



Strategic Command
Defence Support

Sustainable Support Strategy



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Sustainable Support Strategy

Foreword from the Chief of Defence Logistics and Support



The Integrated Operating Concept reinforces the need for our forces to be able to operate and be supported anywhere around our planet and have the agility to move between theatres. The deeply complex ability to sustain forces at reach has long been a determinant of success. History, however, provides many lessons of failure where underinvestment in support has hampered front line capability and where supply lines have been left exposed to threats.

The threats posed by climate change are changing the tasks we face and the way we deliver those tasks. The Climate Change & Sustainability Strategic Approach notes that “The character of warfare is changing fast; so is the climate. Both issues are changing the way our military fight, live and train in unfamiliar ways. Linking these issues together, they both demand that we adapt to the new circumstances that we face and take transformative action now. We need to change mindsets, and the way we operate in peace, in war and in persistent competition.”

While such adaptation can be viewed as an imposition, I believe that sustainability is the solution for the future. Emerging green technologies will allow us to make a reality tomorrow of what seems impossible today: greater agility, higher operational tempo and increased resilience will all underpin Support Advantage. Doing so will ensure we keep pace with industry whose financial decisions place sustainability as core business and with international partners to ensure we are interoperable and sustainable by design. This Strategy, developed in close collaboration with all stakeholders across Defence and Industry will therefore be command-led and designed into Defence’s practices: I commend it to you.

A handwritten signature in black ink, appearing to read 'R Wardlaw', with a long horizontal line extending to the right.

Lieutenant General Richard Wardlaw, OBE

Executive summary

The Sustainable Support Strategy (SSS) describes how the Support Function is setting itself to meet the challenges of the Integrated Operating Concept through addressing the urgent issues of climate change and sustainability. It has been developed from work led by the Boston Consulting Group that drew on broad consultation across Defence and bespoke analysis to form a comprehensive evidence base. It has a focus out to 2025 with the reach to shape activity further in the future. It is a strategy for the whole of the Support Function across Defence.

The SSS is aligned to Defence's Climate Change and Sustainability Strategic Approach as well as capstone concepts such as the Integrated Operating Concept. It is complementary to the Support Operating Concept that provides a contemporary assessment of how we can deliver Support to operations that is rooted in the demands of the next decade. These assessments highlight that the future deployed force needs greater autonomy from its strategic base to generate greater agility, responsiveness, and resilience in a persistently engaged posture defined by constant competition.

For the delivery of Support Advantage the emphasis shifts from planning to sustain at reach, to designing for self-sustainment in varied environments. Support activity must be able to meet the increased tempo and manoeuvre agility this demands. It will need a Support force that is more precise in what we demand and when it is needed. Our footprint in deployed operations needs to be smaller, more mobile and more self-sustaining. Our networks need greater resilience particularly to climate-related threats.

The SSS assesses these problems, analyses the evidence and lays out near-term actions. This is framed against the four elements that we look to resolve: improving the effectiveness and efficiency of operational support; increasing our military capability; reducing our vulnerability to environmental threats; and mitigating our activity's impact on the environment.

The six strategic initiatives by which change can be delivered are:

- **Sustainable delivery of platform availability.** Our equipment needs to be available for greater periods to reduce the equipment support footprint that is deployed and sustained.
- **Operational energy in the global transition.** Platforms need to reduce carbon emissions and the use of fossil fuels. This energy transition will be complex and rapid; its implications will be assessed through a Defence Operational Energy Strategy.
- **Resilience of the global Strategic Base.** The support network needs to be resilient to a changing environment, with its vulnerabilities assessed and mitigated.
- **Self-sustainment of operations.** More efficient use of resources and different ways of delivering support will deliver greater self-sustainability on operations.
- **Impact of Defence commodities.** The decarbonisation of our commodities and the circularity of their lifecycle will increase the sustainability of the commodities we use.
- **Impact of deployed food.** The food Defence provides to operations needs to create fewer emissions, better sustain our people and meet their changing needs.

The SSS will draw on a series of enablers and multipliers from across DefSp and from others delivered centrally from the Defence's Climate Change & Sustainability Directorate. The SSS will be governed by Defence Support for the whole Support Function.

Purpose

The Sustainable Support Strategy (SSS) is Defence Support's (DefSp) initial response to the challenges climate change poses. It outlines how we plan to reduce our emissions and increase the sustainability of our operations and how we can maximise the opportunities presented through novel approaches and technology. It also explains how we will identify and reduce our vulnerabilities and the risks we face in delivering our activity. These vulnerabilities and risks include, for example, how the changing weather and environment could affect our ability to deliver logistics support owing to rising temperatures or sea level.

The Strategy follows-on from, and starts, the work called for in the Ministry of Defence (MOD) Climate Change and Sustainability Strategic Approach (CCSSA). It remains in step with the Department's approach to climate change and sustainability (CC&S) and is complementary to other work, such as the development of the Defence Operational Energy Strategy¹.

Scope

The strategy is:

- led by DefSp and takes a Defence-wide perspective on Support activity that would benefit from coordinated action across all Services. It does not, however, exclude any Service-led specific activity;
- focused on areas that the Chief of Defence Logistics and Support, as the head of DefSp and Functional Owner for Support, can affect;
- focused on activity required in Epoch 1 (out to 2025);
- shaping further work for Epoch 2 (2025 - 2035) and Epoch 3 (2035 - 2050);
- collaborative, having been developed through wide engagement within and outside of Defence and was reviewed and challenged by a panel of external experts.

Sustainability in the context of this strategy refers to environmental sustainability.² This publication is a summary of the key themes and initiatives which have been identified through detailed research.

Policy context drivers and change

The Integrated Operating Concept (IOpC) sets out a new approach to the role and purposes of UK armed forces, in an era of strategic and constant competition that reflects a rapidly evolving character of warfare. It represents the most significant change in UK military thought in several generations.

¹ The Defence Operational Energy Strategy is under development through 2022/23.

² Broader social and sustainability issues are out of scope, including sustainable working practices within Defence or labour standards and human rights outside Defence.

IOPC's force for 2030 needs to be able to operate in a dispersed manner. It needs to be capable of moving between activity at varying levels of intensity, and able to shape the conditions and tempo of activity in both the Operate and Warfight paradigms.

The Support Operating Concept (SptOpC), is DefSp's response to the challenges described in the IOPC. It foresees a force that will operate with increased precision, a smaller footprint and greater agility. By doing so it will reduce its demands as far as is practical both on the Strategic Base (SB)³ as well as on the regions in which it is operating. These changes provide greater operational freedoms and make forces more sustainable. Additionally, our forces need to:

- have a more resilient physical infrastructure at home and abroad;
- be prepared to navigate through the uncertainty of the energy transition away from fossil fuels;
- develop an end-to-end sustainable approach to its supply chain and minimise the lifetime effects of the commodities and military materials and equipment (known as materiel) that Defence purchases.

This will require far-reaching change to our policies, culture and behaviours. It will range from how we design equipment and platforms with greater sustainability in mind, through to how we recycle, re-use or re-purpose what we have rather than dispose of it. Beyond this 'bottom-up' approach that drives a more effective and efficient military and continually delivers Support Advantage (see below), there are also key policies across government that are driving the need for this strategy.

The Climate Change Act (2019 Amendment) and related legislation requires the MOD (and within that DefSp) to fully contribute to the national plan for a Net Zero economy by 2050 (NZ50) and the legally binding target for Greenhouse Gas (GHG) emissions.

Our ambition

Our ambition is that:

- **We will understand the vulnerabilities of the Defence Support Network⁴ within a climate changing world, including where risks lie.**
This Strategy will bring together and drive activity that increases our resilience. It will achieve this by understanding the environmental threats we face and reducing their impacts whilst maintaining or improving military capability, effectiveness, and efficiency. This will be in line with both the UK's defence requirements and climate ambition.
- **Support will understand its role in mitigating climate change and adapting to a climate changed environment, delivering enhanced effectiveness and efficiency.**
Climate change and sustainability poses both challenges and opportunities for Support. Rising temperatures will increase the burden on Support as the efficiency of equipment and our people will reduce, requiring greater levels of reserve to maintain the same outputs. At the same time the global energy transition from fossil fuels threatens higher

³ The Strategic Base capability provides the ability to store, distribute, mount and recover across the Defence Support Network.

⁴ The DSN is defined in JDP 004 as: a flexible set of supply chains connecting points of production and use, ensuring the most appropriate and efficient use of resources across the Whole Force, maximising information and technology to assure logistic support to operational commanders.

costs and lower supply. Public policy and social expectations will require Defence to decarbonise. However, lower-impact, more-resilient means of Support are often also more efficient and effective.

- **Sustainable Support Advantage⁵ will unlock the potential of the future force** as, in partnership with our partners and allies, we meet the challenges and seize opportunities more effectively than our adversaries.

Framework

This strategy will extend Support Advantage. It will reduce the vulnerability of UK Defence to environmental risk and mitigate the environmental impact of Defence’s activities. Collectively, its output will maintain or improve our capability, effectiveness, and efficiency in line with the UK’s national ambitions.

We will deliver through cross-functional leadership, collaboration and pan-Defence coordination, engagement with allies and in partnership with industry and academia. This strategy sets out ways in which the four dimensions of the challenge can be resolved (Figure 1).



Figure 1. The Dimensions of the Sustainable Support Strategy

⁵ Support Advantage: an approach that enables Defence to outpace, outwit and, where necessary outfight its enemies' by: "delivering a paradigm shift of greater platform availability; the development of superior, assured, environmentally sustainable and cost-effective logistic services; the exploitation of data and technology; and a culture of interoperability that places NATO at the heart of Defence."

Strategic initiatives

When developing the strategy our analysis identified six strategic initiatives:

1. Sustainable delivery of platform availability
2. Operational energy in the global transition
3. Resilience of the global Strategic Base
4. Self-sustainment of operations
5. Impact of Defence commodities
6. Impact of deployed food

These six initiatives are areas within DefSp’s direct sphere of influence and cover Support activity across Defence. They represent opportunities to address structural factors that can yield significant climate change and sustainability benefits.

Environmental degradation will increase the Support burden, whilst also making that Support harder to deliver. DefSp should shape and accelerate the expected transformation of engineering and equipment support to address the environmental impact of, and threat to, these Support activities, covered in Initiative 1. Operational fuel (Initiative 2) represents the largest single source of carbon emissions in Defence (54% of 3.4Mt CO₂e in Defence’s Scope 1 and 2 carbon baseline) and the CCSSA tasked the development of more detailed analysis on how the transition from fossil fuels can be delivered.

DefSp aims to strengthen the resilience across the global strategic locations where the key Support effects are delivered, with the focus in Initiative 3 on those essential global Support nodes used for Support activities including storage, maintenance and distribution. The CCSSA also noted that by the end of Epoch 1 (2025) Support would be starting to realise the benefits that accrue from greater self-sufficiency in deployed operations. Part of that self-sufficiency comes from better availability, and Initiative 4 covers a process that stretches from procurement decisions through Support solutions to in-service Support policy and standards.

Commodities are the life blood of the supply chain that Support operates. The lifecycle of these products Defence procures will be examined with an assessment of how to reduce the carbon embodied through the production, procurement, distribution and storage phases (Initiative 5).



We will examine how we can move from disposal of the product (as is described in the Acquisition Life cycle that covers Concept, Assessment, Demonstration, Manufacture, In-service and Disposal (CADMID)) to a more circular approach of that moves the end point to one of re-use, repair or repurpose. The Defence Support Network connects into each phase of this life cycle, and so must be prepared for the threats that the changed environment is now bringing.

The commodity that has tangible contact with our people’s daily lives is food. Though Defence’s food emissions are relatively small (compared to national or global agricultural and food production sector), Initiative 6 expands beyond what can be done to reduce emissions to take a holistic view of food. This will range from how food can nourish and fuel our people so they are better able to perform on operations through to examining food packaging to make it more sustainable. But also assessing the changing dietary needs of people and seeing how menu choices can reflect those needs as well as reducing the use of carbon intensive foodstuffs.

The delivery of the Strategic initiatives will be aided by a series of enabling activities (Figure 2). The portfolio addresses both environmental impact and environmental threat. It does so across the majority of spend and personnel, over all areas of Support activity: logistics, engineering and equipment Support. It includes both low-cost, early-impact opportunities and more complex initiatives with longer lead-times and higher resource requirements.

The strategic initiatives will be delivered initially by modifying planned activity and via existing teams. The initiative owners will be from within DefSp and have the responsibility for developing the detail in the initiative. This also includes engaging Support areas across Defence to deliver the desired outcomes. In some areas the process will need additional or specialist support. Progress against the agreed plan will be reported to the Support Plan Progress Group (SPPG).

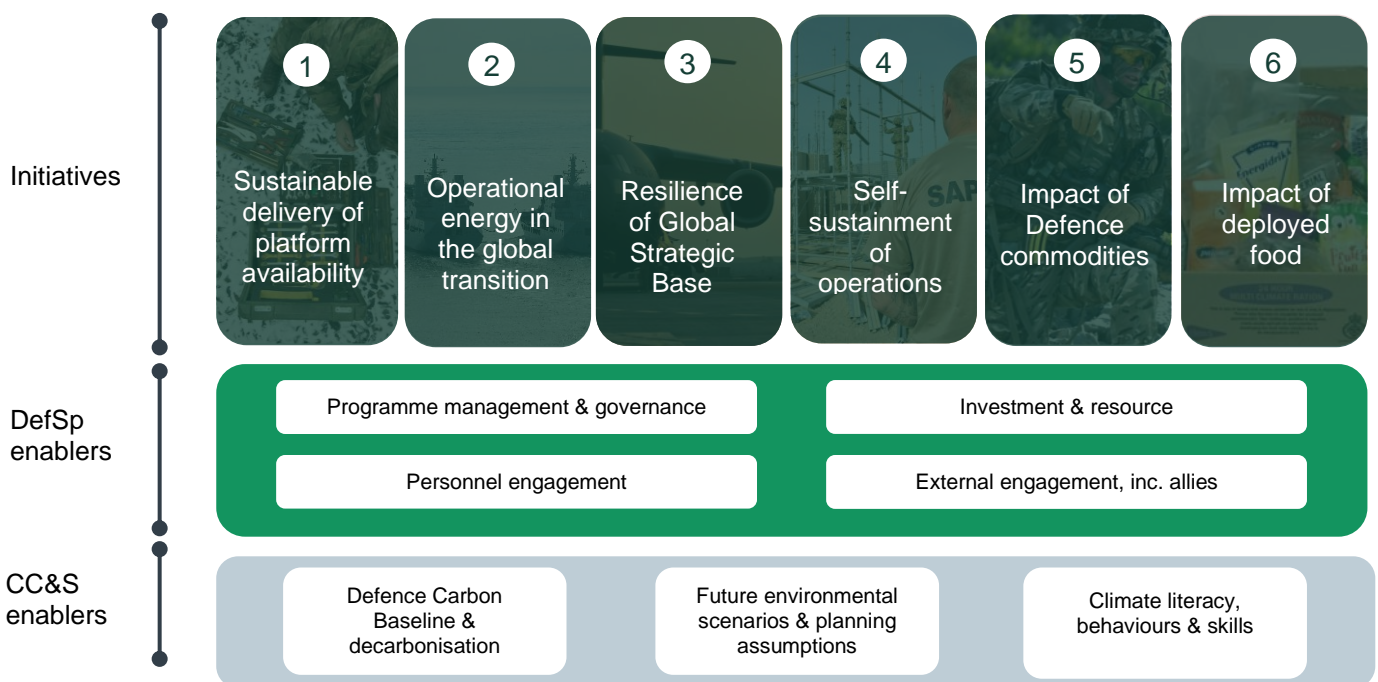


Figure 2. Structure of the Sustainable Support Strategy

The emissions that are directly attributable to DefSp under the Government’s ‘sectoral’ definitions have not been determined but are expected to be relatively small. However, the emissions over which DefSp has influence are high, including those related to fuel, maintenance, distribution, food and general commodities. This strategy addresses the environmental impact of those activities, in coordination with the Front-Line Commands and Enabling Organisations.

Strategic initiative one: Sustainable delivery of platform availability

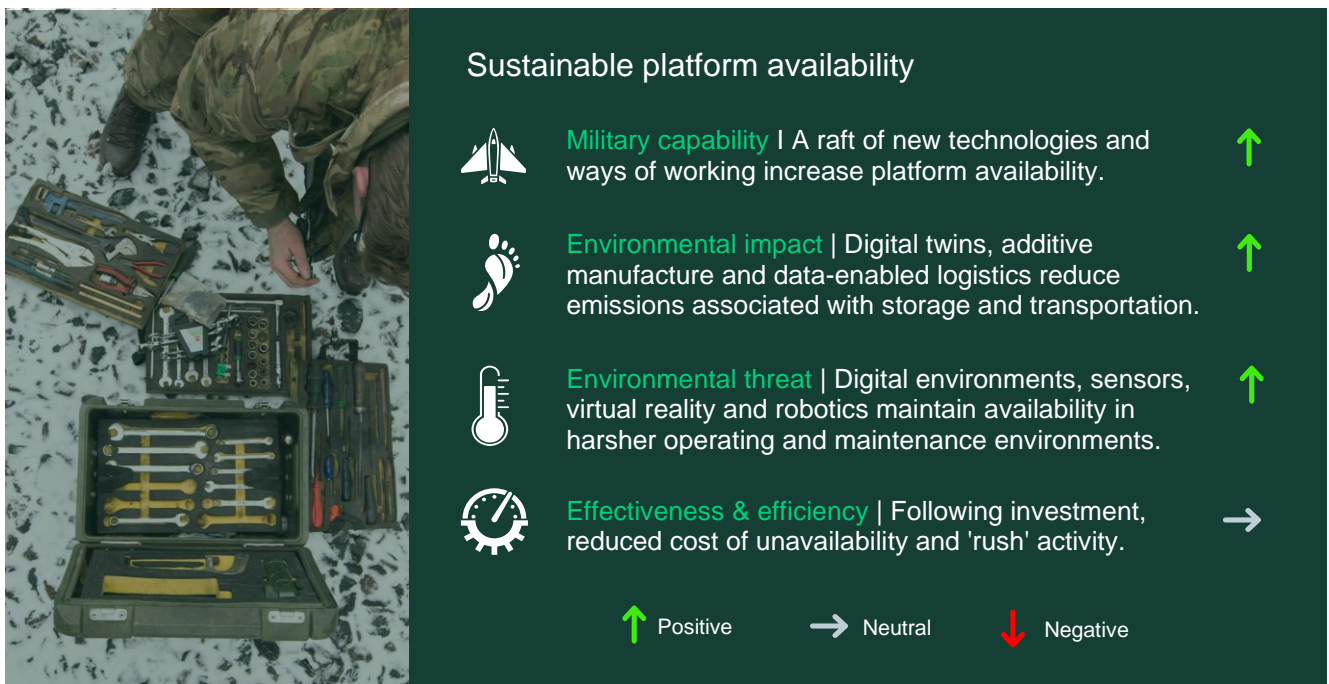


Figure 3. Strategic Initiative 1.

The problem

One third of the Defence budget is spent on Support activities. Yet availability of some of our equipment and platforms is not as high as we would like it to be owing to a range of factors. These span from the design and acquisition process through to our ability to support capabilities through their life cycle. Climate change presents further challenge.

As the environment deteriorates the burden on Support will increase, whilst also making it harder to deliver. For example, the pace of rotary wing aircraft maintenance will slow as they operate in extreme heat and dust. There is greater risk of engine damage. Aircraft will need cleaning more frequently, which will take longer as engines cool more slowly, and crews need longer breaks.

The analysis

DefSp will continue to transform engineering and equipment support to address the environmental impact of, and threat, to those activities. There are a range of approaches that will deliver sustainable platform availability. This includes using future climate scenarios to redefine the environmental standards that Defence platforms must meet and, by delivering better reliability, reducing the significant emissions transporting spare parts by air causes (Figure 4).

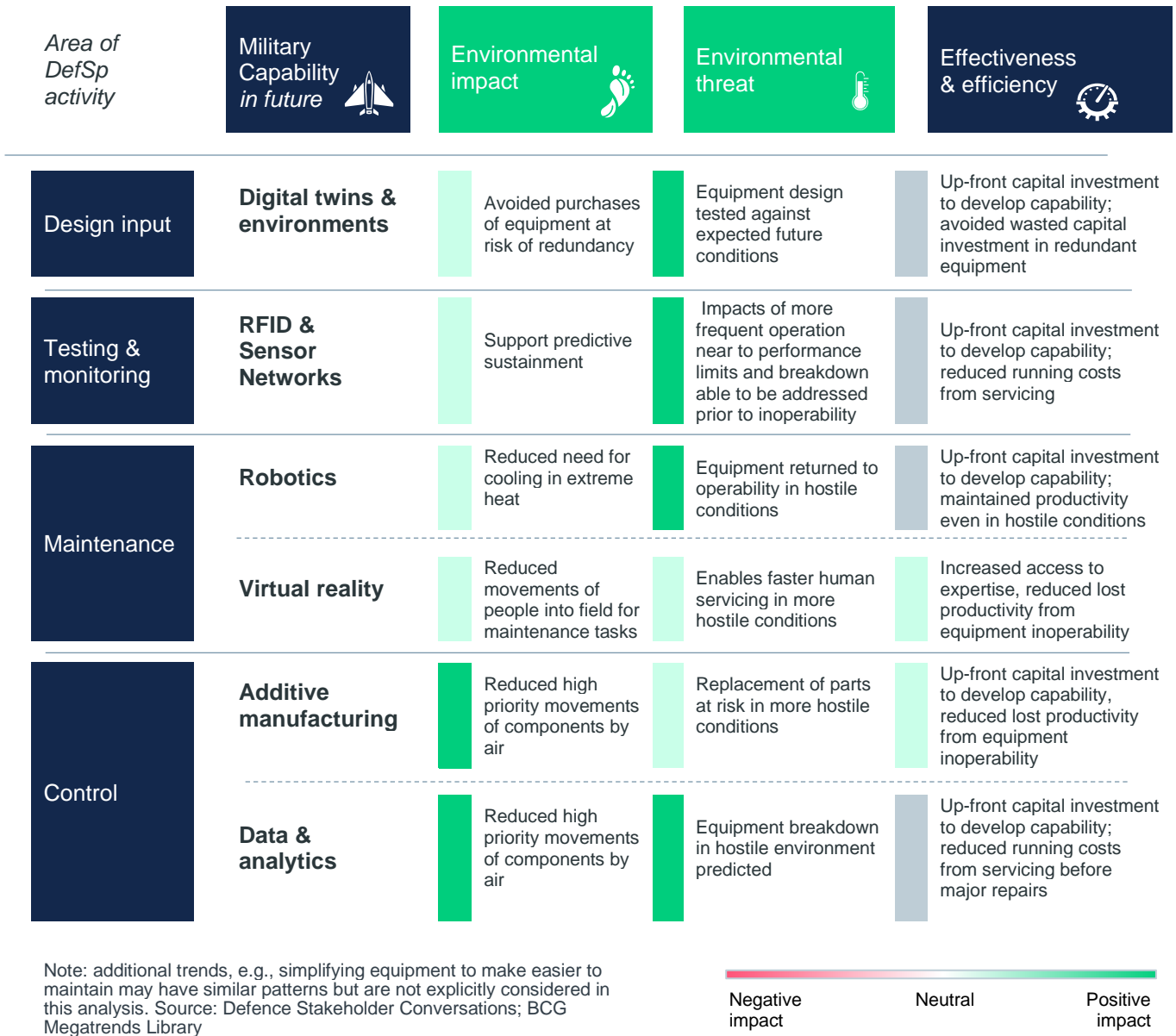


Figure 4. Impact summary for the Sustainable Platform Availability Initiative

Epoch 1 ambitions

Defence Support will:

- use the refreshed Climate Change & Sustainability (CC&S) scenarios that Defence’s CC&S directorate are developing, to fully consider the demands of the future environments in which we will be operating and maintaining equipment and platforms;
- evaluate and champion new technology that can drive improvements in emissions and sustainability targets.
- change Defence processes to ensure sustainability is considered when platforms are designed and procured as well as for their in-service support activity.

Strategic initiative 2: Maintaining operational energy through the energy transition

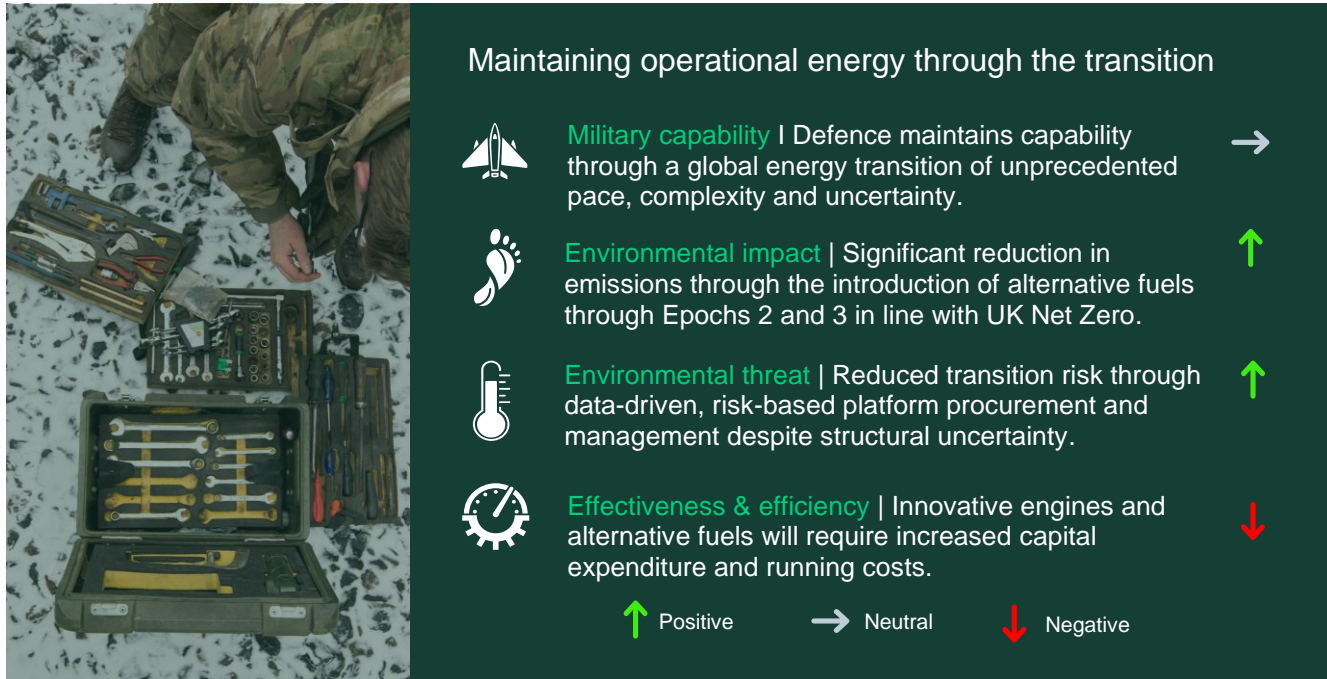


Figure 5. Strategic Initiative 2.

The problem

DefSp must make sure energy supplies are available to power platforms and enable many pieces of equipment on deployed operations. The overwhelming majority of the fuel and energy Defence uses is delivered in the form of liquid fossil fuels; this accounts for over 50% of its emissions. Nearly two thirds of these emissions are from the aviation and maritime sector.

The global economy is now on a transition to low or non-carbon fuels and the Government has directed carbon reduction paths for each sector of the UK economy. Defence must fully contribute to this national effort. This opportunity represents both the single biggest lever to reduce emissions and a highly complex and risk laden area in which the delivery of military capability must be maintained.

The Support function does not advocate a particular energy source for a particular capability. No matter which energy source is chosen the logistic challenge remains. That is to make ensure the supply, distribution and storage capabilities are in place to provide the necessary energy at the right location at the right time.

The analysis

This work is unprecedented in its complexity, uncertainty and pace, as the world moves from the reliance it has had on fossil fuels. It took around 100 years for coal to surpass wood and 80 years for oil to surpass coal. The global economy has 20-30 years to remove fossils fuels from the energy system. Unlike previous transitions it will not be one main energy source replacing singularly dominant fuel. Rather it will be a one-to-many transition as a complex set of

alternatives are developed: electric drives and battery storage, use of hydrogen, ammonia or methanol. The development of small modular nuclear reactors may have a role to play, whilst fossil fuels are likely to be used in legacy platforms for many decades to come.

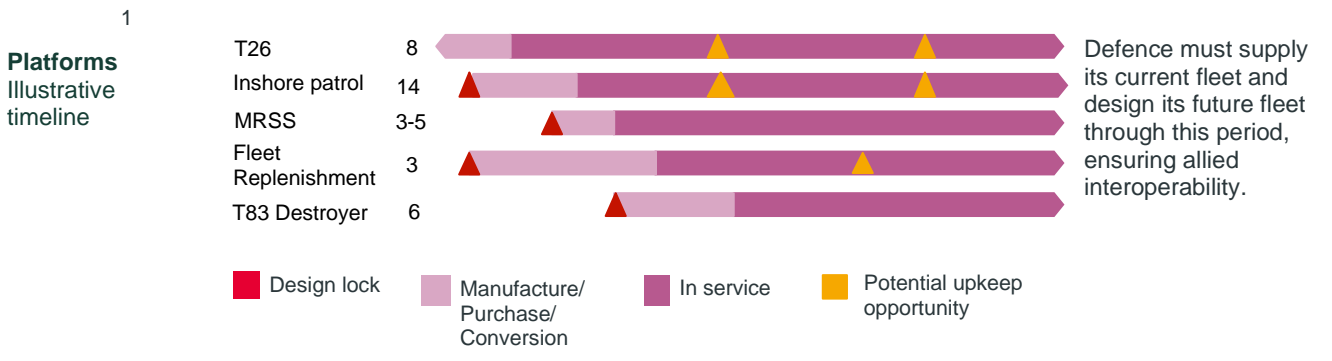
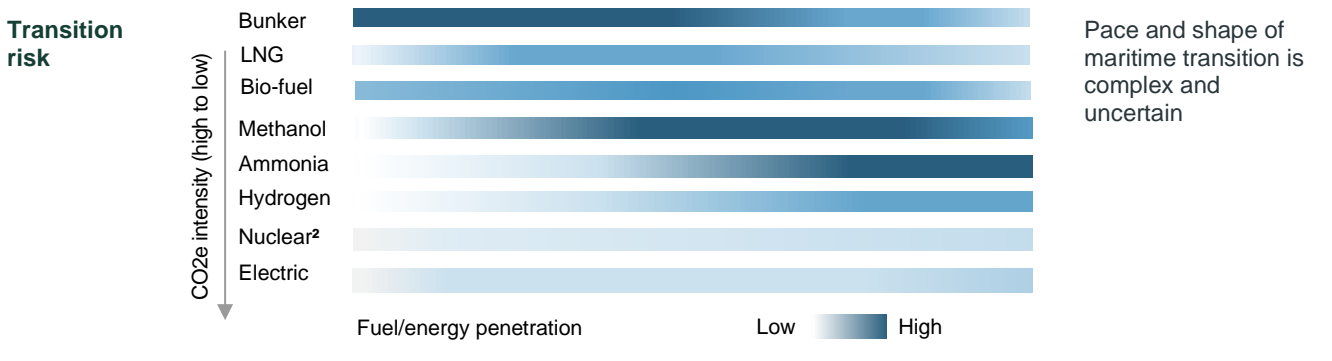
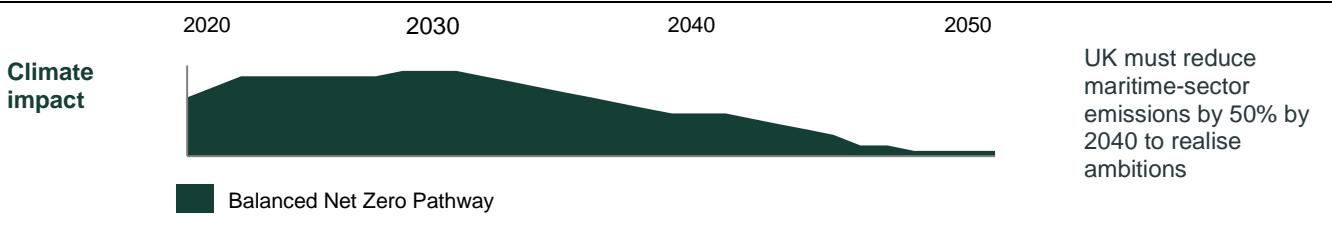
The fuels we are replacing account for a significant proportion of the UK Defence carbon emissions total and are used on many different platforms. The judgements for deciding which fuel/energy source best meets the demand of a particular platform is nuanced and involves assessing many risk factors.

The UK's Committee on Climate Change has set out a pathway to net zero for the national economy and is detailed by sectors (maritime, aviation, etc.). It is the policy context for Defence and the key planning guidance that shapes our approach to the task of decarbonising our activity. Each sector is a different profile and has different challenges. For example, whilst there is much agreement on the pathway for mitigating emissions from aviation fuel, the steps for the maritime environment are far more complicated and the future is more uncertain.

Our analysis has covered the challenges faced by the aviation, maritime and surface transport sectors. The maritime data, shown in Figure 8 (on the next page), highlights the large reductions that are needed for emissions in the 2030s to achieve net zero by 2050. It also shows there is a lack of agreement in the shipping industry on which fuel type will become predominant for the long term and what will form the transition fuel in the 2030s. On top of this uncertainty, it highlights that Defence has a series of high-cost, long-term decisions to make before there is clarity. For example, platforms which will be designed and built in a world dominated by bunker fuel but will operate in a world dominated by alternatives – and where bunker fuel will be less available.



MARITIME| Significant complexity around transition and long service lives



1. Highly illustrative, needs to be validated; 2. Nuclear potential option for military but considered to have limited viability for industry at this time; zero emissions when used but significant embedded carbon; Sources: CCC; UK Gov; Global Maritime Forum, WEF; Friends of Ocean Action; IMO; Bank of England; EU: Expert & Defence Interviews; BCG analysis

Figure 6. Energy Transition in the Maritime Sector

Epoch 1 ambitions

Defence Support will:

- develop a separate Defence Operational Energy Strategy (OES);
- use a data driven approach, specific to each Defence domain to reduce risk in the decision-making process and minimise or unlock the uncertainty the energy transition will create in platform decisions. Alternative courses-of-action will also be identified and assessed;
- focus on reducing the environmental impact of operational energy as well as the energy transition. Our functional ownership allows us to govern for Defence as a

whole, accounting for whole-life support and continued interoperability with partners and allies;

- through the Defence OES’s risk-based decision-making approach, look to group decisions on platform requirements by integrated analyses and forward-looking assessments;
- through the Defence OES, set out separate approaches for each domain and sector based on global scenarios and Defence requirements.

Strategic initiative 3: Building resilience across the global Strategic Base



Figure 7. Strategic Initiative 3.

The problem

Acquisition, storage and distribution of materiel are critical to military forces and a core role for DefSp. Detailed, data-driven assessments of five overseas locations reveal significant practical risks to DefSp activities. These will get worse over time and be particularly severe in key locations for Defence.

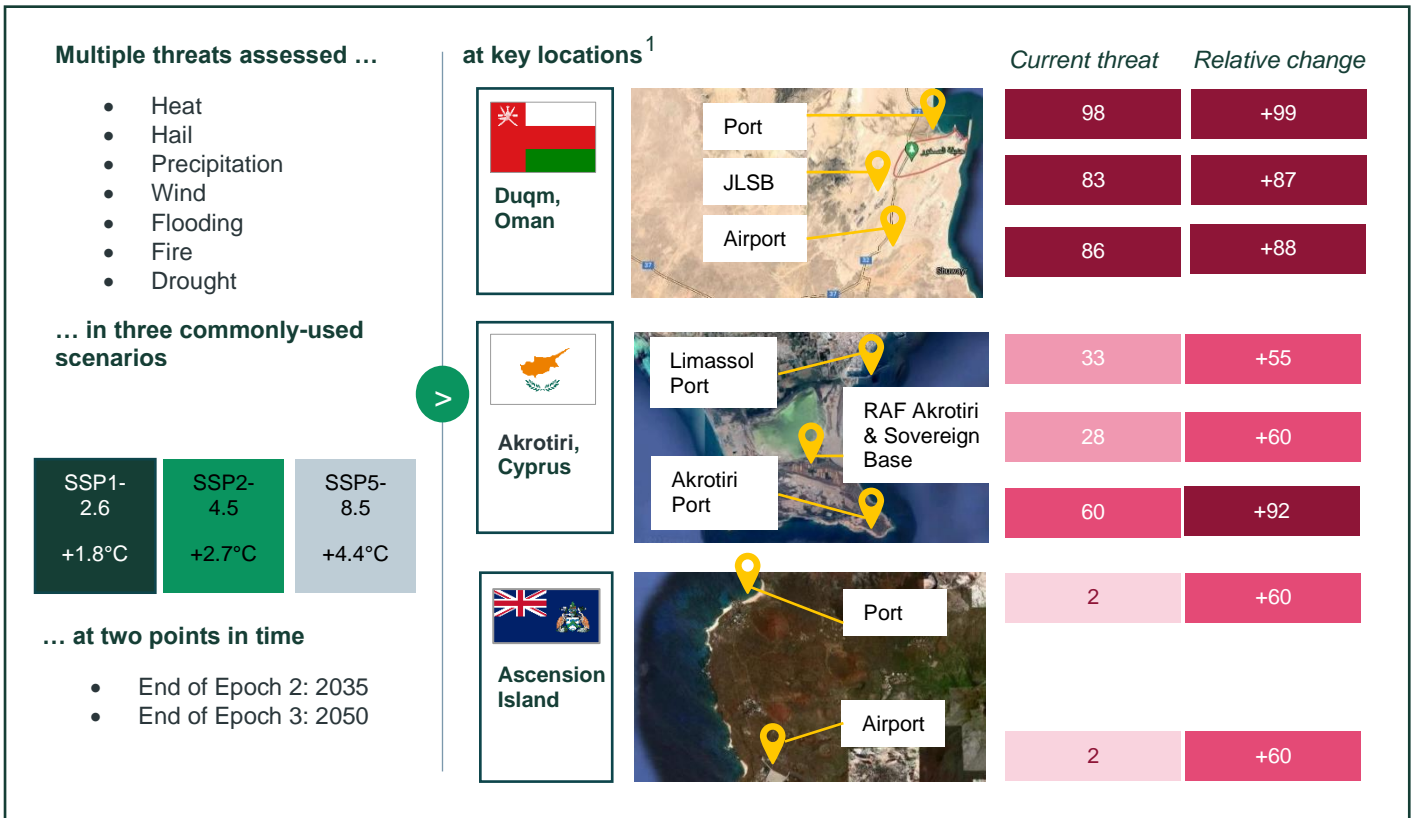
The analysis

Climate change is not only affecting the long-term meteorological picture but also increasing the frequency and intensity of day-to-day weather events. The Strategy has assessed key locations across the globe that act as hubs and nodes within the Defence Support Network.

The risk for each location was assessed by mapping precise geographical assessments, against a range of natural hazards, at two points in time (2035 and 2050) and against three

commonly used climate change scenario frameworks⁶. These are Shared Socioeconomic Pathways 1, 2 and 5, which represent warmings of +1.8°C, +2.7°C and a +4.4°C respectively.

Figure 6 highlights a selection of the assessments and shows the discrimination that is possible between, for example, increased wind strength risk at Akrotiri airport and increased flooding risk at Akrotiri sea port.



Source: Jupiter Intelligence, BCG Analysis

1. Select examples; 2. Consolidated global percentile for all hazards

Figure 8. Examples of Environmental Threat Data for UK Overseas Base Locations

Equally, the climate modelling of Duqm reveals, to a 90m² resolution, significant practical risks to Support activities. Located on Oman’s Indian Ocean coast it is already in the top 2% of environmentally threatened locations in the world. It will get worse and be in the top 1% in terms of deterioration for most heat stressed locations. This means the extreme heat will limit payloads being moved through the airport. Mitigating these risks requires upgrades to the infrastructure, creating network redundancy, and forward storage requiring capital and resource investment.

⁶ Shared Socioeconomic Pathways: SSP 1 - Sustainability (Taking the Green Road); SSP2 – Middle of the Road; SSP3 – Regional Rivalry (A Rocky Road); SSP4 – Inequality (A Road Divided); SSP5 - Fossil-fuelled Development (Taking the Highway).

Epoch 1 ambitions

Defence Support will:

- assess environmental threats at key locations in the Defence Support Network;
- conduct a prioritised evaluation of key locations to assess future-proofing existing infrastructure;
- ensure the approach to supply chain resilience is aligned across Defence;
- develop balance of investment options that can address long-lead time initiatives.

Strategic initiative 4: Increasing self-sustainment of operations

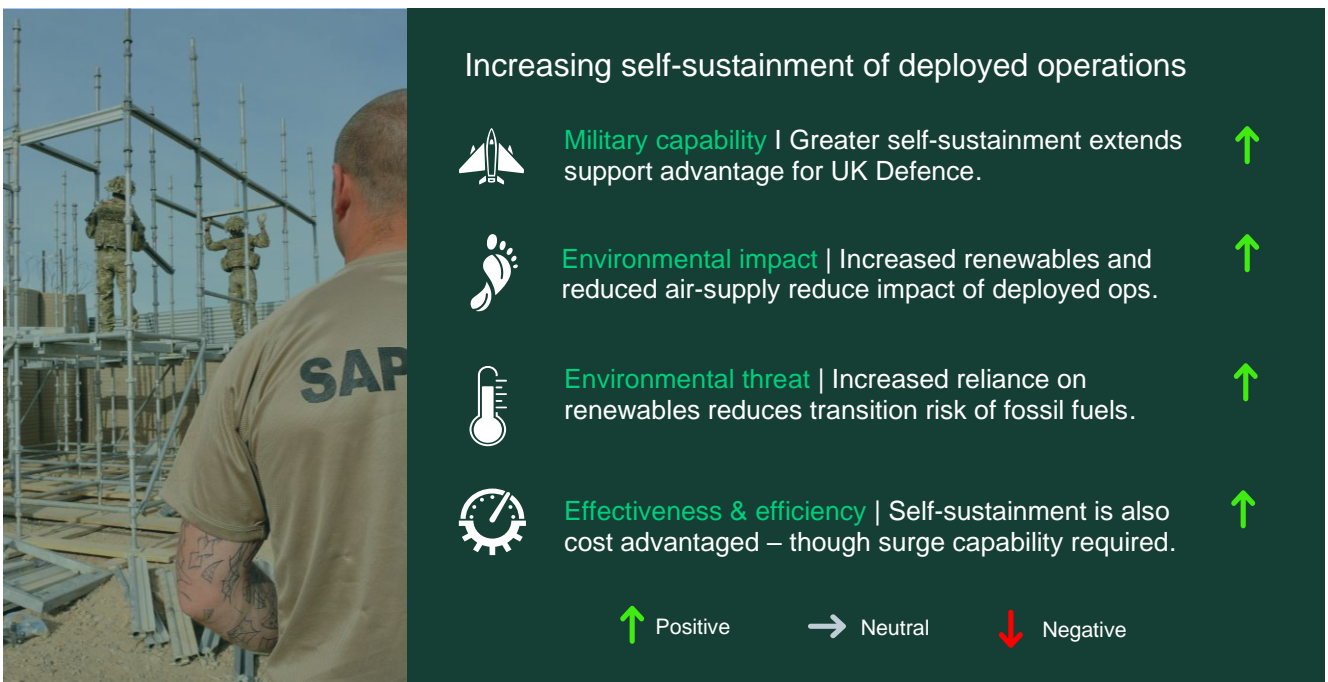


Figure 9. Strategic Initiative 4.

The problem

Lengthy supply chains with high volumes of materiel flowing through them create inertia and drag to operational tempo. High levels of demand stress the capacity of our strategic lift capability and lead to more emissions. Once deployed, large Support needs, such as warehousing and maintenance facilities, removes the flexibility to manoeuvre forces and reduces our agility and reaction.

Defence operates where there is civic and political stress. Our footprint and demand for fuel, water or food must not add to a difficult situation but equally, we should not default to transporting such basic needs across very long distances.

The analysis

The Future Force needs greater agility and responsiveness from its Support function. Reducing the burden placed on the Defence Support Network can contribute to this ambition. Greater self-sufficiency would reduce the volumes of material passing through the supply chain. It would minimise the footprint we create when deployed as well as the burden we place on the local services.

We can achieve this by having fewer people deployed through the increased use of autonomous systems. More reliable equipment and a better understanding of spares required will also reduce demand. We can also employ technologies that can locally produce what has previously been transported long distances. Opportunities to reduce environmental impact exist in operations where the threat and intensity are lower and where we expect to be deployed for longer.

This strategy's analysis highlights significant opportunities to reduce cost and carbon whilst improving capability in power, food, water and materials with well-established technologies. That said, the nature of what our forces will use and need in deployed operations will change. It is reasonable to assume that the demand for energy may increase, even with a smaller deployed force.

There will be a need for more power to cool batteries and key equipment in hotter climates. The use of additive manufacture to locally produce components will increase demand too. An electrified surface vehicle and aerial platform fleet will rely on batteries and large-scale recharging facilities. The increased use of high-powered data analytics and artificial intelligence data processing will use significant amounts of power directly and will also increase the power needed for cooling systems.

To increase our self-sustainment, Defence will need to adopt a more flexible approach. It is more complex than simply using emerging technologies. For example, a new method is needed to assess how we measure the return on investment in low carbon technology when there is often a higher up-front cost; photo-voltaic cells producing electricity are more expensive to purchase than traditional, carbon intensive methods such as a diesel generator.

At the moment our model focuses on the cost of procurement rather than the cost of operating. It is not sufficiently refined to compare and evaluate sustainable technologies with legacy approaches that have a long and enduring supply chain and that produce higher levels of emissions.

Figure 10 highlights how the approaches needed could vary across the Integrated Operating Concept's Integrated Operating Framework. A range of responses will be required to the situations that we may confront and the complexity around what is needed to support the Force.

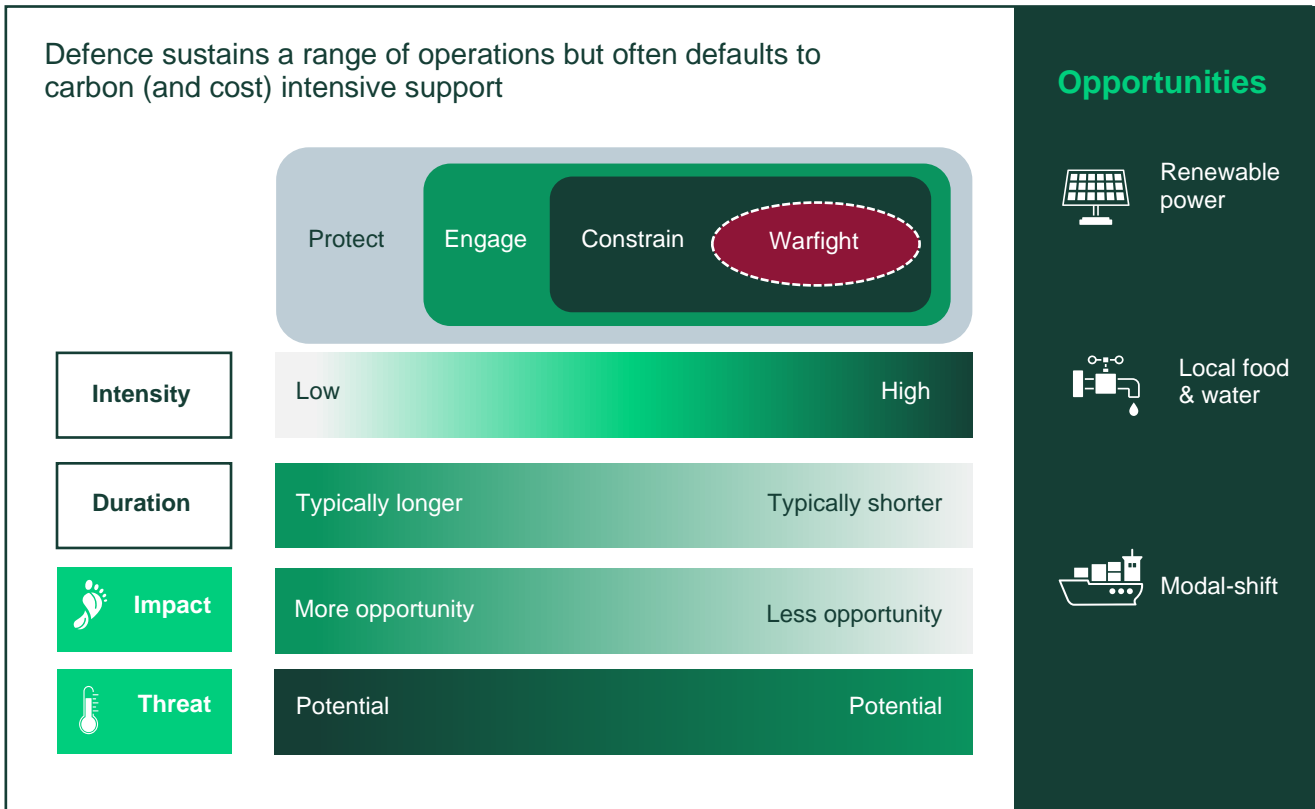


Figure 10. Differing Opportunities within the Integrated Framework

Operating on a global scale will require responses that vary by region and geography. For example, photo-voltaic cells will have significant potential in tropical regions, but less if used in winter in the High North. Equally water drawn from air through dehumidifiers will operate best in south-east Asia but less well in the Sahel. Research and experimentation will continue in DefSp and be coordinated and coherent with that conducted by the Commands and through Defence’s science and technology organisations.

Epoch 1 ambitions

Defence Support will:

- sponsor a programme of focused research, experimentation and innovation. It will be aligned with programmes in the Front-Line Commands’ concept and capability branches as well as with work being undertaken by allies, partners and industry, and those being explored by academia;
- DefSp will conduct practical assessments to gain a detailed understanding of the demands of the Future Force and its footprint in deployed operations;
- conduct an in-depth assessment of the potential of new approaches and make accurate comparisons to measure demand;

- investigate how the principles of the circularity could be used for deployed operations to ensure that we reuse, repair and recycle at every opportunity. This will reduce the demands on the Strategic Base, keep material value in the supply chain.

Strategic initiative 5: Decarbonising the impact of Defence commodities



Figure 11. Strategic Initiative 5.

The problem

The storage and distribution of materiel are a critical part of DefSp activity. Huge numbers of individual items are sourced from numerous suppliers and delivered to wherever our forces need them.

DefSp has a direct role in acquisition too through commodity purchasing contracts. In this area there is the opportunity to reduce the environmental impact of the commodities in use. This is because significant emissions are embedded within materiel during the production and end of life disposal processes – these are known as Scope 3 emissions.⁷

Estimates suggest that about 80% of the emissions associated with commodities are embedded in materials, manufacture and distribution. Reduction opportunities exist but commercial frameworks (and lack of consistent data) prevent DefSp optimising our choices for carbon as well as cost and quality.

⁷ Greenhouse gas emissions are categorised into three groups or 'Scopes' by the most widely used international accounting tool, the Greenhouse Gas (GHG) Protocol. Scope 1 covers direct emissions from owned or controlled sources. Scope 2 covers indirect emissions from the generation of purchased electricity, steam, heating and cooling consumed by the reporting company. Scope 3 includes all other indirect emissions that occur in a company's value chain.

The analysis

Reducing emissions within the supply chain mitigates the impact Defence's activity has on the environment and contributes to a more sustainable supply chain with less risk.

Separate to this strategy, but linked, is the Supply Chain Strategy (SCS). It will explain why Defence's supply chain needs to move beyond simply assessing cost reduction and efficiency gains. Instead, it should focus more broadly on a supply chain that is resilient by design and that reflects the balancing of cost, service and reliability all of which are underpinned by environmental sustainability. It identifies that Defence's supply chain must have the capability to respond and react both in times of business as usual with normal risks and in times of crisis and rapid response. Finally, it outlines ambition for Defence's supply chain that will move it away from a siloed and reactive posture and make it better integrated and collaborating with industry.

Developing the ambitions of the SCS and defining the needs of the next generation of logistics and commodities contract are major activities. The Strategy's aim to decarbonise the supply chain will sit within this overall approach to transforming Defence's supply chain and be outside of the programmatic structure covering the other initiatives.

There is early work to complete, and DefSp can identify the changes required, pilot new approaches and build capacity to contract for decarbonisation. Before the end of Epoch 1 (in preparation for the re-let of the contract), DefSp will investigate how an approach can resolve the issue and cost of carbon within commercial constraints. This approach will be a key part of future business as usual along with gaining a more detailed understanding of the baselines within the various elements of the supply chain and commercial frameworks. Work will develop a collaborative approach with stakeholders on the value of sustainability for materiel and design mature performance ambitions.

Epoch 1 ambitions

Defence Support will:

- focus on preparing for the next generation of logistics and commodities contract;
- assess specific areas where improvement can be made, such as increasing the amount of recycling, repair and reuse – the principles of a circular approach – in the clothing supply chain so that more value can be retained, and less new resources are required.

Strategic initiative 6: Reducing the impact of deployed food

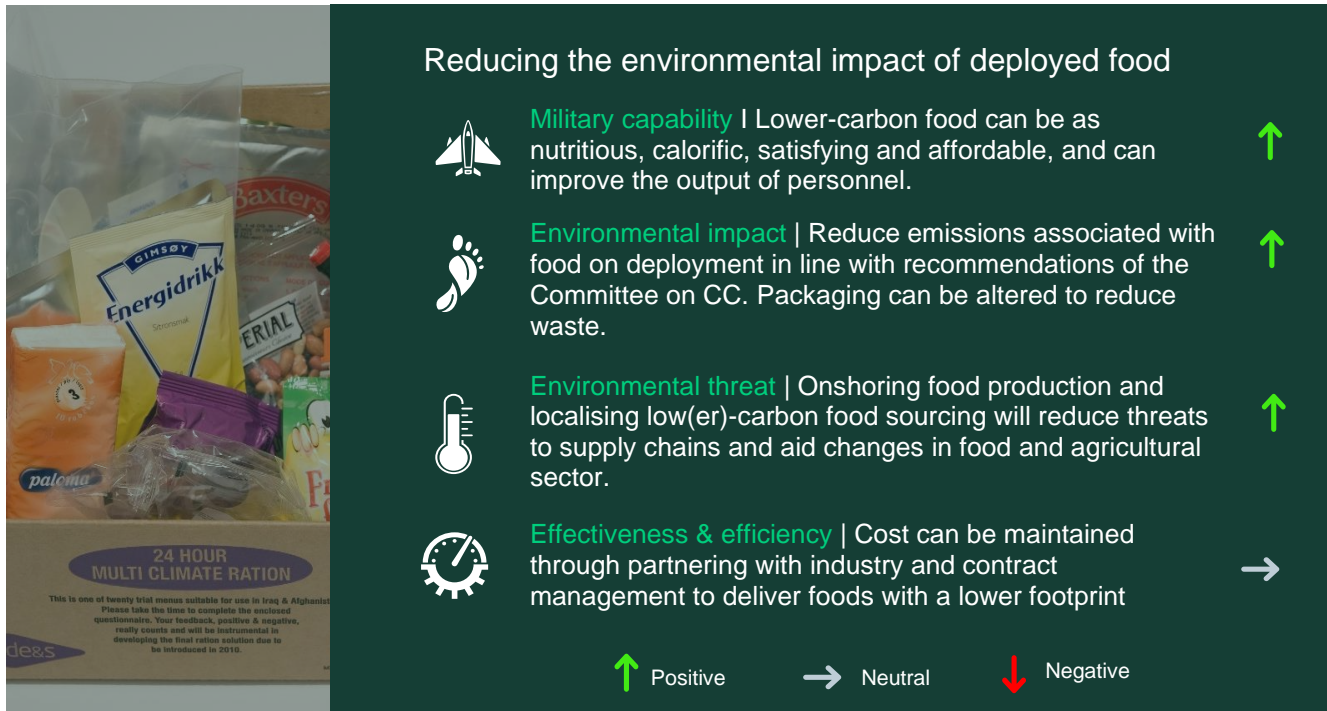


Figure 12. Strategic Initiative 6.

The problem

Food systems and production are critical to global and UK Net Zero ambitions. They account for between 25 – 35% of global emissions.

Defence needs to be aware of the impact of the food it provides, whilst balancing that against the need for food in deployed operations to be nutritious, calorific, satisfying and affordable. Ration packs can be made lighter, with enhanced packaging and fewer products discarded. The food itself should provide precisely what personnel in the most demanding physical situations need.

The food we provide need to match people’s dietary preferences. Such preferences are changing. Our people expect Defence as an employer to reflect their values and standards. Our feeding policies need to stay in step.

The analysis

Defence’s deployed food footprint is relatively small, with low immediate benefits to reducing emissions. Yet it is part of a ‘systems of systems’ and so should be seen in the broader context where there is pressure to decarbonise agricultural production.

Food is, of course, far more than the product of a system of systems. We experience food as a regular part of our daily activity, it generates routines and effects morale. In short it is a very tangible commodity about which our people care greatly. Assessments on other commodities suggest today’s workforce want Defence, as their employer, to reflect the value judgements that they make in their everyday lives. There is, for example, a significant growth in vegan and

vegetarian diets amongst our people. We need to balance such demand against the need to provide food that enables our people to conduct arduous operations in the most testing of circumstances. Food is fuel in these situations, but the correct nutritional balance can also increase alertness and make our people more resilient to wider health issues and allow them to recover more quickly from minor injuries.

Finally, food must be transported to and around deployed theatres. The operational ration packs (and variants supplied to very high readiness forces) significantly contribute to what a person has to carry. This limits the length of patrols that our people can deliver. More nutritious rations that are mapped more carefully to our people's needs and that are lighter can mitigate this challenge.

Epoch 1 ambitions

Defence Support will:

- understand the baseline of emissions associated with the delivery of food to Service personnel;
- conduct surveys with Service personnel to gauge their opinions regarding food choices, and so to start the process of making evidence-based changes to menus and food sourcing;
- review the contracts that Defence has for the delivery of food and make sure the necessary management information is being provided;
- continue a programme of experimentation that is developing the nutritional value and reducing the waste associated with operational ration packs.

Defence Support enablers

Beyond the strategic initiatives, DefSp will harness a series of enabling functions to bring coherence and programmatic discipline to the delivery of this strategy.

- **Programme management and governance.** DefSp will require a pan-Support and pan-Defence effort. The Support Plan Progress Group (SPPG) will oversee progress. Each initiative will have a named 1* owner accountable to the SPPG. The Assistant Chief of the Defence Staff (within Support Operations) will be responsible for making regular updates and for the coordination of activity.
- **Investment and resource.** DefSp will mainly draw on existing resource to deliver the strategic initiatives. It will do this in preparation for justifying the investment of more significant resource and capital expenditure via the Annual Budget Cycle or Comprehensive Spending Reviews. In addition, DefSp will leverage existing Support Transformation and research and development funds. It will also continue to investigate and exploit other sources of public sector climate change and sustainability funding.
- **Personnel engagement.** DefSp will build on the enthusiasm and expertise of personnel across the function to deliver on the ambition. DefSp will communicate the ambition and approach we are taking, encourage structured participation, and share progress throughout Epoch 1.
- **External engagement.** DefSp will actively engage external stakeholders to shape and deliver at initiative and portfolio-level. 1*s will engage relevant stakeholders in development and delivery of their initiatives through the existing DefSp/ industry working groups and with the Defence Suppliers Forums on sustainability. DefSp will share ambition and expectations with industry partners, inviting their participation. In parallel, DefSp will engage allies and partners. Established forums will allow us to align with the US, NATO and other key partners to ensure long-term interoperability, leverage scale and share best practice.

CC&S enablers

DefSp is beginning to deliver the Strategy at the same time as the rest of Defence is identifying their specific paths. The Strategy will, therefore, be developed completely in alignment with the ambitions and direction of the work of the MOD's Climate Change and Sustainability Directorate. The Strategy will use common templates, baselines and approaches.

- **Defence carbon baseline.** DefSp will need a robust and detailed baseline that attributes emissions to specific activities, goods and services. It will need decarbonisation pathways that are specific to the various sectors that underpin Defence ambitions. DefSp will support MOD Climate Change and Sustainability Directorate and sector leads to deliver and will use it to inform any trade-offs and investment decisions.
- **Future Environmental Scenarios and Planning Assumptions.** Defence will need assumptions for future environmental threats which are widely used and aligned to Force

Development assumptions. In the meantime, DefSp activity can make progress using data aligned to the Shared Socioeconomic Pathways of the Intergovernmental Panel on Climate Change (IPCC).

- **Climate Literacy, Behaviours and Skills.** Defence would benefit from a shared understanding of sustainability, a common lexicon and behaviour change. This could be delivered by a central programme to upskill Defence leaders on this topic and sharing best practices.

The Sustainable Support Strategy - Success for Epoch 1

By the end of 2025/Epoch 1 we will have:

- Evolved engineering and equipment support to maintain platform availability as the environment deteriorates;
- Put Defence on a clear path through the energy transition;
- Fully understood how to deliver increased self-sufficiency of deployed operations;
- Identified and planned mitigation for the environmental threats to the Global Strategic Base;
- Positioned ourselves ready to negotiate a low-carbon, low-cost next generation commodities and logistics contract having assessed how to reduce the environmental impact of deployed food and examined the potential, for increasing the circularity.

Overall, we will have positioned UK Defence Support at the forefront of environmental sustainability and Defence Net Zero ambitions and ultimately unlocked the potential of the future force.

