay down approaches of how AR goes the extra mile in terms of attention, relevance, confidence, and satisfaction in the manner of learning processes have been proposed by Keller in the theory of ARCS (Keller, 2010).

4. Applications for Augmented Reality in maintenance training: evidence from literature

Increasingly, international literature discusses the use of AR in performing maintenance and assembly procedures in the realms of construction, manufacturing, and facility management. Empirical research indicates a reduction in task completion time, mistake rates, and mental load when following instructions through an AR system, in contrast to conventional instruction (Bacca et al., 2019; Lewis, 2023)

In relation to the built environment, AR has been used in HVAC repairs, electrical fault identification, building inspection, and safety training (Steven, 2010). The use of visual overlays and animation has long been demonstrated to enhance procedural knowledge and understanding of space, especially in novice technicians (Paul, 2020). In relation to the built environment, marker-based AR started to attract attention because of its low costs as a viable means of addressing existing assets in buildings (Chylinski et al., 2020; Keller, 2010).

Despite these advantages, the literature also identifies limitations, including device usability issues, content development effort, and limited empirical validation in operational building environments (Lamberti et al., 2014; Abbasi, 2023). Most studies are conducted in controlled laboratory settings, with relatively few large-scale implementations reported in the built environment sector, especially in developing countries (Bacca et al., 2019).

5. Theoretical models supporting AR-based maintenance training

Application of Augmented Reality in maintenance training within the built environment is underpinned by several well-established theoretical models from learning sciences, human-computer interaction, and cognitive psychology (Brieger et al., 2020). Each of these theories provides some conceptual justifications for AR's effectiveness beyond its technological novelty.

Constructivist theory proposes knowledge is an active, constructed, rather than a passive, received, process. This active engagement in knowledge construction is facilitated by AR technology in building maintenance, then followed by the ability of workers to engage with real-world buildings while assisted by knowledge provided by digital information (Kumar, 2019; Mishra, 2023)

Experiential Learning Theory is yet another theory that ensures this foundation is well supported by learning through experience, observation, conceptualization, and experimentation. This happens in an AR-based maintenance training program, according to Kolb et al., (2000), in that a technician can complete a procedure, observe system responses, and then implement corrective steps in that environment.

By the cognitive theory of cognitive load, the presentation of the info in the Augmented Reality system can reduce unnecessary cognitive load because the info is presented in relation to the physical elements of the object instead of being interpreted from manuals (Kirschner et al., 2018). In general, the retention of spatial correspondence can improve the accuracy of tasks and procedural memory in the case of maintenance tasks.

Moreover, theories of motivational design, for instance, Keller's ARCS theory, highlight how AR could raise learners' levels of attention, relevance, confidence, and satisfaction, which is quite important concerning motivating learners engaged in repetitive tasks such as maintenance (Keller, 2010).

Altogether, these theories have placed the role of AR in a supported mode of education in the sector as opposed to a technological approach that has the potential to positively affect sector professionals.

6. Conclusion and way forward

This literature-based article has investigated the role of Augmented Reality in improving maintenance training in the built environment sector. The evidence shown in this article review proves that conventional maintenance training methods are ineffective in dealing with issues raised by increasing system complexity in buildings, diversity in the workforce, and the need to be efficient in operations in the I5.0 era.

The literature confirms a significant advantage of AR in providing visual, interactive, and context-aware training within a real-world maintenance context. Based on constructivist, experiential, cognitive load, and motivational theories, AR-supported training in maintenance provides an effective means of understanding, minimizing errors, and engaging learners.

Although its potential is evident, existing research work shows that there is also a need to carry out empirical validation work in operational buildings, especially in developing countries.

In general, Augmented Reality has a theoretically valid, practically significant role in the transformation of maintenance training as well as in the sustainable functioning of the built environment.

References

Azuma, R. T. (1997). A Survey of Augmented Reality. In *Presence: Teleoperators and Virtual Environments* (Vol. 6). http://www.cs.unc.edu/~azumaW:

Bacca, J., Baldiris, S., & Fabregat, R. (2019). Framework for designing motivational augmented reality applications in vocational education and training. In *Australasian Journal of Educational Technology* (Issue 3). http://piranya.udg.edu/quimica/files/TableOfFrameworksComparison.pdf

Bokrantz, J., Skoogh, A., Berlin, C., Wuest, T., & Stahre, J. (2020). Smart Maintenance: a research agenda for industrial maintenance management. *International Journal of Production Economics*, *224*. https://doi.org/10.1016/j.ijpe.2019.107547

Brieger, E., Arghode, V., & McLean, G. (2020). Connecting theory and practice: reviewing six learning theories to inform online instruction. *European Journal of Training and Development*, *44*(4–5), 321–339. https://doi.org/10.1108/EJTD-07-2019-0116

Chylinski, M., Heller, J., Hilken, T., Keeling, D. I., Mahr, D., & de Ruyter, K. (2020). Augmented reality marketing: A technology-enabled approach to situated customer experience. *Australasian Marketing Journal (AMJ)*, *28*(4), 374–384. https://doi.org/10.1016/J.AUSMJ.2020.04.004

Domènech Monfort, M., De Jesús, C., Wanapinit, N., & Hartmann, N. (2022). A Review of Peer-to-Peer Energy Trading with Standard Terminology Proposal and a Techno-Economic Characterisation Matrix. In *Energies* (Vol. 15, Issue 23). MDPI. https://doi.org/10.3390/en15239070

Donna R. Berryman. (2012). Augmented Reality: A Review. *Medical Reference Service Quartely*, 212–218.

Eversberg, L., & Lambrecht, J. (2023). Evaluating digital work instructions with augmented reality versus paper-based documents for manual, object-specific repair tasks in a case study with experienced workers. *International Journal of Advanced Manufacturing Technology*, *127*(3–4), 1859–1871. https://doi.org/10.1007/s00170-023-11313-4

Gavish, N., Gutierrez Seco, T., Webel, S., Rodriguez, J., Peveri, M., & Bockholt, U. (2011). Transfer of Skills Evaluation for Assembly and Maintenance Training. *BIO Web of Conferences*, *1*, 00028. https://doi.org/10.1051/bioconf/20110100028

Jasiulewicz-Kaczmarek, M., Legutko, S., & Kluk, P. (2020). Maintenance 4.0 technologies - new opportunities for sustainability driven maintenance. *Management and Production Engineering Review*, *11*(2), 74–87. https://doi.org/10.24425/mper.2020.133730

Keller, J. M. (2010). Five fundamental requirements for motivation and volition in technology-assisted distributed learning environments. *Revista Inter. Ação*, *35*(2). https://doi.org/10.5216/ia.v35i2.12668

Kirschner, P. A., Sweller, J., Kirschner, F., & Zambrano, J. R. (2018). From Cognitive Load Theory to Collaborative Cognitive Load Theory. *International Journal of Computer-Supported Collaborative Learning*, *13*(2), 213–233. https://doi.org/10.1007/s11412-018-9277-y

Kolb, D. A., Boyatzis, R. E., Mainemelis, C., Sternberg, R. J., & Zhang, L. F. (2000). *Experiential Learning Theory: Previous Research and New Directions*.

Kumar Shah, R. (2019). Effective Constructivist Teaching Learning in the Classroom. *Shanlax International Journal of Education*, *7*(4), 1–13. https://doi.org/10.34293/education.v7i4.600

Lamberti, F., Manuri, F., Sanna, A., Paravati, G., Pezzolla, P., & Montuschi, P. (2014). Challenges, opportunities, and future trends of emerging techniques for augmented reality-based maintenance. *IEEE Transactions on Emerging Topics in Computing*, *2*(4), 411–421. https://doi.org/10.1109/TETC.2014.2368833

Lewis, P. (2023). Innovation, technician skills, and vocational education and training: connecting innovation systems and vocational education and training. *Journal of Vocational Education and Training*. https://doi.org/10.1080/13636820.2023.2215749

Milgram, P., Takemura, H., Utsumit, A., & Kishino, F. (n.d.). *Augmented Reality: A class of displays on the reality-virtuality continuum*. http://vered.rose.utoronto.ca

Mishra, N. R. (2023). Constructivist Approach to Learning: An Analysis of Pedagogical Models of Social Constructivist Learning Theory. *Journal of Research and Development*, *6*(01), 22–29. https://doi.org/10.3126/jrdn.v6i01.55227

Paul, L. (2020). Developing Technician Skills for Innovative Industries: Theory, Evidence from the UK Life Sciences Industry, and Policy Implications. *British Journal of Industrial Relations*, *58*(3), 617–643.

Steven, H. S. F. (2010). Exploring the Benefits of Augmented Reality Documentation for Maintenance and Repair. *Transaction on Visualization*, *17*(10), 1355–1368.

Tantiyaswasdikul, K. (2024). Design thinking for innovation in sustainable built environments: a systematic literature review. *Smart and Sustainable Built Environment*, *13*(3), 677–710. https://doi.org/10.1108/SASBE-01-2023-0023

Wetzel, R., Blum, L., Broll, W., & Oppermann, L. (2011). Designing Mobile Augmented Reality Games. In *Handbook of Augmented Reality* (pp. 513–539). Springer New York. https://doi.org/10.1007/978-1-4614-0064-6_25

Yigitbas, E., Krois, S., Renzelmann, T., & Engels, G. (2022). *Technical Report: Comparative Evaluation of AR-based, VR-based, and Traditional Basic Life Support Training*. http://arxiv.org/abs/2207.03306

Zia Ahmed Abbasi. (2023). New Challenges in Maintenance Management. *Maintenance World*.

Research Article

Constructing a Greener Tomorrow: Will Sustainable Materials Lead the Way?

Madhushani SJL, Ranadewa KATO
Department of Building Economics, University of Moratuwa, Sri Lanka

Keywords: Sustainable construction, sustainable materials, policy-making

1. Introduction

The construction industry plays a pivotal role in national socio-economic development, generating extensive linkages with both upstream and downstream sectors (Zhao, 2024). Despite its economic significance, the industry is widely recognised as a major contributor to global environmental pollution, driven by excessive energy consumption, large-scale resource extraction, and biodiversity loss (Pourvaziri et al., 2024; Al-Numan, 2024). Recent global statistics indicate that the construction sector accounted for approximately 32% of global energy demand and 34% of global CO_2 emissions in 2023, while consuming about 55% of global material demand in 2020 [United Nations Environment Programme (UNEP), 2024].

In response to these challenges, sustainable construction has emerged as a catalyst to mitigate environmental impact while ensuring long-term socio-economic benefits (Stanitsas & Kirytopoulos, 2023). Within this paradigm, the adoption of sustainable materials has become an essential component of achieving sustainability objectives across the construction lifecycle (Sun et al., 2019). However, despite notable progress in developed countries including Switzerland, Japan, Australia, and China, developing nations continue to experience limited adoption of sustainable materials (Nikyema & Blouin, 2020; Eze et al., 2023).

Consequently, a clear understanding of the benefits, barriers, and strategies associated with sustainable material adoption is essential to facilitate effective implementation within the construction industry.

2. Sustainable Construction

Sustainable construction represents a fundamental dimension of sustainable development, integrating environmental stewardship, social responsibility, and economic viability within the built environment (Zajemska et al., 2025). It aims to deliver long-term environmental benefits while satisfying the present and future needs of society (Liu et al., 2020). The implementation of sustainable construction practices offers a wide range of benefits, including enhanced energy efficiency, reduced operational costs, improved indoor environmental quality, improved quality of life, protection of green landscapes, and lower carbon emissions (Hoseini et al., 2021; Maqbool et al., 2023; Zajemska et al., 2025).

Despite these advantages, the transition towards sustainable construction remains constrained by persistent challenges. These include a strong reliance on conventional construction practices, higher perceived costs of sustainable alternatives, limited regulatory enforcement, inadequate education and training, and insufficient governmental incentives (Maqbool et al., 2023).

Such barriers have contributed to the relatively low adoption of sustainability practices, underscoring the need for holistic approaches that promote sustainable construction in diverse contexts.

3. Sustainable Materials in Construction Industry

The growing emphasis on sustainable construction has catalysed the need for sustainable materials in the construction industry (Zhang & Song, 2022). Sustainable construction materials are widely recognised for their ability to reduce raw material extraction, embodied energy, carbon emissions, and lifecycle costs (Hammadi & Sahib, 2018; Jain & Nayak, 2024; Sen et al., 2024).

They are typically characterised by durability, reusability, recyclability, or biodegradability, and are often manufactured using renewable or recycled content. The successful application of sustainable materials has been well recognised in developed economies including Germany, Sweden, Japan, Switzerland, Australia, China, and the United States, where policy support and technological advancements have facilitated widespread adoption (Gounder et al., 2023; Sen et al., 2024).

Conversely, developing countries continue to lag behind due to structural, economic, and institutional constraints, emphasising the need for effective strategies to promote sustainable material adoption in developing regions (Nikyema & Blouin, 2020; Eze et al., 2023).

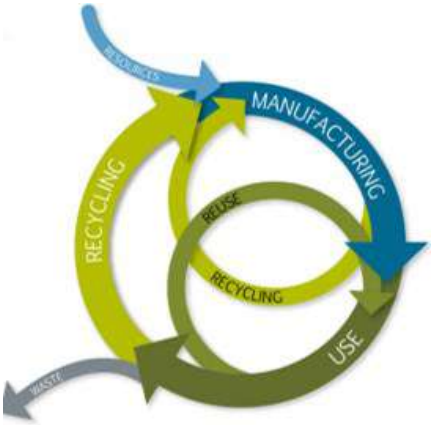


Figure 1: Lifecycle of sustainable materialsSource: (Hingston & Hingston, 2024)

4. Benefits of Using Sustainable Materials in the Construction Industry

The adoption of sustainable materials offers substantial environmental, economic, and social benefits to the construction industry. From an economic perspective, sustainable materials contribute to reduced operational, maintenance, and replacement costs, improved energy efficiency, and enhanced long-term profitability through lifecycle cost savings (Hammadi & Sahib, 2018; Mohamed et al., 2019). Environmentally, sustainable materials play a vital role in reducing greenhouse gas emissions, lowering carbon footprints, minimising construction waste, conserving natural resources, and improving energy efficiency (Popescu et al., 2024; Yahia et al., 2024). Socially, sustainable materials enhance occupant health, psychological well-being, and productivity by improving indoor environmental quality and reducing exposure to harmful substances (Yahia et al., 2024; Popescu et al., 2024). Furthermore, the use of locally sourced sustainable materials supports local suppliers and labour markets, promotes social inclusivity, and encourages cooperation among construction stakeholders, thereby creating sustainable living conditions (Gounder et al., 2023).

5. Barriers for Using Sustainable Materials in the Construction Industry

Despite their benefits, the widespread adoption of sustainable materials remains constrained by multiple barriers. A predominant challenge is resistance to change and a continued preference for conventional construction practices, which is frequently reinforced by limited awareness and insufficient knowledge of the benefits of sustainable materials (Nikyema & Blouin, 2020; Yahia et al., 2024). Economic barriers, including high initial capital costs, perceived financial risks, and limited access to funding, further discourage adoption (Hammadi & Sahib, 2018; Eze et al., 2023).

In addition, institutional challenges including inadequate building codes, weak regulatory enforcement, absence of standardised testing and certification processes, and limited government incentives significantly restrict progress (Nikyema & Blouin, 2020; Popescu et al., 2024). Supply-side constraints, including scarcity of sustainable materials, limited availability of qualified suppliers, and lack of skilled professionals, further hinder effective implementation (Nwokediegwu et al., 2024). Collectively, these barriers highlight the need for effective strategies to facilitate sustainable material adoption, particularly in developing countries.

6. Strategies for Using Sustainable Materials in the Construction Industry

To overcome existing barriers, a plethora of strategies has been proposed to enhance sustainable material adoption. Government-led initiatives play a critical role, including the introduction of incentive mechanisms, subsidies, and low-cost financing options (Eze et al., 2023; Yahia et al., 2024). Institutional strategies such as establishing training programmes, supporting research and development activities, and creating centralised knowledge-sharing platforms are essential to improve industry capacity and awareness (Nikyema & Blouin, 2020; Nwokediegwu et al., 2024). Technological strategies, including the adoption of technologies that facilitate material reuse, deconstruction, and lifecycle assessment, further support sustainable outcomes (Popescu et al., 2024).

Moreover, awareness and educational initiatives, including public campaigns, and the integration of sustainability education into academic curricula, are vital to creating long-term behavioural change and stimulating market demand for sustainable materials (Rokunuzzaman, 2024).

References

Al-Numan, B. S. O. (2024). Construction industry role in natural resources depletion and how to reduce it. In A. M. F. Al-Quraishi & Y. T. Mustafa (Eds.), *Natural Resources Deterioration in MENA Region* (pp. 93–109). Springer International Publishing. https://doi.org/10.1007/978-3-031-58315-5_6

Eze, E. C., Sofolahan, O., & Omoboye, O. G. (2023). Assessment of barriers to the adoption of sustainable building materials (SBM) in the construction industry of a developing country. *Frontiers in Engineering and Built Environment*, *3*(3), 153–166. https://doi.org/10.1108/FEBE-07-2022-0029

Gounder, S., Hasan, A., Shrestha, A., & Elmualim, A. (2023). Barriers to the use of sustainable materials in Australian building projects. *Engineering, Construction and Architectural Management*, *30*(1), 189–209. https://doi.org/10.1108/ECAM-10-2020-0854

Hammadi, M. A., & Sahib, E. D. (2018). Identifying barriers to the use of sustainable building materials in building construction. *Journal of Engineering and Sustainable Development*, *22*(2), 107–115. https://doi.org/10.31272/jeasd.2018.2.87

Hingston, P., & Hingston, P. (2024, August 15). *#EcoRenovate Guide to selecting sustainable materials.* Elemental Green | Dream Discover Design.https://elemental.green/ecorenovate-guide-to-selecting-sustainable-materials/

Hoseini, S. A., Fallahpour, A., Wong, K. Y., Mahdiyar, A., Saberi, M., & Durdyev, S. (2021). Sustainable supplier selection in construction industry through hybrid fuzzy-based approaches. *Sustainability*, *13*(3), 1413. https://doi.org/10.3390/su13031413

Jain, S., & Nayak, A. V. (2024). Benefits of using eco-based materials. In *Futuristic Trends in Construction Materials & Civil Engineering Volume 3 Book 6* (Vol. 3, pp. 59–78). Iterative International Publishers, Selfypage Developers Pvt Ltd. https://doi.org/10.58532/V3BJCE6P2CH3

Liu, Z.-J., Pypłacz, P., Ermakova, M., & Konev, P. (2020). Sustainable construction as a competitive advantage. *Sustainability*, *12*(15), 5946. https://doi.org/10.3390/su12155946

methods study of sustainable construction practices in the UK. *Journal of Cleaner Production*, *430*, 139087. https://doi.org/10.1016/j.jclepro.2023.139087

Mohamed, F., Jamil, M., & Zain, M. F. M. (2019). Sustainable material: challenges and prospect. *Journal of Advanced Research in Materials Science*, *57*(1), 7–18.

Nikyema, G. A., & Blouin, V. Y. (2020). Barriers to the adoption of green building materials and technologies in developing countries: The case of Burkina Faso. *IOP Conference Series: Earth and Environmental Science*, *410*(1), 1–10. https://doi.org/10.1088/1755-1315/410/1/012079

Nwokediegwu, Z. Q. S., Ilojianya, V. I., Ibekwe, K. I., Adefemi, A., Etukudoh, E. E., & Umoh, A. A. (2024). Advanced materials for sustainable construction: A review of innovations and environmental benefits. *Engineering Science and Technology Journal*, *5*(1), 201–218.

Patil, P., Kedar, R. S., & Kakpure, R. K. (2024). A research article on "sustainable construction material." *International Journal of Aquatic Science, 15*(1), 199–211.

Popescu, C., Dissanayake, H., Mansi, E., & Stancu, A. (2024). Eco breakthroughs: Sustainable materials transforming the future of our planet. *Sustainability, 16*(23), 1–38. https://doi.org/10.3390/su162310790

Pourvaziri, M., Mahmoudkelayeh, S., Kamranfar, S., Fathollahi-Fard, A. M., Gheibi, M., & Kumar, A. (2024). Barriers to green procurement of the Iranian construction industry: An interpretive structural modeling approach. *International Journal of Environmental Science and Technology*, *21*(4), 3599–3616. https://doi.org/10.1007/s13762-023-05346-1

Rokunuzzaman, M. K. (2024). Advancements in sustainable materials: Innovations and applications for a circular economy. *European Journal of Advances in Engineering and Technology, 11*(6), 50–58.

Sen, B., Tam, N., Maharjan, R., Maharjan, A. K., & Talukdar, G. (2024). The shift towards green construction: A review of environmental management strategies and sustainable materials in developed countries. *Tropical Environment, Biology, and Technology*, *2*(2), 80-92. https://doi.org/10.53623/tebt.v2i2.482

Stanitsas, M., & Kirytopoulos, K. (2023). Investigating the significance of sustainability indicators for promoting sustainable construction project management. *International Journal of Construction Management*, *23*(3), 434–448. https://doi.org/10.1080/15623599.2021.1887718

Sun, Y., Hou, J., Cheng, R., Sheng, Y., Zhang, X., & Sundell, J. (2019). Indoor air quality, ventilation and their associations with sick building syndrome in Chinese homes. *Energy and Buildings*, *197*, 112–119. https://doi.org/10.1016/j.enbuild.2019.05.046

UNEP (2024). *Global Resources Outlook 2024: Bend the Trend – Pathways to a liveable planet as resource use spikes.* International Resource Panel.https://wedocs.unep.org/20.500.11822/44902

Yahia, A. K. M., Rahman, M., Shahjalal, M., & Morshed, A. (2024). Sustainable materials selection in building design and construction. *International Journal of Science and Engineering*, *1*(4), 106–119. https://doi.org/10.62304/ijse.v1i04.198

Zajemska, M., Wojtyto, D., Michalik, J., & Berski, S. (2025). Review of current trends in sustainable construction. *Energies*, *18*(10), 1–42. https://doi.org/10.3390/en18102559

Zhang, Y., & Song, Y. (2022). Tax rebates, technological innovation and sustainable development: Evidence from Chinese micro-level data. *Technological Forecasting and Social Change*, *176*, 121481. https://doi.org/10.1016/j.techfore.2022.121481

Zhao, T. (2024). Research on the path of high-quality development of the construction industry driven by new quality productivity. *Journal of Civil Engineering and Urban Planning*, *6*(3), 43–49. https://doi.org/10.23977/jceup.2024.060306

Research Article

Comparison of cost and carbon impacts of demolition vs. modern methods of deconstruction

Michele Florencia Victoria and Logan King

Keywords: Carbon impacts, demolition, deconstruction methods,

1. Demolition Methods

The traditional demolition process involves the quick knock- down of buildings either by hand or mechanically. Prior to becoming a predominant mechanical process, traditional demolition was a labour-intensive, low technology and uncontrolled process that involved techniques such as pulling, where workers would use ropes to pull parts of buildings down with little control (Kamrath, 2013). In recent years, traditional demolition has mostly become a mechanical process due to the growing complexity of building design, health and safety regulations, advanced mechanical plants and the speed in which projects can be completed compared to those involving manual labour and hand tools (Diven & Shaurette, 2010; Kamrath, 2013). Smaller scale projects such as internal strip outs, shed or garage demolitions or chimney removals still require manual labour and small hand tools such as jackhammers or hydraulic shears. The type of demolition and equipment required for any structure can vary and depends on many factors such as the condition of the building, materials used in construction and the scale and nature of the project, e.g. larger scale projects dealing with a block of high-rise flats would require heavy equipment like hydraulic excavators, cranes and in some cases, even explosives (Diven & Shaurette, 2010).

However, the demolition techniques would differ had the building been unsafe due to hazardous materials like asbestos or lead and/or any damage to critical structural elements (Coelho and De Brito 2013). A site survey is the first step to establish how the structure will be demolished. Hazardous materials require careful planning before any work starts and specialised handling for the removal. These specialised contractors are brought in to remove the contaminated materials carefully and are generally disposed of in brownfield and domestic sites (Diven & Shaurette, 2010).

If the site survey shows any structural damage which could result in a collapse, temporary shoring and bracing can be introduced to keep parts of the building stable, allowing sectional demolition to take place.

There are typically four main steps involved in demolition:

- Decontamination – removal of any contaminated materials such as asbestos or lead
- Core removal or deconstruction – the removal and separation of internal and non-load-bearing parts.
- Machine demolition – mechanical plant to tear down the rest of the building structure
- Disposal/recycling – managing and separating the CDW into correct groups to maximise recycling and reuse (Kamrath, 2013)

Kamrath (2013) states that excavators with different mechanical attachments are commonly used for demolition projects due to their flexibility. Common attachments include demolition shears, grabbing tools and hydraulic breakers. Coelho and De Brito (2013) also highlight the lesser-known methods such as thermal, chemical and abrasive techniques for traditional demolition, highlighting the demolition method depends on the nature and scope of the project.

2. Modern Methods of Deconstruction

The deconstruction method involves manual and mechanical methods to dismantle structures whilst maximizing material conservation (Heisel et al. 2023). Zaman et al. (2018) argues that the lack of technology around automated systems to maximise material recovery often makes the deconstruction process a labour-intensive one.

Such barriers have contributed to the relatively low adoption of sustainability practices, underscoring the need for holistic approaches that promote sustainable construction in diverse contexts.

The construction and demolition waste reduction produced from deconstruction is beneficial for encouraging material reuse and recycling if reuse is not possible. This proves beneficial when offsetting "virgin resource consumption (Zaman et al., 2018). The deconstruction process also helps reduce Greenhouse Gas (GHG) emissions during the end-of-life phase. However, as highlighted by Rios, Chong and Grau (2015), these carbon savings depend on the type and quality of recovered materials. Coelho and Debrito (2013) and Denhart (2010) agree and find that greater carbon savings can be achieved when recycling materials with higher embodied carbon as it prevents any emissions linked with the production of new materials. Heisel et al.'s (2023) case study also demonstrated that a 420m2, 13-bedroom building took five days to deconstruct with a group of eight workers whereas typical demolition would have been far quicker than this with less than half of the workers required. Similarly, Denhart (2010) found that deconstruction is a much more time-consuming process than demolition as it requires much more care to be taken when stripping all existing elements. This research showed that a house which would take one worker two days to demolish would take 4-6 workers 10 to 15 days to deconstruct.

The studies conducted by Denhart (2010) and Zaman et al. (2018) both focus on and resource harvesting through deconstruction strategies in New Orleans and New Zealand respectively. In these studies, the deconstruction process was completed by hand, in a systematic approach as follows:

- Removal of interior finishes
- Removal of architectural features and fixtures
- Removal of frame and ultimately the foundations

Both Denhart (2010) and Zaman et al. (2018) highlighted the importance of a systematic deconstruction approach to maximise high quality harvested materials.

Coelho and De Brito (2013) found that the typical deconstruction process involves the following steps: site set up, disconnection of all services, bracing structural elements, scaffolding erection, preparation and execution of safety measures, separate storage for recovered materials, and finally, individual protection measures for workers.

Further, other studies have identified the importance of planning, hazard identification, and material handling to achieve a successful deconstruction project.

Diven and Shaurette (2010) highlight the importance of planning to ensure everyone can fulfil their roles on site and studying the existing structure to identify any potential hazards when deconstructing it. They also identify the two different types of deconstructions as "structural", which involves removing integral building component, and "non-structural" such as soft strip works which do not affect the structural integrity of the building. Similarly, Bertino et al. (2021) also highlight the structural and non-structural deconstruction processes but emphasise that structural deconstruction should be conducted in a top to bottom system to ensure safety. While Diven and Shaurette (2010) emphasise the importance of material handling, Bertino et al. (2021) provided more information on how materials or components can be reused such as component reuse or reuse of entire buildings. However, the reuse of entire buildings is only feasible when the building has been designed for deconstruction.

Coelho and De Brito (2013) provide examples of some deconstruction techniques as follows:

- Panelisation - commonly used for wooden components, involves cutting large sections of the building while it is suspended. The sections are then lowered by crane to a more accessible level to speed up the process compared to in-place disassembly. This technique also improves safety, as less work is completed at heights.
- Dropping (controlled collapse) – similar to panelisation, this process allows manual disassembly to be performed at a more accessible level to prevent working from heights. The downside to this process is the potential loss in material quality when dropping components.
- Punching – this technique involves removing inner wall coverings from the opposite side via mechanical equipment such as excavators with forks or backhoes. It is particularly useful when removing wood boards and gypsum plasterboards but can also be used to remove floor coverings.

Although a laborious task, deconstruction is a beneficial alternative to demolition due to its material recovery, recycling and reuse.

However, the level of effectiveness depends on the type and quality of material. Careful planning and specialised techniques are crucial to ensure success in any deconstruction process. Effective deconstruction projects will ultimately vary between buildings and how well the process has been planned.

3. Cost Comparison

There are several factors which influence the varying costs of traditional demolition compared to modern methods of deconstruction. These include location, labour costs, tipping fees, material resale values and specific project circumstances (Coelho and De Brito, 2013; Heisel et al., 2023).

Initial Costs

Multiple studies have found that the initial costs of deconstruction are often much higher than traditional demolition's (Heisel et al., 2023; Coelho and De Brito, 2013; Lynch, 2022; Zaman et al., 2018). These costs are typically due to the extensive labour or longer project times for deconstruction work. Denhart's (2010) research on the deconstruction of hurricane-damaged houses after Hurricane Katrina showed a 17% to 25% higher cost for deconstruction compared to demolition. However, the same study shows when material resale values were considered, the cost of deconstruction ($3.80/m2) was far more competitive with demolition costs ($5.50/m2). Coelho and De Brito (2013) conducted a case study in Portugal, which further backed higher deconstruction costs, although this time they were only around 15% higher than demolition. They also demonstrated that deconstruction costs can become more competitive when disposal costs for mixed construction and demolition waste (CWD) are significant.

Factors Impacting Costs

Labour costs – Deconstruction requires a considerable amount of labour hours compared to demolition. As indicated by Coelho and De Brito (2013), labour costs for deconstruction work can be six times more expensive than demolition work, but Heisel et al. (2023) note that these labour costs can be offset by volunteer labour.

Equipment costs – Demolition equipment costs are frequently higher than deconstruction costs as they require more mechanical plants, as highlighted in Coelho and De Brito's (2013) study. In total, equipment costs for demolition and deconstruction were found to be €1100 and €390 respectively for this project. Similarly, Chong and Grau (2015) note that deconstruction equipment costs are reduced due to the reduction in plants.

Transportation and disposal costs – The huge amount of mixed waste from demolition generally involved large transportation and tipping fees. Deconstruction transportation and disposal costs can be offset depending on the volume of recycling achieved (Heisel et al., 2023). Coelho and De Brito (2013) note that demolition is more sensitive to transportation costs as the bulk of waste is sent to one destination, such as landfill sites. In contrast, deconstruction debris is sent to various sites depending on the level of sorting and recycling achieved.

Resale of Salvaged Materials – As previously discussed, salvaged materials from deconstruction projects such as timber, doors and windows, flooring, bricks, metals and even special architectural features can be sold to offset costs, leading to more competitive demolition and deconstruction costs.

Zaman et al. (2018) have shown that recovered materials can be reused and recycled to produce new products such as furniture, garden features and ornaments. The study also conducted an exhibition where all these recycled items were sold, and the funds raised from said exhibition were used to offset the cost of the deconstruction. However, there is a lack of knowledge of how the costs can become more competitive. Some potential ways include government policies like tax incentives or subsidies for material resellers or reduced labour costs (Rios, Chong and Grau 2015), increased landfill fees and regulation changes to encourage material reuse, and marketing recovered materials effectively (Coelho. and De Brito 2013).

4. Carbon Comparison

Deconstruction provides many benefits over traditional demolition in terms of carbon emissions. Some of the ways in which deconstruction achieves this is through reduced landfill, lower direct process emissions, reduced emissions from new material production and carbon sequestration (Heisel et al. 2023; Coelho and De Brito 2013; Bertino et al. 2021; Denhart, 2010; Lynch, 2022)

Reduced Landfill Emissions

As shown by Bertino et al. (2021), deconstruction has a substantial decrease in CDW sent to landfill compared to demolition. Landfilling materials can lead to the production of greenhouse gases such as methane and this occurs when materials such as timber are landfilled (Heisel et al. 2023). As the deconstruction process encourages material reuse throughout, this diverts waste from landfill and in turn reduces the amount of carbon emissions from landfilled materials (Coelho and De Brito 2013).

Lower Direct Process Emissions

Anuranjita (2017) found that deconstruction relies far less on heavy machinery than demolition as it requires more manual picking and smaller tools to ensure the materials keep their integrity. The reduction in heavy plants will then reduce the direct carbon emissions which would have been present during demolition. Similarly, Denhart (2010) highlights that diesel-powered equipment used in demolition heavily contributes to carbon emissions.

Reduced Emissions in Virgin Material Production

One of the advantages of reusing and recycling is the lower demand for virgin materials (Bertino et al., 2021). Three parts to this process produce carbon emissions: the extraction of raw materials, the manufacturing of new products, and the transportation of the materials. Deconstruction helps reduce these emissions by ensuring materials are reused or recycled as much as possible (Denhart, 2010). Bertino et al. (2021) found that up to 25% of materials in a traditional residential home can be reused, and up to 70% can be recycled.

5. Conclusions and Recommendations

Demolition is the most commonly preferred method when assets reach their end of life because of its speed, efficiency and familiarity among demolition contractors. Demolition started as a hands-on process, much like deconstruction, but it has slowly developed into a predominantly mechanical process. Plants such as cranes, excavators, and high-reach machines are commonly used in demolition projects. Although less common, modern methods of deconstruction focus on material recovery to offset carbon and costs.

Materials such as timber, steel, concrete, slate roofing, flooring and glass are commonly reused and recycled within projects. The process is often labour-intensive and time-consuming; however, the waste reduction and sustainability benefits justify the additional cost and labour requirement.

Key literature findings highlight that while traditional demolition may provide initial cost savings, modern methods of deconstruction have the potential to provide long-term value by significantly reducing carbon emissions and can be achieved at a competitive cost if planned properly.

References

[1] ANTUNES, A. et al., 2023. Reducing the environmental impact of the end-of-life of buildings depending on interrelated demolition strategies, transport distances and disposal scenarios. *Journal of Building Engineering,* 82

[2] ANURANJITA, A. and MANAGEMENT, C., 2017. LIFE CYCLE ASSESSMENT FRAMEWORK FOR DEMOLITION AND DECONSTRUCTION OF BUILDINGS by. In: Anonymous

[3] ARIOĞLU AKAN, M.Ö, DHAVALE, D.G. and SARKIS, J.,2017. Greenhouse gas emissions in the construction industry: An analysis and evaluation of a concrete supply chain. *Journal of Cleaner Production,* 167, pp. 1195.

[4] BALOGUN, H. et al., 2024. Critical factors for assessing building deconstructability: Exploratory and confirmatory factor analysis. *Cleaner Engineering and Technology,* 21

[5] BERTINO, G. et al., 2021. Fundamentals of Building Deconstruction as a Circular Economy Strategy for the Reuse of Construction Materials. *Applied Sciences,* 11(3),

[6] BISWAS, W.K., 2013. Carbon footprint and embodied energy assessment of a civil works program in a residential estate of Western Australia. *The International Journal of Life Cycle Assessment,* 19(4), pp. 732.

[7] CAO, F., LI, R. and GUO, S., 2024. Rhetoric and reality of public-private partnerships in China: A sustainable public procurement perspective. *Socio-Economic Planning Sciences,* 92

[8] CLARKE, V. and BRAUN, V., 2016. Thematic analysis. *The Journal of Positive Psychology,* 12(3), pp. 297.

[9] COELHO A. and DE BRITO, J., 2013. Conventional demolition versus deconstruction techniques in managing construction and demolition waste (CDW). , pp. 141–185.

[11] Environment, U. (2024). *Emissions Gap Report 2024*. [online] UNEP - UN Environment Programme. Available at: https://www.unep.org/resources/emissions-gap-report-2024 [Accessed 23 April. 2025].

[21] HAITHERALI, H., 2024. Sustainable urban development: Evaluating the potential of mineral-based construction and demolition waste recycling in emerging economies. *Sustainable Futures,* 7

[22] HECHELMANN, R. et al., 2023. Decarbonisation strategies for manufacturing: A technical and economic comparison. *Renewable and Sustainable Energy Reviews,* 188

[23] HEISEL, F. et al., 2023. Carbon, economics, and labor: a case study of deconstruction's relative costs and benefits compared to demolition. *Journal of Physics: Conference Series,* 2600(19),

[24] KAMRATH, P., GMBH, I. and GERMANY, 2013. Demolitiontechniques and production of construction and demolition waste (CDW) for recycling. In: Anonymous Elsevier. pp. 186.

[25] KERÄNEN, O., 2017. Dynamics of the transition process towards partnership thinking in centralized public procurement. *Industrial Marketing Management,* 65, pp. 86.

[26] KNOTH, K., FUFA, S.M. and SEILSKJÆR, E., 2022. Barriers,success factors, and perspectives for the reuse of construction products in Norway. *Journal of Cleaner Production,* 337

[27] LYNCH, N., 2022. Unbuilding the city: Deconstruction and the circular economy in Vancouver. *Environment and Planning A: Economy and Space,* 54(8), pp. 1586.

[28] MARTIN, H. et al., 2024. Too good to waste: Examining circular economy opportunities, barriers, and indicators for sustainable construction and demolition waste management. *Sustainable Production and Consumption,* 48,pp. 460.

[29] MAZHAR, S.A., 2021. Methods of Data Collection: A Fundamental Tool of Research. *Journal of Integrated Community Health,* 10(01), pp. 6.

[12] NATANZI, A.S., LAEFER, D.F. and ZOLANVARI, S.M.I.,2020. Selective demolition of masonry unit walls with a soundless chemical demolition agent. *Construction and Building Materials,* 248

[13] RIOS, F.C., CHONG, W.K. and GRAU, D., 2015. Design for Disassembly and Deconstruction - Challenges and Opportunities. *Procedia Engineering,* 118, pp. 1296.

[14] SINGH, J. and ORDOÑEZ, I., 2015. Resource recovery from post- consumer waste: important lessons for the upcoming circular economy. *Journal of Cleaner Production,* 134, pp. 342.

[15] SOTO-PAZ, J. et al., 2023. The circular economy in the construction and demolition waste management: A comparative analysis in emerging and developed countries. *Journal of Building Engineering,* 78

[16] TAHERDOOST, H., Data Collection Methods and Tools for Research; A Step-by-Step Guide to Choose Data Collection Technique for Academic and Business Research Projects Authors.

[17] VALILA, T., 2019. An overview of economic theory and evidence of public-private partnerships in the procurement of (transport) infrastructure. *Utilities Policy,* 62

[18] YI, Y. et al., 2024. An integrated model of life cycle assessment and system dynamics for construction and demolition waste management and reduction in Italy. *Journal of Cleaner Production,* 486

[19] YI, Y. et al., 2024. Evaluating the carbon emission reduction in construction and demolition waste management in China. *Energy and Buildings,* 324

[20] ZHANG, M., LIU, X. and KONG, L., 2023. Evaluation ofcarbon and economic benefits of producing recycled aggregates from construction and demolition waste. *Journal of Cleaner Production,* 425

PAQS CONGRESS 2026
COLOMBO SRI LANKA

"Innovate. Collaborate. Build."

Established: 1996 in Singapore by 12 founding professional institutions
First Congress: Held in 1997 in Singapore
Growth: Expanded to include members from 15+ countries
Milestone: Approaching 30 years of service in 2026

Research & Development

Green construction and circular economy
Life-cycle costing and BIM
Procurement, dispute resolution, and AI in QS

Construction Industry Impact

Promoting sustainable and digital construction
Enhancing project delivery efficiency
Strengthening transparency and regional knowledge-sharing

Scope of Services

Quantity surveying and cost engineering
Education, training, and accreditation
Value management and project controls
Cross-border practice and professional exchange
Student and early-career engagement initiatives

PAQS Annual Congress & Conference

At Cinnamon life at City of Dreams

21st August 2025 - YQS
22nd August 2025- PAQS Committee Meetings
23rd August 2025- PAQS Congress (Board meeting)
24th - Morning - PAQS Conference
25th August 2025- PAQS Conference

Activities:

- *Global gathering of QS professionals*
- *Policy dialogue, workshops, and technical sessions*
- *Best paper and student awards*
- *Business matching and networking*

The PAQS Congress 2026, to be held in Sri Lanka will focus on the theme

Constructing the Evolution: Unleashing the Human Intelligence

bringing together professionals across the region for knowledge sharing and collaboration.

Message from the President

Ch.QS Indunil Seneviratne

BSc. (Hons) QS, MSc. (Construction Management) (USA), FIQSSL
President - Institute of Quantity Surveyors, Sri Lanka

It is my pleasure and honour to deliver this message on the occasion of the **IQSSL Annual General Meeting 2024/2025**.

From its humble beginnings in 1983, the Institute of Quantity Surveyors Sri Lanka (IQSSL) has continued to grow steadily in membership and professional recognition, both among industry stakeholders in Sri Lanka and within international Quantity Surveying bodies. The invaluable contributions made by current and past Governing Council members, who have represented IQSSL with distinction at various industry forums, deserve the highest appreciation.

Personally, it has been both an honour and a rewarding challenge to serve as the President of IQSSL during the 2023/24 and 2024/25 financial years.

In recent years, Sri Lanka's economy has faced unprecedented challenges arising from a series of domestic and global events. The tragic Easter Sunday attacks of 2019, the COVID-19 pandemic, the foreign currency crisis that began in 2021, and most recently, the aftermath of cyclone Ditwah, have collectively delivered severe blows to an already fragile economy. The latter has been a major setback to the country's recovery efforts. The gravity of this situation was clearly articulated by the President of Sri Lanka during the 2026 Budget Speech. As Sri Lankans, we are now compelled to rise once again from ground zero.

The critical question before us today is whether the Sri Lankan construction industry possesses the resilience to re-emerge and lead the nation's recovery. We have witnessed the current government focusing on funding on owner-driven housing repairs and refurbishment. Once the immediate impacts are absorbed, there will be an inevitable and urgent demand for permanent housing solutions, as well as the reconstruction of roads, bridges, irrigation bunds, and canals to support agriculture, tourism, and broader national development.

As of mid-December 2025, the total funds accumulated in the Central Bank's "**Rebuilding Sri Lanka**" Disaster Relief Fund have exceeded **LKR 3 billion**, with substantial contributions from both government allocations and private donations. In this context, I firmly believe that re-employment prospects for Sri Lankan Quantity Surveyors will strengthen as economic recovery gains momentum. The new skills, global exposure, and international experience acquired by Quantity Surveyors who have worked overseas will significantly enhance the profession's capacity to contribute meaningfully to Sri Lanka's immediate recovery as well as its long-term strategic national development.

I am confident that the IQSSL Governing Council will continue to remain at the forefront in guiding, representing, and empowering the profession, while supporting the Sri Lankan Government in the successful implementation of this national reconstruction programme.

From the Institute's own standpoint, **the year 2026 will be a critical milestone for IQSSL**. The Institute will have the honour of hosting the **PAQS 2026 Congress and Conference in Sri Lanka**, after a lapse of 15 years. This will mark yet another significant achievement in IQSSL's history as a professional body representing Quantity Surveyors at a global level.

In conclusion, I sincerely hope that IQSSL members, together with the wider Sri Lankan construction industry, will play a pivotal role in driving renewed growth and contributing decisively to the nation's journey towards recovery and resilience. I wish the very best to the incoming President, Ch. QS Hasitha Gunesekara, and his Governing Council as they assume leadership of the Institute.

Message from the Vice President

Ch.QS Hasitha Gunasekara

BSc. QS, MSc. in PM, Dip. Arbitration,
FIQSSL, FAIQS, CQS, ACIArb, MRICS, ICECA, GREENSL AP

I am honoured to deliver this message on the IQSSL Annual General Meeting 2025/2026.

Since its establishment in 1983, the Institute of Quantity Surveyors Sri Lanka (IQSSL) has continued to grow in both membership strength and institutional influence. This progress reflects the tireless efforts of our past and present Governing Council members, whose contributions at national and international forums have elevated the Institute's standing and strengthened the visibility of the Quantity Surveying profession.

Over the last few years, Sri Lanka has navigated one of the most challenging economic periods in its post-independence history. The construction industry, in particular, has been deeply affected by inflationary pressures, high material costs, volatile interest rates, and reduced development expenditure. Many firms have struggled to remain competitive, while underemployment and unemployment have compelled a significant portion of our skilled workforce—including many Quantity Surveyors—to pursue opportunities overseas.

Most recently, the severe floods and natural disasters that struck the country on 28th November 2025 have added further strain to both communities and the construction sector.

Beyond the devastating humanitarian impacts, these events have highlighted the urgent need to strengthen climate-resilient infrastructure, enhance disaster-preparedness planning, and elevate the role of built-environment professionals in post-disaster assessment and reconstruction. The Quantity Surveying profession now has an even greater responsibility to contribute technical expertise to ensure that rebuilding efforts are effective, efficient, and sustainable.

Despite the multitude of challenges, I remain confident in the resilience and adaptability of Sri Lankan Quantity Surveyors. Our profession has consistently demonstrated its ability to evolve, innovate, and support national recovery efforts in times of crisis. As we move forward, IQSSL remains fully committed to guiding, supporting, and advocating for all members—ensuring they are equipped with the skills, knowledge, and professional capacity required in an industry shaped by both economic transitions and an increasingly unpredictable climate.

I extend my best wishes to all members for a productive and progressive year ahead.

Report of BQSET Chairperson

Ch.QS Tilanka Wijesinghe

BSc. (Hons) QS, PG Dip. (Proj. Mgt.), FIQSSL, ICECA

Chairperson – Board of Quantity Surveying Education and Training, IQSSL

It is my pleasure to present the notable achievements of the Board of Quantity Surveying Education and Training (BQSET) during the highly successful 2024/25 session.

The central objective of the Board of Quantity Surveying Education and Training (BQSET) is to enhance and harmonise the expertise of both current and aspiring IQSSL members. In fulfilling its mandate, BQSET oversees the Assessment of Professional Competence (APC), the Graduate Member Qualifying Examination (GMQE), and professional examinations spanning Levels 1 to 3. All these key activities have been effectively executed during the current session.

The 2024/25 session witnessed a significant surge in interest in IQSSL corporate membership, as evidenced by a record number of APC candidates, exceeding 120 for the first time in history during the September 2025 session. This milestone was largely the result of IQSSL's focused initiatives to strengthen mutual recognition with international professional bodies and to enhance engagement with the global quantity surveying community. To accommodate this growth, BQSET conducted the APC in a hybrid format, enabling international candidates to participate online while local candidates attended in person. Throughout the 2024/25 session, two APC programmes were held in March and September 2025, each preceded by well-structured support classes designed to help candidates prepare effectively.

Enhancing the quality of professional-level examinations was prioritised, with a structured moderation process implemented across all assessments. Although there was a decrease in the number of participants, the professional exams were conducted successfully.

Another key priority has been standardising Quantity Surveying education across the country, including accrediting degree programmes and administering the Graduate Member Qualifying Examination (GMQE) for non-accredited QS degree holders. It was encouraging to note that nearly 50 applicants participated in the January 2025 GMQE session, with most successfully passing their respective modules.

I would like to extend my sincere gratitude to my dedicated team of Ch.QS Prof. (Mrs) Anuradha Samarajeewa, Ch.QS Nimantha Manamgoda, Ch.QS (Ms.) Rasika Samanmali, Ch.QS (Mrs) Chamila Amaratunga, Ch.QS (Mrs) Chamari Allis, Ch.QS (Ms) Dinusha Munasinghe, Ch.QS Danushka De Silva, Dilshan Akalanka, and Ch.QS (Ms) Deshani Alwis for their tireless efforts.

Report of BQSP Chairperson

Ch.QS Duleesha Wijesiri

BSc. (Hons) QS, MBA (PIM-SJP), FIQSSL, MRICS, Dip (Arb)
Chairperson – Board of Quantity Surveying Publications, IQSSL

I am pleased to present a summary of the Board of Quantity Surveying Publications' (BQSP) activities over the past year. Our primary goal has been to communicate IQSSL's information to members and the public accurately and efficiently. With the support of our dedicated board and sub-committee members, we achieved our objectives for the year.

Key accomplishments include: Updating the corporate profile of the Institute of Quantity Surveyors Sri Lanka, which has been instrumental in promoting the Institute's services to both government and private sectors; enhancing the IQSSL website to provide improved services to our members; publishing the quarterly e-journal "Focus" and several planned publications, thanks to the invaluable contributions of the Editorial Board: Dr. (Ms.) Roshani Palliyaguru, Dr. (Ms.) Tharusha Ranadewa, Ch. QS (Dr.) Kasun Gunasekera, and Mr. Dharshaan Vijayananda.

We encourage members to submit articles to further enrich our journal.

Special thanks go to Mr. Lahiru Fernando of Web Shop Sri Lanka for his ongoing support in maintaining our website and facilitating the timely publication of Focus magazine. We also appreciate the efforts of Ch. QS Indunil Seneviratne and Ch. QS Suranga Jayasena in updating our social media and website.

I extend my gratitude to our board members—Ch. QS. Prasad Dissanayake, Ch. QS (Ms) Nisha Thambugala, Ch. QS Buddhika Perera, Ch. QS (Ms) Dhamisha Sriyananda, Ch. QS Dasun Fernando, Ch. QS Iresha Gamage—and sub-committee members Mr. Sandun Senanayake, Ms. Piumali Hettige, and Mr. Dharshaan Vijayananda for their commitment. I also thank the Secretariat staff for their valuable assistance.

Report of FAB Chairperson

Ch.QS Jayantha Jayakody

MBA (PM), PG Dip. (CPM), BSc. QS, Dip.Com.Arb., Dip. Adj., FIQSSL, MRICS, MCIArb., ICECA, GREENSL®AP

Chairperson – Financial Affairs Board, IQSSL

I have the pleasure of presenting the certified audited accounts of the IQSSL for the financial year of 2024/2025 ending 31st March 2025.

First, I would like to acknowledge that our ongoing efforts to ensure the financial stability of the Institute have been successful for the year 2024-2025. Despite the severe economic crisis, we carefully monitored the status of membership subscription payments, which is the primary source of income. The Chairperson of the Membership Affairs Board and his team made extensive efforts to reach out to members both locally and internationally through our overseas representatives. While we have seen significant progress, continued efforts will be necessary to enhance collections in the coming years.

Additionally, a focused initiative was undertaken to update the membership registers across all categories, implementing a more systematic and acceptable approach during the financial year 2024/2025.

Additionally, the short courses conducted in collaboration with the Professional Affairs Board and the Board of Quantity Surveying Education and Training have generated substantial income for the Institute. It is my pleasure to report that the dedication of the Chairpersons of Professional Affairs board, Board of Quantity Surveying Education and Training with the board members and board members' commitment to CPDs' and short courses has successfully created a new revenue stream.

The emailed audited accounts will give you an overview of the Institute's financial standing and administration for the year 2024/2025. These accounts were prepared by the auditors, S & A Associates.

We have made considerable improvements in the status of fixed deposits, especially during the year under consideration. Fixed deposits amounted to Rs. 170,885,591.00 at the end of the financial year 2024/2025 increased from Rs. 130,002,644.00 of the financial year 2023/2024. Furthermore, the Total Assets have increased from Rs. 179,298,467.00 to Rs. 192,314,821.00 in 2024/2025 financial year.

Total revenue of the Institute has been increased from Rs. 24.4 million to 30.8 million, from 2024 up to 2025. This has been incurred due to the investment in the fixed deposits during the period.

Finally, I would like to express my gratitude to the President, the Governing Council, and the members of the Financial Affairs Board for their invaluable guidance. I also extend my thanks to the Directors of CQSGL, as well as the accounting and administrative staff of both the Institute and the College, for their support, which has greatly contributed to our achievements in the financial year 2024/2025.

Report of MAB Chairperson

Ch.QS Prasad Jasinghe

BSc. (Hons) QS, Dip. Arb, AIQSSL, MRICS, ICECA, MCIArb.
Chairperson – Membership Affairs Board, IQSSL

During the period 2024/2025, the Membership Affairs Board (MAB) continued to advance the Institute's mission of bringing together all Sri Lankan Quantity Surveyors both locally and internationally under the national Institute.

The primary function of the Board is to advise the Governing Council on matters related to membership, including new enrolments and membership upgrades. During the year, the MAB focused on updating membership information across all categories. These efforts are part of a broader objective to strengthen the IQSSL's membership base in the coming period.

1) An initiative has been undertaken to study and propose a web-based membership database for the Institute. This system is intended to support and integrate with the existing Institute website, enabling new membership applications, official communications, membership upgrades, renewals, and related processes to be handled through a simplified and fully digital platform.

2) Negotiations were continued to renew reciprocity agreements with international institutions such as RICS and AIQS, with the objective of recognising the Institute's Corporate Membership as equivalent to their respective Corporate Membership recognition criteria.

3) Organise awareness programmes targeting institutions that employ Quantity Surveyors (QSs) or offer QS academic programmes. In this regard, the following aspects shall be considered:

   4) Identify, on a district-wise basis, institutions offering QS-related programmes (such as technical colleges and training institutes).

   - Engage with organisations that employ a significant number of QSs, both locally and internationally.
   - Identify IQSSL members in each district who are willing to deliver guest lectures as part of membership awareness and promotion activities, and finalise an implementation schedule.
   - Organise and conduct these guest lectures on a district-wide basis.

4) The Institute looks forward to conducting member interaction programmes with the objective of gathering new proposals to enhance the quality standards of the Institute's current operations, while also identifying and encouraging potential leaders to actively and positively engage in Institute activities.

5) Offer attractive discounts to companies willing to pay IQSSL subscriptions for their entire QS staff, based on the number of subscriptions.

6) Newly appointed Country Representatives are invited to submit their annual programmes aimed at enhancing Institute membership and uplifting member recognition within the construction industry of their respective countries. The WhatsApp group that has been established will be used to maintain close and effective communication between the MAB and the Country Representatives.

As the Chairperson of MAB, I have observed a strong interest from non-members, including Sri Lankan Quantity Surveyors both practicing locally and abroad, in joining the institute. Additionally, existing members have shown enthusiasm in upgrading their memberships to align with their newly acquired qualifications and current professional experiences.

Our present membership strength as of 31st December 2025 is:

No.	Membershp Category	Updated Member Count June 2023	Updated Member Count October 2024	Updated Member Count December 2025
1	Honorary Life Fellow	5	5	5
2	Fellow (FM)	33	35	36
3	Associate (AM)	470	540	670
4	Graduate (GM)	566	616	641
5	Technical (TM)	484	482	486
6	Probationary (PM)	361	399	425
7	Registered (RM)	16	14	14
8	Student (SM)	2456	2418	2352
TOTAL		**4391**	**4509**	**4629**

Underlying functions and tasks have been successfully performed during the past period with extended support received from MAB members.

Members who have not paid membership subscriptions were identified and committee members and subcommittee members were assigned to follow up the process in collecting the membership fees. Members who have not paid membership subscriptions more than 10 years up to year 2024/2025 had been suspended from their memberships and its summary is as follows:

Category	Number of Members Suspended						(A) Removed Members	(B) Re-added Members	Total Removed Members (A-B)
	May 2019 1st List	Nov 2019 2nd List	Oct 2020 3rd List	Jun 2021 4th List	Dec 2022 5th List	Oct 2023 6th List			
FM	-	-	1	-	1	-	2	0	**2**
AM	-	-	19	3	1	3	26	0	**26**
GM	-	-	171	8	6	21	206	14	**192**
TM	-	-	5	-	5	13	23	0	**23**
PM	-	-	6	5	1	5	17	2	**15**
RM	-	-	6	1	2	2	11	0	**11**
SM	101	497	64	175	148	245	1230	21	**1209**
Total	**101**	**497**	**272**	**192**	**164**	**289**	**1515**	**37**	**1478**

Membership Renewal Form has been revised considering the facts which are required during membership updating process.

Members were appointed as country representatives from each of the countries; Sri Lanka, Oman, Dubai, Qatar, Saudi Arabia, New-Zealand, Canada, United Kingdom. Coordination meeting was convened with the overseas representatives with the purpose of discussing the way forward for addressing the issues faced by them, such as limitations in making payments through credit cards, expanding overseas networks, facilitating APC process, amongst other things.

I would like to extend my heartfelt thanks to the members of the Membership Affairs Board: Ch.QS Rajitha Dasanayake, Ch.QS Ajith Hindakaraldeniya, Ch.QS (Mrs.) K. D. Kumudu Rangani, Ch.QS P. Dasun Kanishka Fernando, and Ch.QS Alfrick George Sahayaraj, for their tireless efforts in making the board's work a success. I would also like to express my sincere gratitude to the sub-committee members of the Membership Affairs Board: Mrs. P. Y. Weerakoon, Mr. Sanju Darshana Perera, Mr. U. D. P. Anuruddha, Mr. Gihan Kasun Tharanga Weerasekara, Mrs. J. K. S. Sandeepani Jayakody, Mr. L. A. Mohan Indika, and Miss N. W. V. Vindya Prabashanie, who also worked tirelessly to support the board members.

Report of PAB Chairperson

Ch.QS Nandun Fernando

BSc. (Hons) QS, FIQSSL, FAIQS, Attorney at Law
Chairperson – Professional Affairs Board, IQSSL

During the year, we had eight CPD seminars conducted, both physically and virtually, on many contemporary issues, sustainability concepts, circular economy, value management, lean construction, etc, most of which were well attended.

Among the highlights is one joint CPD session held in conjunction with Sustainability Committee of PAQS which apparently turned out to be the most successful joint CPD held by PAQS with member associations.

Number of short-durational programmes were conducted continuously with an encouraging participation from industry practitioners, who has kept the demand rising displaying their eagerness to enhance knowledge, skills and capacities.

A total of two Round Table Discussions were also held, for the benefit of many corporate members.

All of above activities have been effectively facilitated and made possible by a dedicated group of PAB Members to whom my heartfelt gratitude is extended, together with members of PAB Sub Committee. A special note of appreciation is also offered to members of IQSSL staff for their support.

Report of PRWB Chairperson

Ch.QS Sumith Lokuge

Chairperson – Public Relations and Welfare Board, IQSSL

As the Chairperson of Public Relations and Welfare Board of the Institute of Quantity Surveyors Sri Lanka it is with great pleasure and honor that I present this message on activities and tasks undertaken and completed during 2024/25 period.

We organised annual cricket tournament among QSs for second consecutive time with participation of many QS societies, institutes. This is one of the most successful events that must be continued yearly.

Year-end dinner was organised as a yearly event to enhance the relationship among us by gathering Council Members, Past Presidents, Past Secretaries, Directors of QS College, IQSSL office members and QS College staff.

I personally thanks to all Board Members, namely Ch. QS. (Mr.) Jagath Basnayake, Ch. QS (Mrs) Nadeeka Damayanthi, and Ch. QS (Mr.) Harshan Amarasekara Sub Committee Members, Mr. Nimesh Priyamantha, Mr. Kawshalya Alwis Samarakoon, Mr. Charuna Thilanga Madhusankha, Mr. Demika Premasiri, Miss Madara Gunawardana, Mr. M. D. Chamara Dias and Mr. Sulochana Attanayake who were with me by giving their utmost support to make success the events planned by the Board.

New Associate Members of IQSSL March 2025

Ms. M. J.C. Perera
AT 0711

Ms. H. Chandanie
AG 1239

Ms. P.L.I. Wimalaratne
AS 1277

Mr. N.W. Weragama
AT 1593

Mr. A.M.C.B. Alahakoon
AG 1768

Ms. K.A.T.O. Ranadewa
AG 1821

Mr. V.R. Senevirathne
AG 1847

Mr. G.L.A. Buddhika
AT 2321

Ms. A. Saranya
AG 2348

Mr. R.G. Kosala
AG 2375

Ms. S. Janani
AG 2390

Mr. D.I. Udana
AG 2632

Mr. G.M. Wickramathilaka
AS 2659

Mr. M.C.L. Amarathunge
AG 2672

Mr. K.A.D. Ranasinghe
AG 2692

Ms. H.M.M.M. Bandara
AG 2713

Ms. H.N.M. Hapuarachchi
AG 2735

Ms. H.D.P.M. Randeniya
AT 2894

Mr. G.D.A.S. Gamage
AS 2917

Mr. J.C.F. Antony Kyntras
AG 2929

Ms. M.N.N.K. Liyadipita
AG 2930

Ms. N.N. Wimalasena
AG 2969

Mr. P.A.S.L. Perera
AG 3173

Mr. A. Jayshanth
AS 3289

Mr. M.M.A.S. Marasinghe
AG 3305

Mr. A.C.N. Uhanovita
AS 3344

Mr. K.M.I.D. Karunathilaka
AG 3362

Mr. D.M.D.S. Diyagama
AG 3561

Mr. A.M.M. Hassan
AG 4280

Mr. P.H.G.H.K. Pathirathna
AS 4342

Mr. D.M.Y. Sampath
AP 5081

Mr. L.M.P.K. Liyanage
AA 6086

Mr. A.R.M. Azam
AA 6087

Mr. T.A.D.D. Dissanayake
AA 6088

Mr. K. Thanushan
AA 6089

Mr. L.W.S.S.K. Wijesinghe
AA 6090

Mr. P.V.G.L.R. Kumara
AA 6091

Mr. K.V.D.A. Dayan
AA 6092

Mr. R.D.L. Perera
AA 6093

Mr. M.M.N. Lakmal
AA 6094

Mr. W.A.P.A. Wijesooriya
AA 6095

Ms. H.M.K.D.S. Fonseka
AA 6096

Mr. K. Kumaranatha
AA 6097

Ms. G.W.A.D. Ganegoda
AA 6098

Mr. M.M.S.C. Fernando
AA 6099

Membership Subscription

Dear Members

If you haven't paid the subscription yet, please make arrangement to pay as soon as possible.

Our established payment methods are as follows;

1. **Direct Deposits**
   Account Name : INSTITUTE OF QUANTITY SURVEYORS SRI LANKA.
   Bank Name & Branch : Commercial Bank – Borella.
   Bank A/C No. : 1208409001

2. **Bank Draft / TT**
   Account Name : INSTITUTE OF QUANTITY SURVEYORS SRI LANKA.
   Swift Code : CCEYLKLX
   Bank Address : Commercial Bank of Ceylon PLC.
   # 21, Bristol Street Colombo -01.
   Sri Lanka.

3. **Credit Card** : At the IQSSL Office or by filling the detachable slip below. Visa and Master card only

4. **Cash** : At the IQSSL Office

Please send the original bank deposited slip to the Institute by registered post in order to update our records. If you have any further queries, please do not hesitate to contact Ms Piyumi on +94112595570 or e mail iqssl@sltnet.lk

With well wishes,
Institute of Quantity Surveyors, Sri Lanka

Hony. Treasurer

Please Return This Part with your payment

CREDIT CARD / CHEQUE PAYMENT SLIP

CHEQUE ☐ **VISA** ☐ **MASTER** ☐ **Cheque #** ______________ **Cheque Date** ___/___/___

CREDIT CARD DETAILS

Name as appeared in the Card

Card No. **Expiry Date** mm yyyy

Amount SLR US$

CONTACT DETAILS

Telephone: **Email Address:**

1. 2.

I hereby authorize the use of my credit card to debit the amount mentioned above:

CARD HOLDER's SIGNATURE **DATE**

Change of Address:

Mail to: INSTITUTE OF QUANTITY SURVEYORS SRI LANKA
The Professional Centre,
2nd Floor, No.275/75, Prof. Stanley Wijesundara Mawatha
Colombo 07.
E-mail : Scan the form and e-mail to: iqssl@sltnet.lk

* **Note: CVV #,** is the three (03) digits, printed on back of the Credit

www.iqssl.lk