Editorial

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In delivery of a project or service, as readers, customers and clients, there is a reasonable inclination for us to focus on the bottom line of output or just on economic sustainability at the expense of the triple bottom line of sustainable development when considering a project or system. Economic stability, environmental awareness and social inclusion can and have featured in a balanced manner in the delivery and performance of any service, if treated in a medium- to long-term timeline; this supports the Brundtland definition, from *Our Common Future* (WCED, 1987). Underneath this aspiration, are a number of systems and processes which need to be considered and satisfied to achieve customer and client satisfaction.

In the sense of joined-up processes, this integrated thinking rationale can be applied to both product and process; also, the challenge is to apply appraisal systems to ensure that both design concepts and delivery outputs are weighted up appropriately and consistently. That understanding of seeking and providing sustainable solutions has been around for many years, and yet clients are still drawn to the bottom line of economic value-for-money measures. Beware, it has been said that ‘there is always a poorer quality of product to be found for those who seek after an even lower price!’

In the retail sector, the phrase ‘The customer is always right’ was originally coined by Harry Gordon Selfridge, the founder of Selfridge’s Department Store in London in 1909, and is typically used by businesses to: (a) convince customers that they will get good service at this company; (b) convince employees to give customers good service. Fortunately, more and more businesses are abandoning this maxim – ironically because it leads to bad customer service. In this context, there are three reasons offered by the contemporary writer Jayson DeMers (2014) on why this maxim is wrong

1. unreasonable customers eat away at your finite resources
2. this mindset positions employees against customers and management
3. money isn’t everything; not even close!

In this June 2019 edition of *Engineering Sustainability*, the reader will find this client-oriented appraisal of a number of processes or products to be considered in depth, and therefore add greatly to

the ongoing quest for valuable sustainability metrics on which to compare outcomes. This range of international papers also gives credibility to the journal and will inform those clients, decision makers and users, as they are seen in the same vein as users – all considered to be customers in the context above of retail and client roles, and with sustainability as an over-arching measure.

The papers, in their separate applications, seem to derive or interpret a system as a collection of processes, whether they relate to an element of infrastructure or to a complex arrangement of managed tools and procedures. The collection of international experiences and variety of sustainability-driven measures bring richness and intelligent analysis to this disparate array of case studies. These are of value to academic pursuit of research findings as well as those within industry who have set out to refine and improve processes with the triple bottom line of sustainability central to values and objectives.

The first paper, by Blom and Guthrie (2019), is a standard bearer for applied research as it presents an overview of research into the misalignment between the strategic intent (why and what) and the management (how and when) of systems such as services, assets, projects and networks. They acknowledge that infrastructure rarely fails catastrophically, but there is an inability to deliver projects long-term that fulfil the original objectives. Drawing from a range of project types, there is use of New Zealand transport organisations to explore this joined-up thinking. Attention to both system and project level brings understanding of this misalignment, thereby pointing toward a new form of ‘system stewardship’ to avoid the current practice of a silo mentality within any specialisation. Both authors applied a rigorous methodology and conclude that this new stewardship approach can link concept to long-term operation, by informing on organisational learning and completing the process of accurately informing the interdependencies of asset, service, organisation and system to meet change and maintain sustainable solutions, keeping customers content and giving true value for money. Ultimately, public infrastructure exists, not in its own right, but to benefit society, and that remains the journey of these prolific authors as they dig deeper into the paradigm of why and how best to provide infrastructure – seeking to keep the customers, and their grandchildren, happy!

The Heriot-Watt University academics' paper on 'Thermal comfort evaluation of an existing glazed airport terminal in Thailand' (Pichatwatana *et al.*, 2019) continues the international context and measurement theme. A post-occupancy evaluation includes both physical assessments (objective measurements) and a questionnaire survey (subjective assessment) relating to the departure lounge of the Suvarnabhumi airport, that has six floors and two basements. Measurement of indoor air temperatures is clearly an important key to study the thermal behaviours associated with unwanted thermal stratification; it is notable that external temperatures were in the range of 24 and 35°C and internal values were recorded at 21.8 to 26.9°C. The occupants are also key to comfort definition – they are the passengers, airport officers and operators, security personnel and shop attendants; with 383 replies (54%) to the questionnaire, the response rate was statistically acceptable. It became evident that the large glazed roof allows the natural light to flood in and results in excessive solar heat gain in the space; strong correlation between the two measurements concluded that the design of the large glazed concourse of this airport terminal does not perform well in terms of the temperature and light levels experienced in its spaces by airport workers. There is also a high probability of encountering significant thermal and visual discomfort in the large, glazed air-conditioned airport terminal in this hot humid climate of Bangkok. Customers need to be made happier!

Fly ash concrete is the subject of another international study by five academics from Zhejiang University of Technology, Hangzhou, People's Republic of China, with specific consideration on the uncertainty in life-cycle carbon dioxide emissions (Zhang *et al.*, 2019). The traditional thinking that substituting fly ash for cement in concrete can reduce carbon dioxide emissions is challenged using a life-cycle assessment (LCA) approach; however, the LCA involves a lot of assumptions and associated uncertainties. Two types of uncertainty, parameter uncertainty and uncertainty due to the choice of functional units, were investigated using the Monte Carlo simulation method and scenario analysis method. This highly technical paper represents considerable data analysis and concludes in a number of areas, while formally acknowledging their limitations. For LCA to continue to be a key measure for carbon dioxide appraisal, it needs to be fully researched, and this paper is vital in that journey – will the technical and decision-making customers be happy?

Agriculture and Iran are the diverse partnership in the final paper, written by four academics from University of Tabriz, Tabriz, Iran, with the sustainability theme as core to their study (Mollayosefi *et al.*, 2019). Although many definitions and alternative interpretations exist, there is some consensus about the definition of 'sustainable agriculture', and its inherent link to natural resources, as an activity

that permanently satisfies a given set of conditions for an indefinite period of time. These conditions are related to the multidimensional character inherent in the concept of sustainable agriculture, which requires this activity to be sustainable from the triple bottom line perspective of economic stability (profitable operation), social inclusion (fair and equitable distribution of the wealth that it generates) and environmental support (compatible with the maintenance of natural ecosystems). In contrast to many published papers on sustainability assessment, these authors adopted Conjoint analysis, also known as choice models or experiments, as it presents a flexible framework which could be adopted for a variety of specific applications and allows the drawing of comparisons among various stakeholder groups based on how they perceive sustainability, in order to measure preferences and assess trade-off decisions. The use of both measurements and stakeholder view again worked, akin to the Thailand airport review, and results in a number of possible interventions being identified to support or develop sustainable agriculture in the case study area of Iran's East Azerbaijan Province, with a view to having greater environmental performance among the province's customers.

Four papers, four nations, 14 authors, several nationalities, sustainability assessments, joined-up thinking in all papers. The diversity of these papers, and yet with several common themes, is surely why this *Engineering Sustainability* issue is worthy of reading, citing its articles and promoting among the wide communities of civil and environmental engineering.

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