

Living and evolving with change: 30 years of the Australian Stream Management (ASM) Conferences

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Key points

- It is 30 years since the first Australian Stream Management (ASM) conference. In this preface to the 12ASM proceedings we briefly reflect on this milestone.
- Throughout 12ASM we will consider how the ASM community and industry has evolved, and what we need to do as an industry and community to further progress and mature.
- The ASM industry has matured into a collaborative and interdisciplinary field but still faces critical gaps in participation, adaptive practice, and policy influence.
- We encourage you to progress sustainable and large-scale river management by strengthening collective social capital across individuals, employers/organisations, and professional bodies.
- We want you to create actionable strategies that focus on collaboration and networking, and engagement and communication through support and resources.

Abstract

This paper takes brief look back at the last 30 years of Australian Stream Management (ASM) conferences to situate and preface the 12ASM conference and proceedings. It synthesises insights from 30 years of the Australian Stream Management (ASM) conference proceedings and recent published Open Access journal papers that undertake a longitudinal review of the sector (Russell et al., 2023, 2026). We reflect on how the industry has matured and consider how it could and should evolve in the future. Since the inaugural 1ASM (in 1996), the ASM conferences have provided a unique national forum for the stream management industry to share knowledge and advance river and stream management (Fryirs et al., 2013). After the 6ASM, 16 years on, over 500 papers were analysed to track the progress, problems and prospects in Australian stream management (published in Fryirs et al., 2013). After 10ASM, 25 years on, over 1000 papers from the 1ASM to 10ASM were analysed to determine the ‘*who, what and how*’ of stream management in Australia and how it has matured over time. This was published Open Access in Russell et al. (2023). It also provided five recommendations for the future.

At 11ASM, these recommendations were workshopped, drawing on the knowledge, wisdom, ambitions and voices held within the industry. The findings provide a blueprint of action strategies to be implemented by individuals, employers and professional bodies if we are to build and leverage the collective social capital of the industry and harness the will to act. This was published Open Access in Russell et al. (2026).

Despite substantial progress and maturation of the ASM industry, critical gaps remain in community participation, proactive adaptive management, and the translation of knowledge into policy and practice at scale, and these gaps have remained in the industry for several decades (Fryirs et al., 2013). We argue that the next phase of industry evolution will depend less on generating more data and new knowledge and more on mobilising coordinated, collective action while taking the opportunity to

innovate further. We will need to live and evolve with change – in the environment and climate, in society and culture, and in technology and data availability including how we incorporate the diversity of knowledge and how we responsibly use AI. We must do this while retaining the collaborative and knowledge-sharing approach that makes the ASM industry and community one of the global exemplars of participatory best practice. The ASM community is uniquely positioned to shape its own future.

Keywords

Collective social capital, action strategies, community of practice, adaptive management, nature-based solutions, preserving knowledge, influencing policy

Introduction

Since 1ASM the stream management community and industry in Australia has evolved into a mature and diverse industry grounded in collaboration, interdisciplinary science, and applied practice. The last 30 years of Australian Stream Management (ASM) conferences provide a unique lens through which to examine the evolution of river management practice in Australia (Fryirs et al., 2013; Russell et al., 2023, 2026). Whilst not a perfect reflection of the stream management community in Australia, it provides an almost unique opportunity to reflect on river management nationally and situate ASM globally. Over the years, the ASM conferences and papers published in proceedings have consistently provided a platform for sharing applied knowledge, fostering collaboration, as well as a rich source of information with which to track how stream management in Australia has evolved over time. Analysing this archive, has allowed the ASM community to reflect on the good things that have happened, the emerging trends in river management, and what still needs to be done (Fryirs et al., 2013; Russell et al., 2023, 2026).

This paper takes a brief look back at the last 30 years of ASM conferences and their themes to situate and preface the 12ASM conference. It then synthesises insights that have been published in Russell et al. (2023, 2026) titled “Evolution of a river management industry in Australia reveals meandering pathway to 2023 UN Goals”, and “Building capacity in an environmental management industry: Investing in collective social capital to advance stream management”. These papers are available Open Access for anyone in the ASM community and industry to use. They track the evolution of the ASM industry and call for greater effort to build capacity within it. Russell et al. (2023) provides a historical and situational context and identifies the critical factors influencing industry performance over the last 30 years. Russell et al. (2026) provides a blueprint of practical pathways for advancing stream management over the next 30 years. The Russell et al. (2026) document provides an example of how a loosely structured industry could be better mobilised and enabled to respond to current and emerging challenges.

Thirty years of ASM conferences: What will 12ASM look like?

Over the last 30 years twelve conferences (including the current one) have been held (Figure 1). In that time conferences have been held in all States and Territories except Western Australia and the Northern Territory. From 1ASM to 11ASM over 1000 papers have been published in peer-reviewed proceedings.



Figure 1 Covers of proceedings, themes and location of the 12 ASM conferences over the last 30 years

The range of themes has changed over the years (Figures 1 and 2) from considering challenges at 1ASM and 2ASM, to values at 3ASM to considering linkages and scale at 4ASM and 7ASM and making a difference while managing extremes at 5ASM and 6ASM. Recent ASM themes (8ASM-11ASM) have been more reflective, holistic, interdisciplinary and action oriented with a focus on the development of the industry and community and less on the ‘act’ of doing river management. 12ASM will continue on this trajectory and has been designed to revolve around the theme of “Living and Evolving with Change”, to recognise the changing context for how we work with rivers, and perhaps even how to formally recognise rivers as living entities in policy and legislation. This includes a shift in the diversity of voices that are required to help situate the ASM community for the next 30 years. The program contains Keynotes and Workshops aimed to provide time to consider how we develop the ASM industry, community and ourselves over coming years and decades while tackling, embracing and working with changes that are coming – whether they be environmental, technological or societal.

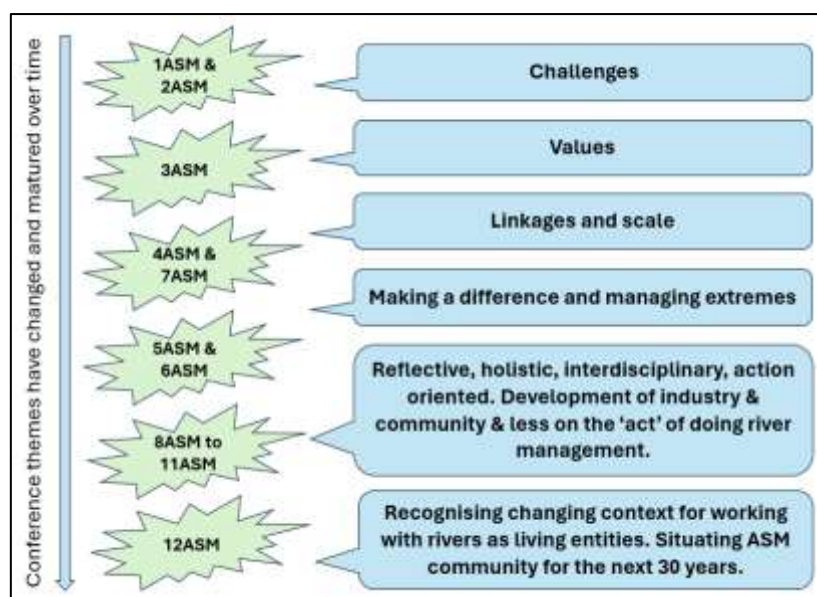


Figure 2 Maturation in the ASM conference themes over time over the last 30 years

The papers that are included here in the 12ASM proceedings are more forward-thinking, presumably inspired by the conference theme. For example, we see reviews of legacy impacts and historical recovery, past and future geomorphic trajectories of change for waterways and how to quantify them, changes in waterway approvals and incentives programs over time (carrots or sticks?), and adaptive management over medium to long-term timeframes. There appears to be a shift to bigger, more holistic thinking. This includes large-scale, catchment-level programs, reconsidering connections between wetlands and estuaries, nature-based solutions (NbS) at scale, thinking outside the channel and ‘room for the river’, and in particular recognition of the diversity of perspectives that are required for effective stream management. There appears to be an increase in the role of developing guidance for a range of waterway management challenges, but also as much emphasis on the people as the rivers. This latter point is reflected in keynotes focused on developing our leadership skills, but also the movement towards personhood or formal recognition of rivers as living entities.

Evolving with change: How has the ASM community and industry evolved over the last 30 years?

The ‘look’ of the ASM industry and community has changed for the better

As reported in Russell et al. (2023), the Australian stream management industry has undergone substantial transformation since 1ASM, shifting from a focus on engineering interventions to a broader paradigm that integrates ecological, social and cultural considerations. The ASM industry has become more diverse and increasingly complex, comprising government agencies, consultants, researchers, regulators, community organisations, practitioners, professional organisations and Traditional Owners.

Over this period, the industry has expanded its scope and capabilities, incorporating interdisciplinary approaches, adopting NbS, and responding to major climatic and environmental events (e.g. Millennium drought, 2019-2020 Black Summer bushfires, 2022 Eastern Australia floods). However, achieving large-scale and sustained improvements in river health remains challenging. While collaboration and diversity have increased, progress in key areas such as community participation, adaptive management, and policy integration is still emerging. There has also been a geographical expansion in the range of rivers being actively managed by communities across Australia, spreading from the humid SE to the tropics and arid zone.

Industry focus, practices and techniques have dramatically shifted

Whilst the involvement of academics in ASM conferences has marginally declined, this is made up for by increasing consultant authorship. Russell et al. (2023) highlighted that the ASM's focus on the boundary between theory and practice enables research advances to be translated and go on to effectively influence practice. One example is that of NbS, that has been a central framing for intervention for several decades. The uptake in practice is reflecting a broader shift toward working with river processes and working with recovery. Many techniques that were once novel are now routine (e.g. the installation of wood, and riparian replanting), indicating both maturation of practice and consolidation of knowledge. At the same time, advances in science and technology have dramatically expanded the data available to practitioners that can be used for analysis, change detection, monitoring and decision-making.

Collaboration and interdisciplinarity has improved

Russell et al. (2023) identified that the ASM community has become more collaborative over time, with growing participation from consultants, government practitioners, and cross-institutional teams. Interdisciplinary and transdisciplinary work has become more common, reflecting the need to integrate biophysical science with management, policy and community and cultural perspectives. However, despite these gains, collaboration remains uneven. Participation from community groups, citizens and non-government organisations is critical but still limited in geographical scope, and collaboration across jurisdictions and regions remains constrained. These patterns suggest that while the core of the community is strong, its breadth and inclusivity require further development.

Actual use of adaptive management and policy engagement has been limited

As reported in Russell et al. (2023, 2026), adaptive management has been a consistent theme within ASM and has been widely promoted within the industry, but its application in-practice has been limited. Monitoring, evaluation and reporting frameworks have been developed but full adaptive cycles including learning from failure, adjusting practice, and embedding feedback are less consistently realised, or perhaps are not being communicated with the broader industry. Communication of successes has been common, but there is - not entirely surprisingly - a reluctance to present on failures and lessons learned, which constrains learning and adaptation. Similarly, while there is evidence of interaction between science and policy, the influence of the industry on policy development has been modest at best. Pockets of influence can be identified in Victoria (e.g. Victorian Waterway Management Strategies, Birrarung Act that formally recognised the Yarra River as a living entity). However, as is typical globally, transition from scientific insight to policy change and implementation has often been slow or incomplete compared to other types of science to practice. There has been in fact a decline in contributions by State government employees to the proceedings.

Living with change: What must be done for the future of the ASM community and industry to progress and mature?

Five key recommendations came from the work conducted by Russell et al. (2023). These highlight where the ASM community and industry are currently situated, and what is needed for the ASM industry to mature further. It considers international obligations, especially the United Nations Sustainable Development Goals (UNSDG). The workshop at 11ASM and the analysis of the responses formed the basis for development of the action plan (blueprint) published in Russell et al. (2026). The blueprint presents action strategies identified by the ASM community that should be enacted so the industry can advance its shared goals and work toward enacting the five recommendations.

Recommendation 1: Work holistically to create communities of practice.

Sustaining and growing the ASM community will require investment in people and a culture of stewardship in decision-making and practice. Inclusion and participation of diverse communities in stream management needs to expand, fostering more integrated and active communities of practice. Urgent integration of First Nations knowledge and practices is essential, alongside removing barriers to

wider participation. The River Basin Management Society (RBMS) and ASM communities should be strengthened as central nodes that support knowledge exchange, mentoring, and shared problem-solving. Expanding engagement, particularly among under-represented and local stakeholders, and maintaining continuity across institutional and generational change. Mentoring and professional development programs will be needed to enhance skills, foster leadership, and support knowledge transfer across generations of practitioners. Opportunities for mentoring should be expanded and embedded into organisational cultures, ensuring that capacity building is continuous and inclusive across career stages and sectors.

Recommendation 2: Implement nature-based solutions (NbS).

Rehabilitation techniques need to transition more fully towards NbS and avoid engineering (e.g. channelisation, piping, rock lining, levee construction). NbS needs to be applied at appropriate scales and to large-scale conservation and rehabilitation initiatives to prevent, halt and reverse riverine ecosystem degradation, and enhance the environmental, societal, cultural and economic benefits and services provided by healthy riverine environments. Even in urban areas, hybrid NbS can be used where engineering is still required to protect infrastructure. Continuous advances in the maturity of the industry will also help us reverse the cycle of restoration persistence – continually (re)investing in the maintenance of poorly performing assets or undoing failed management strategies.

Recommendation 3: Substantially improve stability and resourcing of the ‘industry’ to implement proactive adaptive management.

The industry must advocate for stable, long-term investment to enable the full adoption of proactive adaptive management, where implementation is designed as experimentation to test hypotheses and build robust “best practice.” This requires integrating visioning, monitoring, evaluation, reporting, communication, and ongoing adaptation into standard practice. Open-access, globally available repositories of data, methods, and case studies that are accessible to practitioners and communities can support this shift, alongside improved transparency, including willingness to learn from failures. Persistent short-term funding remains a major barrier; securing sustained investment is essential to move from reactive responses to strategic, forward-looking planning, particularly in addressing climate change and natural disasters. Innovative funding mechanisms, including partnerships and market-based approaches could be used to complement public investment but must be underpinned by strong governance and safeguards to ensure equitable and effective outcomes.

Recommendation 4: Preserve and use what we know more effectively.

Preserving institutional and community knowledge, relationships, and collaborations as institutions evolve will be vital, particularly as the industry has become larger and now involves a broad range of actors. Ongoing challenges remain in information and data archiving and sharing, despite dramatic advances in technology and online environments. Recurrent restructuring, and changes to institutional structures and priorities risk the loss of critical knowledge, despite encouraging growth in collaboration, which depends on stability, transparency, and effective governance. The ASM archive highlights the depth of existing knowledge, yet adaptive management requires accessible, reliable, and well-managed data systems. Strengthening data governance, archiving institutional knowledge, and improving data sharing and open access platforms are essential to mobilise this knowledge effectively. At the same time, knowledge systems must integrate diverse perspectives, including local and Indigenous knowledge, while supporting continuous learning, synthesis, and adaptation across institutional and generational change.

Recommendation 5: Step-change ‘industry’ influence on policy and implement large-scale stream management.

The industry must improve its ability and capacity to influence legislation, policy and regulations that provide a mandate that supports continuous improvement in our ability to protect and rehabilitate stream health in the face of major challenges such as climate change and population pressure. This

includes the need for large-scale stream and catchment management. This will require commitment to local, national, regional and global agreements and visions. This will require collective advocacy, consistent and persistent communication, stronger relationships between researchers, practitioners and policy-makers, and a better understanding of policy processes by individuals, organisations and professional bodies.

Living and evolving ‘together’: The ASM industry must invest in collective social capital to progress and mature in the future.

The ASM industry and community self-identified that the primary constraint on industry progress is not a lack of technical knowledge but a lack of investment in the social and institutional dimensions of the industry (Russell et al., 2023, 2026). Central to this is the need to enhance collective social capital to enable collaboration across sectors and institutions, and to mobilise existing knowledge more effectively.

Collective social capital is defined as the networks, norms, and trust that facilitate coordination and cooperation for mutual benefit. Collective social capital enhances the capacity of individuals, community, organisations and professional bodies to engage in and sustain management efforts (Pretty and Ward, 2001). Strengthening collective social capital enables improved collaboration, knowledge exchange, innovation and coordinated action and development of strong communities of practice (Pahl-Wostl et al., 2007; Brierley et al., 2025). However, it requires deliberate investment and coordinated action across all levels of the industry; *individuals, employers and professional bodies*. *Individuals* can contribute through continuous learning, collaboration, and proactive engagement. *Employers* can support these efforts by providing resources, fostering a culture of knowledge sharing, and investing in staff development. *Professional bodies* can play a key role in coordination, advocacy, and the development of shared standards and platforms. *Government and private industry funders* can recognise the importance of strengthening society connections to waterways so that we all recognise their true value and worthiness for investment. What is urgently required is a shift in funding emphasis towards proactive, future focused programs that protect stream in good health as a high priority while tackling causes of stream degradation, over reactive programs that only tackle symptoms of degradation and rapid response after disasters.

The Russell et al. (2026) work found three cross-cutting themes that repeatedly emerged from the 11ASM workshop (Figure 3), all of which require the strengthening of collective social capital in the ASM industry and community by individuals, employers and professional bodies.

1. *Collaboration and Networking*: collaboration, networking, relationships, capacity building, knowledge sharing, and knowledge accessibility.
2. *Engagement and Communication*: shared vision and purpose, communication, storytelling, engagement, and education.
3. *Support and Resources*: policy influence, legislative support, practice integration, funding, resources, and staff retention.

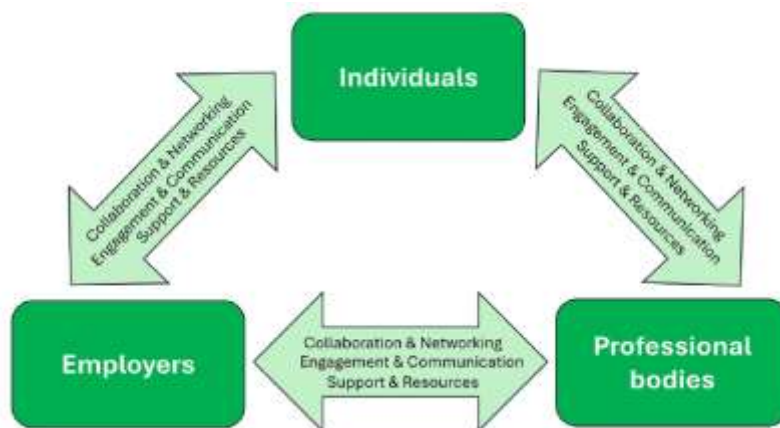


Figure 3 Cross-cutting themes for the future of stream management in Australia. Source Russell et al. (2026)

A living blueprint: Action strategies to use and develop for individuals, employers and professional bodies.

The ellipse diagrams in Figures 4 to 8 pull together action strategies for individuals, employers and professional bodies, framed around the 5 recommendations and areas for action identified by the ASM industry and community. They are only included as placeholders and reminders in this paper. When using this work, we encourage you to download the original versions of the Russell et al. (2023, 2026) papers and access the action strategies using the Open Access links provided below.

For copies of these, please go to the supporting information section (at bottom of page) in Russell et al. (2026).

<https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2025EF006923>

As graphics:

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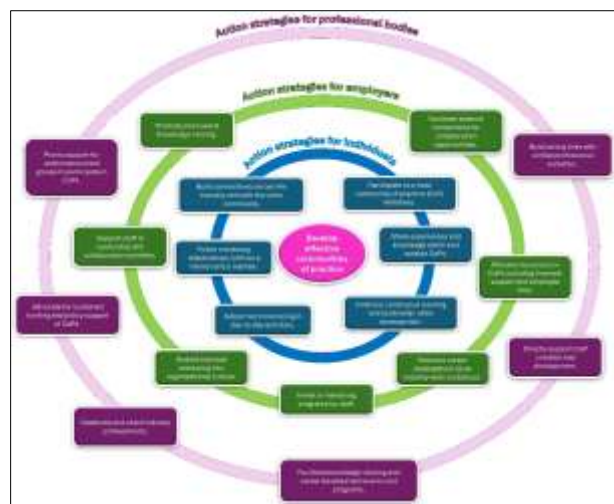


Figure 4 Action strategies to develop effective communities of practice



Figure 5 Action strategies to mainstream and up-scale nature-based solutions (NbS)

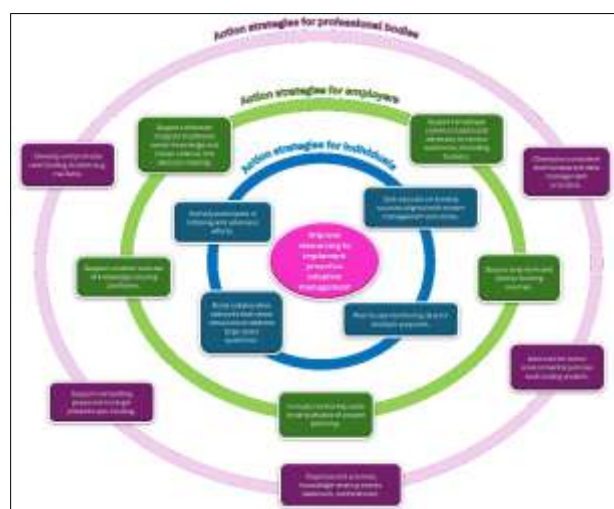


Figure 6 Action strategies to improve resourcing to implement proactive adaptive management

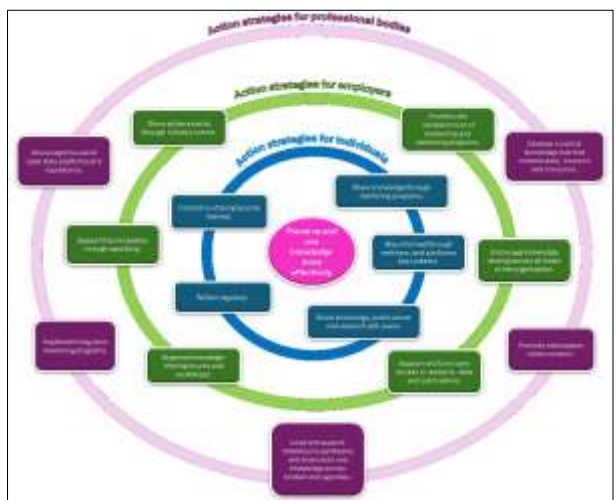


Figure 7 Action strategies to preserve and use knowledge more effectively

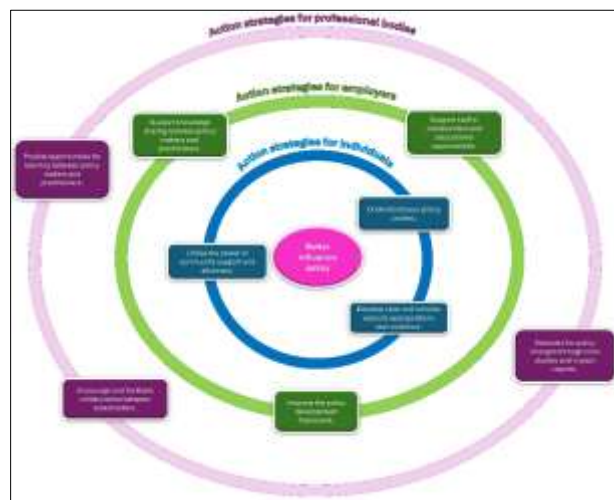


Figure 8 Action strategies to better influence policy

Conclusions

The Australian stream management industry has made significant progress over the past 30 years, evolving into a mature sector. This has been realised by moving from ‘control’ of nature and ‘fixing’ waterways to an evolution toward living and dynamic rivers accommodated to self-regenerate with the support of our actions. Future progress toward living rivers and a supportive industry depends on strengthening collective social capital, embedding adaptive and proactive practices, and enhancing collaboration across all parts of the industry. Investment in people, relationships and institutional capacity will be essential to complement existing technical expertise. Achieving this will require a shift from fragmented efforts to coordinated, collective action grounded in strong social capital and funding for strategic programs. Professional bodies such as the River Basin Management Society (RBMS) and the ASM conference gatherings provide just two examples of a platform and network to support this transition. By focusing on coordinated action across individuals, organisations and professional bodies, the industry can build the capability needed to deliver sustainable, large-scale improvements, ensuring that both rivers and those in our industry live and evolve over the coming decades.

Acknowledgements

This paper relied on the substantial contributions and work undertaken for the Russell et al. (2023, 2026) papers. Those bodies of work drew on over 30 years of knowledge, wisdom, ambitions and voices held within the industry, and the findings that emerged from the 11ASM workshop that focussed on collectively developing action strategies for the ASM industry. We thank the authors of all ASM conference papers over the years and the participants of the 11ASM workshop for your contributions.

Disclaimer and declaration of AI use

Microsoft CoPilot was used to paraphrase several sections of this paper and condense it into a short format. If you, your employers or professional bodies wish to use any of the findings or strategies presented in this paper, please use the Russell et al. (2023 and 2026) papers as your go-to guides. This paper is a significantly compressed summary of those publications. Both are available Open Access for anyone to download. Click on the DOI links in the reference list below to get a copy.

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