



How does *Materials and Structures* contribute to the UN's Sustainable Development Goals?

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1 Introduction

Materials and Structures has a long-standing reputation for high-quality publication in science and engineering, with a central focus on developments in materials, structures and construction systems. As the flagship journal of RILEM (<https://www.rilem.net/>), we are pleased to support our parent organisation in its work to enhance the understanding of materials and their role in structural applications. Within RILEM's research interests, one aspect that we particularly value is the use of sustainable materials and techniques in construction. Thus, we are pleased to dedicate this year's Editorial to highlight our journal's contributions toward the United Nations Sustainable Development Goals (SDGs).

The SDGs are a set of 17 goals adopted by all United Nations member states in 2015, to outline a framework for peace and prosperity for people and the planet, now and into the future [1]. The 17 goals were put forward as an action plan to fulfil by 2030. These goals are interlinked with one another, and multidisciplinary collaboration is essential if we are to tackle them effectively. As a journal that publishes high-quality integrated research on the materials used in construction and civil infrastructure—which is to say,

the materials that underpin every aspect of our daily life—we are in a prominent position to promote action toward the SDGs.

The field of construction directly affects many local and global challenges, including climate change, health and well-being [2]. However, fulfilling SDGs within the construction industry depends on a wider community than engineers and academic researchers, including multiple stakeholders in policymaking and regulation as well as the general public [3]. RILEM is a founding signatory of the GLOBE Consensus (<http://globe-consensus.com/>), which encourages stakeholders in the built environment to embed sustainability in every aspect of their practice and policymaking, from design and standardisation to construction and operation, and the work of M&S as a publishing outlet is specifically intended to support these aims.

2 Which UN SDGs do we address within the scope of M&S?

We contribute to several SDGs that are directly and indirectly relevant to the scope of our journal. The main SDGs that we address are as follows.

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2.1 Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation

Within this goal, we primarily address the following sub-objectives (sub-objective text given here in italics is abridged from [1]):

9.1 Develop quality, reliable, sustainable and resilient infrastructure..., to support economic development and human well-being, with a focus on affordable and equitable access for all.

9.4 Upgrade infrastructure and retrofit industries to make them sustainable... with all countries taking action in accordance with their respective capabilities.

2.2 Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable.

Our journal specifically contributes to the following sub-objectives:

11.3 Enhance inclusive and sustainable urbanisation...

11.6 Reduce the adverse per capita environmental impact of cities, including by paying special attention to... waste management.

2.2.1 Goal 12: Ensure sustainable consumption and production patterns

Sustainability has always been a significant consideration in all the related research areas published by *Materials and Structures*. Within this goal, we address the following sub-objectives

12.2 Sustainable management and efficient use of natural resources.

12.4 Environmentally sound management of chemicals and all wastes throughout their life cycle... and significantly reduce their release... to minimise their adverse impacts on human health and the environment.

12.5 Substantially reduce waste generation through prevention, reduction, recycling and reuse.

12.8 Ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.

2.2.2 How do we contribute?

Our journal is dedicated to representing the three main goals of RILEM, which are defined (<https://www.rilem.net/introduction>) as: (i) to promote sustainable and safe construction, and improved performance and cost benefit for society; (ii) to stimulate new directions of research and its applications, promoting excellence in construction; (iii) to favour and promote interdisciplinary and multidisciplinary cooperation at international scale by open access to advanced knowledge. Indeed, these goals are well-aligned with SDGs 9, 11, and 12, and our commitment to the GLOBE Consensus.

Within the main goals of RILEM, our journal contributes to the SDGs mainly in the following aspects.

- *Integration of scientific research, policies, and communities:* As an editorial board with representation from every continent and expertise across many aspects of the construction sector, we play an important role in communicating research with multidisciplinary stakeholders to contribute to and promote the SDGs. Our journal has become an essential medium for transferring scientific knowledge to multiple stakeholders in the community, including RILEM Recommendations which are in many instances used by national standardisation bodies to develop formal Standards, and the outputs of RILEM Technical Committees, in addition to regularly contributed articles. *Materials and Structures* is a transitional journal that is involved in the SpringerNature pathway toward open access; we already publish many papers, including RILEM outputs, in a form that is freely accessible to any interested reader. Open access is a proven method to make scientific knowledge easily accessible to broader communities, including non-academic audiences [4]. We have also published a special issue marking the 75th anniversary of RILEM (https://link.springer.com/journal/11527/topicalCollection/AC_4d46a721d4db45e85b6d8d69c0b440ed/page/1), aiming to highlight some of the most influential papers that have been published by the journal throughout its history. The ease of access to



scientific findings, and improved understanding that can be reached through identifying essential publications over an extended time period, also contribute to SDGs 9 and 12.

- *Promoting sustainable construction practices:* The majority of the research published in *Materials and Structures* is focused on improving the understanding of materials and methods that can be applied to optimise construction in a sustainable manner. Such developments in sustainable construction materials and practices are critically important to build structures and infrastructure elements that are not only resilient, but also environmentally friendly in construction and operation. Our commitment to high-quality publications related to innovations in sustainable materials and construction contributes directly to addressing SDGs 9 and 11.
- *Fostering research on waste reduction via cradle-to-grave approach:* Our journal is actively publishing high-quality research that helps to tackle environmental issues, especially by reducing waste through prevention, reduction, recycling, and reuse, and managing waste throughout the life cycle. We actively seek to publish articles related to green/alternative/durable construction materials to minimise the overconsumption of materials. We also promote using waste materials in construction, to reduce and manage generated wastes efficiently. Thereby, we contribute to SDG 12.
- *Proactive research on reducing CO₂ footprint:* Our journal highly encourages the efficient use of natural resources and reducing CO₂ footprint when utilising building materials in construction. We have recently published several topical collections focused on supplementary cementitious materials that can reduce the CO₂ footprint of cements and concretes, and our publications on bitumen and asphalt also include a very strong focus on scientific and engineering aspects of waste valorisation in these materials. By these means, we support SDGs 11 and 12.

3 Future commitments to contribute and promote SDGs

- We are working with our publishing team to promote research on sustainability via possible

press releases on research that are of great interest to the general public and are relevant to SDGs.

- New topical collections are to be set up relevant to sustainability, and articles will be tagged whenever they are related to the SDGs.
- New appointees to our editorial board include experts in material durability, alternative cementitious binders, and waste management, and we welcome authors to submit novel and high-quality research on these extended research areas.
- We encourage our authors to highlight how each published paper contributes to the SDGs, as a part of the introductory text that gives the motivation for each piece of technical work we publish. Some such contributions will be able to provide a positive impact on a global scale, while the impact of some others is more local—for example, contributing to the betterment of a single community, in a way that generates knowledge which is also relevant to other communities, but which is critically important to achieve SDG goals in a local context. Therefore, we encourage the authors to highlight their impact on SDGs locally and globally, particularly seeking to provide transferable and fundamental knowledge rather than isolated case studies, and always with a view toward enabling the reader to use the information provided to improve their own knowledge and practice in engineering and science.

4 Concluding remarks

We reinforce our strongly-held position that the United Nations Sustainable Development Goals provide a roadmap towards a sustainable transformation of human society, and we hope that our readership will also recognise the importance of this initiative and others (e.g. the GLOBE Consensus) which align with the SDGs. As a journal related to the construction sector and building materials, we actively contribute to several SDGs, including 9, 11, and 12. We continuously aim to communicate research work related to SDGs to our stakeholders to achieve these goals, and we actively encourage our research community to work collectively to reach a state of sustainability in our activities for the benefit of present and future society.

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