By Daisy Malt and Steven Judd

Learning and Upskilling in Energy Management

In an era marked by information overload, technology advancements, shifting regulatory landscapes and an increasing demand for sustainability, the field of energy management is evolving faster than ever. To keep pace with these changes, professionals in the industry must prioritise continuous learning and upskilling—ensuring they have the knowledge and tools to navigate ongoing and emerging challenges and drive energy and carbon reductions in their or clients' organisations.

In this feature, we asked two energy management professionals to explore why ongoing education and skill development are crucial for both individual successes and organisational growth.

Daisy Malt, Sustainability Manager, University of Essex

Can you explain why in your role of a Sustainability Manager, you found it essential to upskill in the field of energy management?

My role is typically much more focused on the 'non-technical' aspects of sustainability and environmental management, such as engagement, policy, strategy and reporting. While I don't directly work on the energy and carbon reduction projects that are delivered by our team, my position means that I need to be able to understand some of the processes, principles and terminology that are essential aspects of energy management. To be able to communicate with the wider university community about the projects we are working on, I was keen to strengthen my knowledge so that I can bridge the gaps between some of the technical language and concepts of energy management, and others' everyday understanding of them. It is also really helpful to understand what I am talking about when preparing reports for senior management and liaising with other members of the team. I was keen to expand my skills recently as part of my ongoing development, recognising the increasing focus on energy efficiency both to our organisation, and more widely.

Has the approach to energy management shifted in recent years in your organisation, and how can professionals like yourself ensure they are equipped to handle these changes?

Over the last few years, as the cost of energy has risen and the focus on carbon reduction has grown, energy management has become increasingly important for the university. We have set a target to reach net zero carbon emissions by 2035 and this means a concerted effort is required to ensure we are on the right trajectory, and can identify the projects that will allow us to make bigger gains on that journey. The cost imperative has obviously grown with unit prices for gas and electricity rising. The higher education sector is already going through a challenging period and spending more on utilities adds to that. At present, energy efficiency is very much about cost efficiency; wherever possible we need to make gains, while the resources to do so are stretched. It's important to be quite agile and creative in how this is addressed. Much of the low-hanging fruit and quick wins have been tackled, and the biggest projects can be out of reach due to affordability. Instead we have to keep nibbling away where we can – whether that's further BMS adjustments, embedding upgrades as part of ongoing maintenance plans or seeking external funding.

How do you balance the need for technical skills with the demand for soft skills, like leadership and communication?

Leadership and communication

skills are essential parts of my job, and as mentioned above, I am coming to energy management from that angle – the training provided by the EMA has given me better knowledge of the technical aspects that I need to communicate to others about. It means that when I'm speaking with the experts in our team, or others in the Estates Maintenance teams, I can understand and process that information so that I know why a certain project is being done, what the benefits and longer-term implications are, and be sure that I can clearly communicate that to others. That can include other members of my team, who work on sustainability engagement, through comms such as blogs and news stories, reports to senior management or at internal committees. These messages need to be tailored to the audience, who will have varying experience of the technologies and infrastructure being discussed.

How do you think the concept of 'continuous learning' can be integrated into the daily routine of an energy professional who may already be balancing a busy workload?

Continuous learning is fairly essential in the ever-changing sustainability and energy efficiency landscape, and it's important to take the time to expand knowledge. This can be anything from learning from colleagues and peers, to keeping up to date with best practice through your networks; for example LinkedIn or professional bodies. Even reading a weekly industry email newsletter helps to keep you in touch with what's going on. Taking advantage of training opportunities, even if it's just half a day once per year, makes all the difference. It can be so easy to get caught up in the pressures and busy-ness of your day to day work, but taking the time to absorb changes helps in the longer-term. We are encouraged to take up suitable training opportunities as part of our professional development at the University, and within our team we typically embed this into our objectives as part of the PDR process. This allows us to identify areas we would like to improve our skills on, and formally records that intention. This means we can highlight an area of focus and have ownership of our development.

What are some of the challenges energy professionals face when it comes to upskilling, and how can organisations support their employees in overcoming these barriers?

Constraints on time and funding can be challenges for upskilling; in higher education money is tight, so being able to pay for more in-depth courses needs clear justification. Organisations must be conscious of the longer-term benefits of upskilling their teams, and the return on investment that it will bring. Where teams are small, or even reducing in size, that puts increased pressure on those doing the work, so having the capacity to further build on knowledge can be difficult. It's really important to recognise the balance of delivering the work that's needed with the imperative to keep up to date with developments, which are happening all the time.

Looking ahead, what advice would you give to young professionals entering the energy management field to ensure they continue to grow and stay relevant in the industry?

While there are lots of challenges, it is definitely an opportunity too. It is a great time for anyone coming into the industry; driving efficiency and measuring impact is crucial for cost savings and as part of wider carbon reduction. These types of roles are in demand, so building competence and expertise are really important. You should always be a sponge at work, to absorb as much as you can, but particularly so when you're starting out so that you have a good breadth of skills. As you develop your expertise you can then identify where your strengths lie and begin to carve out your niche. Building on this by learning from others, seeing how the industry is developing and what the priorities are, advocating for yourself for opportunities for training all help you stay relevant. The technologies and solutions available are always evolving, but the challenges themselves often

remain fairly static, so keeping up to date allows you to be one step ahead.

Author's profile:
Daisy holds an MSc in Environmental Sustainability from the University of Edinburgh, and has worked in Sustainability for almost a decade. Her work focuses on engagement to embed sustainable practice, both at the individual and organisational level, and exploring resource efficiencies.

Steven Judd, Environment and Sustainability Manager, Landmarc Support Services

Can you explain why in your role of an Environment and Sustainability Manager, you found it essential to upskill in the field of energy management?
In my role as an Environment and Sustainability Manager for Landmarc within the defence sector, upskilling in energy management became absolutely essential.
The Defence Training Estate operates across some of the most geographically remote and complex environments in the UK from high-security ground and air operational bases across hundreds of thousands of hectares of land and seascapes, delivering around 8.2 million Personnel Training Days to UK and Foreign Forces in a typical year.
We have been delivering this service to the Defence Infrastructure Organisation (DIO) on behalf of the Ministry of Defence (MOD) for over 20 years. The new Training Estate Support Contract, won by Landmarc in 2023 and initiated in April 2024, marked a shift in the significance of energy, water and carbon management and conservation in over 9,000 operational buildings. These range from Napoleonic forts to state of the art Net Zero Carbon buildings, commercial kitchens, dormitories with associated ablution blocks through to air traffic control and hangars where tanks and other combat vehicles are maintained.
To put the size and scope of the contract into context, we provided the UK armed forces with over 2.5 million accommodation nights and 8.2 million meals in 2024 – that equates to a productivity similar to a UK Top 10 hotel chain. These sites function 24/7, and without a detailed understanding of how energy is consumed, sourced and controlled, it's incredibly difficult to deliver energy resilience, meaningful asset management, carbon reductions and long-term cost efficiencies.

My energy management upskilling has enabled me and the wider Landmarc sustainability team to engage much more effectively with building performance data, energy metering systems and cross-disciplinary stakeholders. It's allowed me to go beyond compliance and start influencing infrastructure strategy. From optimising BMS and deploying real-time sub-metering to specifying low-carbon technologies, such as air source heat pumps, solar PV and battery storage, energy management now sits at the core of our sustainability and resilience planning.

In the defence context, energy resilience is critical. We're not just managing kilowatt-hours — we're enabling operational continuity. Reducing dependency on fossil fuels, improving system redundancy and increasing local generation capacity directly supports mission assurance, capability and by extension guaranteeing national security.

Being part of the EMA community has also been hugely beneficial — not just for CPD, but for staying on top of innovation, policy change and practical delivery models that work in real-world, high-stakes environments like defence. Energy management, in this context, is not just a technical function — it's a strategic imperative.

Has the approach to energy management shifted in recent years in your organisation, and how can professionals like yourself ensure they are equipped to handle these changes?
Yes, the approach to energy management in our company has shifted significantly in recent years; it's reflective of a wider trend across the Defence sector. Traditionally, energy management was seen as a back-of-house technical function, focused primarily on compliance, reporting and cost control. However, in today's environment with net zero targets, volatile energy markets and growing operational risks tied to energy resilience, it's become a central strategic pillar.

In our case with Landmarc operating within the defence and facilities management space, we've moved from reactive monitoring to proactive, integrated energy management. We're embedding energy and carbon considerations into asset lifecycle planning, capital projects require DREAM - the military version of BREEAM. It's not just about reducing kilowatt-hours anymore, it's about decarbonising heating, integrating renewables, ensuring continuity of operations and building energy resilience into

core services. That shift has required closer collaboration across estates, sustainability, engineering, finance and senior leadership.

For professionals in the field, the key to staying equipped is continuous learning. This includes technical upskilling such as in data analytics, building controls and low-carbon technologies, but also developing a strategic mind-set. Energy managers need to speak the language of carbon, risk and value. We're no longer just managing energy, we're shaping the future of how our organisations operate, how our country is adapting to a net zero carbon future, and the evolving and mitigating climate impacts.

How do you balance the need for technical skills with the demand for soft skills, like leadership and communication?

Striking the right balance between technical expertise and softer skills is crucial to success. On the technical side, we are responsible for driving energy efficiency, reducing carbon emissions and integrating new technologies. This requires a deep understanding of energy systems, data analysis, building management systems and the ever-evolving regulatory landscape. We need to stay ahead of new technologies, such as AI, IoT and renewable energy systems while ensuring the operations of high-security, mission-critical environments are efficient and resilient.

The technical side isn't enough. We are humans and we work with humans and not just machines and equipment – we often need to deliver through others.

The softer skills, like leadership, communication and stakeholder management are just as important, especially in defence, where project delivery often involves multiple teams, from operations to engineering, sustainability and senior leadership. Effective communication is key to translating complex technical concepts that can be understood by non-technical stakeholders, ensuring that energy-saving initiatives can be mapped across to organisational goals and priorities.

Our own mental and physical wellbeing also plays a role, I have found that when under periods of stress through workload, finance or personal issues, we tend to revert to our comfort zone. Be conscious of that trait if you recognise it in yourself and it will make you a better energy manager and employee.

Leadership and influencing are critical when it comes to securing buy-in for sustainability initiatives. It's not uncommon to encounter resistance to change, particularly when it involves shifting long-standing practices or investing in new technologies. Recently, a colleague told me: "soldiers will never do that". For me, that's like a red rag to a bull, the ability to influence, build trust and guide stakeholders through the change process is invaluable. The ability to manage relationships, align various interests and foster collaboration across departments is vital in overcoming barriers to energy management and achieving long-term success.

How do you think the concept of 'continuous learning' can be integrated into the daily routine of an energy professional who may already be balancing a busy workload?

As an energy manager in the UK, the pace and complexity of daily responsibilities can make continuous learning feel like a luxury. Our work environment is being shaped by evolving technologies, regulatory changes and ambitious sustainability goals, and keeping knowledge fresh isn't optional, it's essential. Making learning part of a routine rather than an added task can be one solution, but the reality is you need to find a solution that works for you.

We all have different learning styles and we need to be cognisant of that. There are many new and innovative solutions evolving. Micro learning can be one effective approach. By dedicating just 10–15 minutes a day to industry podcasts, short articles or e-learning modules, energy professionals can stay current without major disruption. Many platforms offer CPD-accredited content in bite-sized formats. Think:

"can I double up on that commute by downloading content and listening to it over several days or weeks?".

On-the-job learning is another valuable opportunity. Every energy audit, project review or stakeholder meeting presents a chance to reflect, ask questions and share insights. Encouraging team discussions or quick knowledge-sharing sessions at the end of a project can help embed lessons learned across the wider group.

Leveraging digital tools also supports ongoing development. Setting up alerts for relevant legislation updates, subscribing to professional newsletters or joining online forums helps energy managers stay connected to wider industry developments. However, don't overdo this and become swamped by notifications and updates, otherwise they can become stressors, which will turn you off training. Importantly, organisations can support this culture by recognising and rewarding professional development, whether through formal CPD targets, internal mentoring schemes or simply giving time and space for learning during the workweek.

With my team over the last two years, we have achieved three professional memberships. Achieving them was made an objective (SMART) and learning time was diarised like any other work task or project. This was part of a greater discussion on ambition and progression. That helped Landmarc plan for the future and helped the employees to understand their ongoing contribution and evolution in role. Reflecting on other people's working and learning styles was important, with some preferring the discipline of studying from the office whilst others lacked the opportunity to work from home.

Ultimately, continuous learning doesn't have to mean formal study or time away from the job. It's about curiosity, reflection, and staying alert to the innovations and insights that help deliver smarter. When learning becomes part of how we work, not just something we do occasionally, it becomes both much more manageable.

How do you view the emerging technologies like AI and IoT solutions in energy management? Are they changing the skills required for energy management?
The world is experiencing the beginning of the 4th industrial revolution. AI is evolving at an incredible rate and already supports my work both directly and indirectly. Machine Learning has been the 'special sauce' of an energy management software we use. By back loading data back to 2017, MOD's carbon baseline year, and then normalising weather and defence specific metrics have enabled accurate predictions of energy demand patterns, optimised energy consumption across multiple sites, and even identified subtle areas of inefficiency that human operators might miss. The alerts we set are continually learning the defence training estate datasets to minimise the number of false alarms allowing lower thresholds to be enacted earlier, so we can understand usage and wastage earlier. The volumes of data-pieces being processed are enormous and beyond the capability of a human, and in nanoseconds.

Similarly, IoT solutions are driving the next level of data collection and connectivity. IoT sensors enable real-time monitoring of energy use across various devices and systems, providing granular insights that allow for much more informed decision-making. These connected systems can automatically adjust settings for lighting, heating and cooling, leading to more efficient energy use without the need for manual intervention. We have

rolled out 82 net zero carbon buildings over the last four years. Equipped with BEMs, they are not only managing their energy usage and generation, but the learning functions are able to predict failures in pumps and motorised valves by recognising how water flows vary against norms before they fail. Systems that alert prior to failure without the complexity of sensors on each module are the 'holy grail'.

In terms of skills, the rise of AI and IoT is absolutely changing the profile of energy management professionals. While the fundamentals of energy management, such as understanding energy consumption, efficiency measures and sustainability strategies, remain critical, there is now a growing emphasis on data literacy, digital tools and systems integration. Energy professionals need to be comfortable working with data analytics platforms, IoT devices and AI-driven systems, as well as understanding how to interpret the data they generate. This interconnectivity brings vulnerabilities. Operating and interfacing within MOD's IT systems brings with it the highest levels of information systems and communications security. The attractiveness of Bluetooth, Wi-Fi and WLAN connections bring with them challenges for secure environments. The building systems that we manage on behalf of the MOD are at the forefront of digital security. Concerns over the origins of hardware, back-door access into software or malicious attacks from foreign nations or just motivated individuals is ever present. The saying which came out of the Northern Ireland troubles rings true today. Malicious attackers "only have to be lucky once, we have to be lucky every day". The more interconnected our systems are, the more careful our preparations need to be as the vulnerability increases. The NHS, British Airways, PlayStation, NASA and other blue-chip organisations have all fallen foul to hackers and malicious attacks. Defence can never be vulnerable – how open are your business systems to attack?

In short, AI and IoT are transforming energy management by improving both the scope and precision of how we manage energy. The skills required are evolving from traditional energy auditing and reporting to a broader understanding of how to leverage technology to create more intelligent, adaptive and efficient systems.

What are some of the challenges energy professionals face when it comes to upskilling, and how can organisations support their employees in overcoming these barriers?

The challenges we face as energy managers are similar to professionals everywhere; however, let me personalise my thoughts by putting them into context. Professional development is critical for energy professionals, especially in the face of evolving regulations, technological advancements and the drive towards net zero. We are the interface between the objectivity of systems, data and finance, and the subjectivity of humans and their personal interface with energy use and wastage. However, there are several challenges that make this a complex undertaking.

Let's talk about time constraints. Energy professionals are often juggling a multitude of responsibilities, from monitoring energy consumption to meeting compliance deadlines. Finding time for structured learning or professional development can be a real barrier, especially in smaller teams where staff are spread thin with demanding stakeholders. Landmarc is not perfect but works hard to ensure we make time for a small team of three, supported by a year in industry student, who deliver energy, climate, sustainability, environment and social value across over 130 sites in the four nations of the UK.

Secondly, access to relevant training can be a challenge. With the pace of change in technology and policy,

the energy landscape is constantly evolving. Professionals may find that existing training courses are either outdated or too generic, failing to address specific needs, such as the integration of renewable energy systems, micro grids or carbon accounting methodologies. This often means that professionals need to be proactive in seeking out the right courses, sometimes at their own expense. However, on-line technology allows low cost hybrid training opportunities whilst joining isolated workers into integrated professional communities who share best practise. In my experience, we learn as much from the community of students as from the course and tutors.

Finally, budget constraints can hinder access to advanced training or certification programs. Energy professionals, particularly in smaller organisations, may not always have access to the resources necessary to take part in expensive training opportunities. To overcome these barriers, organisations play a pivotal role. Leadership support is key, organisations must recognise upskilling as an investment in the long-term sustainability of the business. Providing dedicated time for professional development, whether through paid training days or flexible schedules, ensures employees can take part in courses without impacting operational efficiency.

Committing to ongoing learning and providing the resources and support needed, organisations can help energy professionals stay ahead of the curve and effectively tackle the challenges of the future. Professional and continuous development in role needs to be considered like any other objective. Target it using SMART objectives and make time for it. If you standstill you are actually falling behind as the profession is moving forward all the time.

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Why is it critical for organisations to prioritise upskilling their staff and teams in energy awareness and energy management, especially in today's rapidly changing energy landscape?
As an energy manager, I see first-hand how informed and engaged teams can significantly influence operational performance, resilience and sustainability outcomes.

The defence estate is vast, complex, and energy intensive. With increasing pressure to reduce carbon emissions, meet regulatory targets and improve energy security, it's essential that energy isn't seen as just the responsibility of a single department. When staff across all levels understand the impact of their actions — whether it's how they operate buildings, use equipment or report inefficiencies — they become active contributors

to energy goals rather than passive observers.

Upskilling empowers individuals to identify opportunities for improvement, make informed decisions and support a culture of continuous improvement. It also enhances compliance with evolving legislation and standards, reduces operational risk and supports the MOD's wider drive towards Net Zero and energy resilience.

Moreover, the rapid pace of technological change, from smart metering to AI-driven optimisation, means that energy managers and technical teams must stay current to make informed decisions about investments, operations and innovation. Regular training and development ensure we are not just keeping up, but leading where it matters.

In a sector where mission readiness, reliability and cost-effectiveness are critical, energy awareness becomes more than just an environmental concern, it becomes a strategic enabler. Prioritising upskilling is how we ensure our people are ready to meet that challenge.

Looking ahead, what advice would you give to young professionals entering the energy management field to ensure they continue to grow and stay relevant in the industry?

For young professionals entering energy management, especially within the defence sector, the key to long-term success is curiosity, adaptability and a commitment to continuous learning. The reality is that a good proportion will be new graduates. Landmarc has six year-in-industry placement students every year as part of our social value agenda. One of those students supported our energy management work. Having a young fresh mind entering a hugely experienced legacy team has been so valuable. The discipline of supporting a new employee and student into the work force has been energising and even though the challenge of "why would you do it like that?" can be testing, it has taught us all to reflect on the way we do things, and not to be content and challenge the way we work. This is an industry that evolves quickly—shaped by new technologies, shifting regulations and global sustainability goals—so staying still is not an option.

Soft skills matter too. Communication, collaboration and influencing are vital when you're working across diverse teams or trying to drive behavioural change. Be proactive, look for efficiencies others might overlook, and always be thinking about resilience and long-term impact.

Above all, stay passionate – we are contributing to a better planet. Energy management is about shaping a smarter, more sustainable future and young professionals have an exciting role to play in driving that change. When people ask me what have I been up to at work today, clearly working in defence I can't always give the detail, but I stay motivated because I am helping to save the planet and supporting the MOD to deliver a secure future for our nation.

Author's profile:

Steve has been working in Environmental and Energy Management for over 35 years. The Landmarc team are delivering sustainable solutions delivering both lower carbon and energy security to the DIO and the MOD on the Defence Training Estate, 24-7. Steve can be found on LinkedIn, he posts most weeks on energy, sustainability and environment subjects.