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From:	European External Action Service (EEAS)
To:	European Union Military Committee (EUMC)
Subject:	EU Concept for Environmental Protection and Energy Optimisation for EU-led Military Operations and Missions

Delegations will find attached the EU Concept for Environmental Protection and Energy Optimisation for EU-led Military Operations and Missions, which was agreed by the EUMC under Silence Procedure on 26 May 2021.

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Delegations will find attached the **EU Concept for Environmental Protection and Energy Optimisation for EU-led Military Operations and Missions**, which was agreed by the EUMC under Silence Procedure on 26 May 2021.

EU CONCEPT

FOR ENVIRONMENTAL PROTECTION AND ENERGY OPTIMISATION

FOR EU-LED MILITARY OPERATIONS AND MISSIONS

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A. INTRODUCTION

1. The EU as a leading proponent of international action on environmental protection (EP) and energy efficiency (EE) is committed to sustainable development (SD) worldwide[2]. The EU has placed the UN Sustainable Development Goals (SDGs) and the Paris Agreement on climate change at the heart of its action. Therefore, the EU promotes measures at the international level to deal with regional and worldwide environmental issues, and EP as well as EE requirements are inherently integrated into the various policies of the EU.
2. With a view to becoming climate-neutral by 2050 in line with the Paris Agreement, the EU has set targets and policy objectives for the period from 2021 to 2030, of which the key ones are: at least 40 % cuts in greenhouse gas (GHG) emissions (from 1990 levels)[3], at least 32 % share for renewable energy and at least 32,5 % improvement in EE. To achieve them, recast and amended directives have been adopted in 2018[4]. Furthermore, the EU Green Deal presented by the European Commission in December 2019[5] marks a new important milestone with emphasis on environmental and energy issues, with a new process of review and revision for the EE directive and the renewable energy directive.

B. BACKGROUND

3. The EU Global Strategy[6] (EUGS), adopted in June 2016, sets out the interests, principles and priorities for the EU, acting as a security provider, in a more connected, contested and complex world. Amongst the priorities is the setting of an integrated approach to conflicts and crises – known as the EU's integrated approach, covering a wide spectrum: a multi-dimensional approach, a multi-phased approach, a multi-level approach and a multi-lateral approach. Energy transition being one of the major challenges in EU's surrounding regions, climate change[7] and environmental degradation exacerbating potential conflict, energy and environmental sector reform policies can assist partner countries along a path of energy transition and climate action.
4. Defence policy will be more conditioned by new challenges related to humanitarian crises and the consequent mass migration, extremism and international terrorism as well as hybrid and environmental hostile actions. The broader concept of security encompasses environmental security. Pollution and other adverse environmental factors constitute a threat to the European Union and an obstacle to fair and sustainable global development, such as to affect the phenomena / processes of economic and political destabilization.
5. The evolution of the European energy security plan is centred on decarbonisation and environmental impact. The energy transition towards renewable energy sources will condition political relations and the notion of energy security, with the emergence of new risks and opportunities. Management of the transformation, as

[2] See Ref. A (Articles 3 and 21 the Treaty on European Union – TEU – and Articles 11, 191-193 and 194 of the Treaty on the Functioning of the European Union – TFEU) and Ref. GG
[3] With a Commission's proposal in September 2020 to cut GHG emissions by at least 55 %, which is expected to be included in the European climate law to be passed
[4] See Ref. PP, Ref. QQ and Ref. RR
[5] See Ref. II
[6] See Ref. B
[7] Climate change is best viewed as a threat multiplier which exacerbates existing trends, tensions and instability. It is important to recognise that the risks are not just of a humanitarian nature; they also include political and security risks that directly affect European interests. The challenge in the context of EP is that climate change threatens to overburden those states and regions which are already fragile and conflict prone, and have an increased likelihood for military activities

the energy transition deepens, is fundamental to reach climate change objectives and an equitable transition. Energy security will undergo significant changes, shifting the focus from traditional physical supply routes to new energy networks, redistributing the power between state and non-state actors, promoted the decentralization and regionalization of energy production, consumption and trade.

6. In June 2019, the EU issued a report on the implementation of the EUGS after three years[8]. The Military Planning and Conduct Capability (MPCC) – established in 2017 as the first-ever unified command centre for EU's military training missions – or the Permanent Structured Cooperation (PESCO) – launched in 2017 for an enhanced cooperation between EU Member States (MS) – stand out amongst the initiatives that were only hinted at in the EUGS.

7. Following the Council conclusions on Security and Defence in the context of the EUGS[9] in June 2019, a Reflection Paper on Climate and Defence[10] and a Military Advice on that Reflection Paper[11] were delivered. Moreover, in its conclusions on Security and Defence in June 2020[12], the Council invited the High Representative to propose, together with the Commission and the European Defence Agency (EDA), and in close dialogue with EU MS, a set of concrete short-, medium-, and long-term actions addressing the links between defence and climate change as part of the wider climate-security nexus, notably in the areas of civilian and military Common Security and Defence Policy (CSDP), capability development, multilateralism and partnerships. The related joint EU Climate Change and Defence Roadmap[13], which includes – inter alia – the revision of this concept, has been issued in November 2020.

8. As an essential part of the EU's integrated approach to conflicts and crises, the CSDP under the TEU[14] provides the operational capacities, drawing on civilian and military assets from the EU MS, which the EU may use on operations and missions (O/M) in areas outside the Union for tasks. These include joint disarmament operations, humanitarian and rescue tasks, military advice and assistance tasks, conflict prevention and peace-keeping tasks, and tasks of combat forces in crisis management, including peace-making and post-conflict stabilisation. During military O/M, the appropriate and proportional use of force to fulfil the military mission while avoiding or minimising collateral damage is of utmost importance for the overall military success and for the eventual transition of responsibility to local authorities. The impact of military action on the civil population, its cultural property and on the environment needs to be limited in order to comply with international law, to maintain the public support in the region as well as back at home, and – in the longer term – to enable successful reconstruction and development efforts. Damage to the environment in an operations area – especially when accompanied by natural resources scarcity – can lead to instability and result in new conflicts, whereas the preservation and protection of the environment during an EU-led military O/M can foster lasting security and development. Therefore, in order to meet the full range of CSDP tasks while taking into account the new challenges and the interdependence between peace, security and sustainable development, EP, including cultural property protection (CPP), and energy optimisation (EO) factors need to be adequately considered during the planning and conduct of EU-led military O/M.

[8] See Ref. C
[9] See Ref. JJ
[10] See Ref. LL
[11] See Ref. MM
[12] See Ref. NN
[13] See Ref. OO
[14] See Ref. A

C. AIM

9. The aim is to establish the principles and the responsibilities to meet the requirements and to promote a common understanding of EP, including CPP, and EO during EU-led military O/M in support of the CSDP, in order to enhance interoperability among EU MS, between the EU and other international organisations (IOs)[15], and with the EU's strategic partners.

D. SCOPE

10. This concept provides the strategic guidance for the consideration of EP, including CPP, and EO during all phases of EU-led military O/M as part of their activities, bearing in mind moreover that it is also everyone's responsibility. It covers the various tasks of EP, including CPP, and EO, and the distribution of duties and responsibilities. Furthermore, the concept addresses relevant energy-related aspects, such as the use of renewable energies during military O/M. Finally, it provides an overview over associated activities and factors which can enhance EP and EO on the longer run, namely training, education and capability development. Lessons learnt (LL) from preceding EU-led O/M, as well as principles and EP and EO best practices of UN and NATO, are heeded, whenever appropriate. Health-related issues are detailed in the respective EU concept[16].

11. The principles, policies and guidelines given in this concept are in general also applicable for training and exercises. EU MS and Troop Contributing Nations (TCNs) are encouraged to use them for these purposes as well.

12. The principles, policies and guidelines set out in this concept may be used, as appropriate, by EU-led O/M when providing strategic advice, education or training, if included in the Operation Plan (OPLAN) or Mission Plan (MPLAN).

13. This concept is consistent, to the extent possible, with NATO's principles and policies on EP.

14. This concept supersedes the European Union Military Concept on Environmental Protection and Energy Efficiency for EU-led military operations (ST 13758/12, dated 14 September 2012) as an improved version reflecting the latest conceptual developments and a more ambitious and pragmatic approach, building on the current momentum to change mindsets and improve things on the ground.

E. DEFINITIONS

15. In the context of this concept the following definitions apply:

    15.1. Environment: the surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans, and their interrelations[17].

    15.2. Environmental protection (EP): the prevention or mitigation of adverse environmental impacts[18].

    15.3. Environmental damage: any change or disturbance to the environment

[15] Primarily with NATO and the UN, as part of the key area of action "Strengthening multilateralism and partnerships" outlined in the Climate Change and Defence Roadmap (Ref. OO)
[16] See Ref. N
[17] Definition according to Ref. NNN. Besides, the definition is the same for the agreed NATO term "environment"
[18] The definition is the same for the agreed NATO term "EP"

perceived to be deleterious or undesirable[19].

15.4. Sustainable development (SD) and sustainable military activity (SMA): SD means development that meets the needs of the present without compromising the ability of future generations to meet their own needs[20]. In this context, SMA transposes the above mentioned SD into military activities. The human and natural environment in an area of operations (AOO) is to be preserved to the widest extent possible, so that its resources remain sufficiently available in the indefinite future, while fulfilling the military mission and meeting the military operational needs. Moreover, SMA means that every action represents an interaction with the environment, which is sustainable if it avoids long lasting collateral effects or even irreversible damages.

15.5. Cultural property protection (CPP) comprises the safeguarding of and respect for cultural property as defined by international law[21].

15.6. Energy efficiency (EE) means the ratio of output of performance, service, goods or energy, to input of energy[22].

15.7. Energy optimisation (EO) is the action of making the best or most effective use of energy, including through energy management measures and procedures, taking into account the particular restrictions and context in which EU-led military O/M operate.

15.8. Alternative energy is the collective term for energy derived from sources independent of fossil and nuclear fuels. It includes:

15.8.1. *Renewable energy*[23] – derived from renewable non-fossil sources, namely wind, solar (solar thermal and solar photovoltaic) and geothermal energy, ambient energy, tide, wave and other ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas, and biogas,

15.8.2. *Alternative fuels* – fuels that are non-fossil based such as synthetic and bio fuels, and hydrogen,

15.8.3. *Alternative conversion and storage* – means of converting and storing energy such as fuel cells and novel batteries.

F. ENVIRONMENTAL THREATS

16. Prior to any EU-led military O/M and advice on EP and EO measures, it is essential to analyse and identify the different aspects of the environment within an operations area, which either might be impacted by military action, or need to be protected from damage by other actors[24]. Furthermore, it is advisable to record the overall

[19] It can also be referred to the definition in the Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage (Ref. WW)

[20] Term and definition introduced by the “Brundtland" World Commission on Environment and Development in a report in 1987 (Ref. EE)

[21] Definition of cultural property and of CPP respectively according to Article 1 and Article 2 of The Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict (Ref. KKK)

[22] As per the definition mentioned in Directive 2012/27/EU on energy efficiency (Ref. RR) and in EN ISO 50001:2018 (Ref. OOO)

[23] As per the definition mentioned in Directive 2018/2001 on the promotion of the use of energy from renewable sources (Ref. QQ)

[24] In this regard, country books and intelligence inputs are important, as the latter can also highlight if needed what sort of resource scarcity or depletion is likely to exacerbate conflictuality at a local level

environmental condition at the very beginning of an EU-led military O/M, as a reference for later examination. The following characteristics are of particular importance:

- Water (availability, quality, use)
- Air quality
- State of the soil and its current use, including evident polluting activities
- Natural resources (availability)
- Biodiversity, wildlife and threatened species[25]
- Regional climate
- Cultural resources
- Demographic conditions.

17. Military and other parties activities can impact and threaten the environment in many ways:

- Pollution and contamination of water, air and soil,
- Noise pollution,
- Degradation of wildlife and biodiversity,
- Damage to natural and cultural resources.

18. It is of utmost importance to integrate environmental factors in the military planning process at the earliest stage possible.

G. PRINCIPLES

19. The following principles should be applied to ensure that EP and EO planning and execution is consistent and effective. Incorporation of these principles will not guarantee success in itself, but it will establish a solid foundation for constructive provision of EP and EO planning.

19.1. Military necessity ("Mission first")

EU policies and principles should be applied as much as possible to ensure coherence and maintain the EU's environmental credibility. However, due to the nature of military action, constraints might arise when applicable laws and rules come in conflict with military needs.

In case of a conflict between EU MS domestic regulations and military needs, the military necessity principle may justify overriding EP where this is necessary to ensure overall success of the O/M. However, decisions to invoke military necessity to substantiate environmental damage should be judiciously considered and fully documented.

Real operational theatre military activities present unique challenges that are not typically associated with peacetime domestic routines or training activities. The use of military force is justified to the extent that is necessary and proportionate to achieve a defined military objective and in accordance with applicable rules of engagement (ROE) or self-defence. When a conflict arises between operational imperatives and EP and EO principles and policies during EU-led military O/M, operational imperatives will usually have priority. Such friction must be avoided or mitigated by early integration of environmental considerations into all aspects of operational planning, training and execution of the EU-led military O/M. Ultimately, EU Commanders may decide not to perform a proposed military action when considering its potential

[25] "Threatened" species refer to species assessed as Critically Endangered, Endangered or Vulnerable according to the IUCN Red List (Ref. JJJ)

consequences, even though the action is planned within authorized legal frameworks.

19.2. Preventive action

Prevention (and reduction) of waste and environmental damage is more environmentally-friendly and less costly than disposal of waste and rectification of damage. It requires addressing EP from the first stage of an EU-led military O/M.

19.3. Proximity

This principle calls for rectification at source. Therefore, when technically possible and cost-effective, in order to avoid the risks, costs and GHG emissions connected to transport, the environmental damage should be remediated at, or close to, the location where the incident happened and waste should be treated or disposed at, or close to, the location where the waste originated.

19.4. Polluter pays

In compliance with EU[26] and EU MS regulations, where applicable, as well as with agreements with the Host Nation (HN) where relevant, producers of waste and environmental damage are ethically and legally (therefore also financially) responsible for their proper disposal or remediation.

19.5. Sustainable development

The EU has made strong efforts to incorporate SD into its political structure as a guiding principle and strategy with adherence to the UN SDGs. Essential elements of SD are economic and social development, sustainable consumption, clean energy and environmental conservation[27].

19.6. Distinction

This principle distinguishes between military and civilian objects and persons. According to international humanitarian law[28], indiscriminate or direct attacks against civilian objects are prohibited. Military objects are those that by nature, location, purpose or use make an effective contribution to military action and whose total destruction, capture or neutralisation, in the circumstances ruling at the time, offers a definite military advantage. Environmental or cultural sites are classified as civilian targets, and their targeting would contradict the principle of distinction, subject to exceptions recognised under international law.

19.7. Proportionality

Proportionality could be defined as the fact that the response must be commensurate with the threat posed and the damage it may cause and that it must be limited to the degree, intensity and duration necessary to eliminate the threat.

19.8. Collective responsibility

The EU and the TCNs share a collective responsibility for the protection of the environment of the HN. The EU Operation Commander (OpCdr)/Director of the MPCC (Dir MPCC) is responsible for the identification of EP and EO contingencies and requirements, and for issuing directives for their proper

[26] See Ref. WW
[27] See Ref. FF, Ref. GG and Ref. HH
[28] See Ref. TT, Ref. UU, Ref. KKK and Ref. LLL

fulfilment. She/he has the authority to establish EP and EO procedures and suitable standards, enforcing them in a manner consistent with this concept and within the remit of her/his authority to all assigned units when no TCNs' EP and EO measures exist or are not at the same level. The designated OpCdr/Dir MPCC or (Mission) Force Commander ((M)FCdr) may negotiate EP and EO arrangements (including, where applicable, EP and EO capabilities of the HN) within the framework of the Status of Forces Agreement (SOFA) or any arrangement related to Host Nation Support (HNS)[29].

19.9. Three-tiered approach

Besides key manning and funding issues, an effective EP and EO policy rely on a three-pronged approach:

- Human factor,
- Organisational measures,
- Technologies.

19.10. Human factor

The "human factor" cornerstone of the three-tiered approach relates to its multiple components: behaviours, leadership and commitment, mindset change, change management, …[30]

As the human factor (from top to bottom) is key to success and we cannot rely only on technologies and organisational measures (procedures, etc.), it must not be set aside and overlooked but it should be continuously[31] emphasized in its role of achieving EP and EO objectives. The EP and EO policy will only become a total success when the EP and EO aspects will win over the hearts and minds of the O/M participating people. A high acceptance of the goals of the EP is key for success of their implementation.

19.11. Leadership and commitment

So as to be the most efficient, EP and EO considerations should permeate the entire chain of command. It is therefore crucial that EU Commanders at all levels show strong commitment, uphold and impart to subordinates the importance of EP and EO in supporting operational objectives.

With regards to environmental and energy management systems (EMS and EnMS[32]) – see below, their success is also due to commitment at all levels and functions of the EU-led military O/M, under the leadership of the EU Commander.

19.12. Leading by example

Like the EU in the international fora, EU-led military O/M should be at the forefront and demonstrate their strong commitment to EP and EO with ambitious goals and actions in correlation. Moreover, this could also be beneficial for influencing towards virtuous behaviour and fostering greater acceptance by the population, prone to avoid propaganda and media/social network operations aimed at discrediting EU action on the grounds of irresponsible behaviour.

[29] See Ref. M
[30] In this respect, psychosociology can be a value-added discipline
[31] « At every opportunity » (when drafting a document (concept, operational guidelines, standard operating procedures (SOPs), …), when giving training/education sessions (not only those related to climate change/environment but also those for Commanders, pre-deployment, induction, …), when providing a lecture, during discussions with partners, …)
[32] EMS stands for environmental management system and EnMS for energy management system

19.13. Energy optimisation

The EU and its MS promote investment in energy efficient and sustainable low carbon technologies. For the sake of consistency, but even more due to added value for the military, this approach should be maintained to the extent possible during EU-led military O/M. As an overarching principle, it also involves the other two pillars of the three-pronged approach, namely the human factor and organisational measures. A wide range of contributions is needed to achieve EO.

19.14. Due diligence and precautionary action

This principle calls for a reasonable standard of care for the environment during the conduct of EU-led military O/M. It presupposes sufficient knowledge concerning the applicable environmental laws and procedures, demands an overall cautious approach for the sake of the environment and a response to environmental incidents as soon as possible. Part of this is safety precaution: if the immediate security situation permits, any environmental damage where the magnitude is unknown should be assumed as significant, and protective measures should be designed to protect human health and the environment. Where the security situation precludes instant protective measures, these should be induced as soon as possible.

19.15. Comprehensiveness

As today's security challenges are often very complex, the involvement of various governmental and non-governmental actors and their cooperation in a comprehensive manner is required to terminate a conflict and create lasting stability. Security and development are intertwined and interdependent: security will only last if development efforts are successful, which in turn require a sufficient degree of security. Therefore, current crisis management has to consider the duality of security and development, as well as the aftermath of a conflict. EP and EO support sustainable development and are called upon to play an increasing part in the conditions for settling a conflict. Therefore, they need to be considered in all phases of an EU-led military O/M. Due to the many TCNs and other actors involved, early and close coordination among them and with the HN is mandatory, and frequent information exchange, in an inclusive and reciprocal way, is essential for the implementation of EP and EO principles and standards in planning and conduct of the O/M.

19.16. Multi-nationality and global reach

EU-led military O/M are inherently multinational. Notwithstanding the various national legal regulations with regard to EP and the ultimate responsibility each nation bears for the actions of its own forces ("polluter pays"), a closer degree of harmonisation is required through establishment of an overarching set of environmental and energy principles and regulations for all EU-led military activities. CSDP O/M can be performed worldwide (outside the EU), which implies that O/M could be conducted in many different environments, with different environmental risks, diverse EP legal frameworks and varying EP and EO awareness. The potential global reach requires an ad-hoc logistic organisation in an operations area and specific arrangements with the HN.

19.17. Early planning

EP and EO are crosscutting and specific issues, which affect the planning process in many ways. The inclusion of EP and EO considerations at an early

stage during the planning process (including at the political-strategic (POLSTRAT) level[33]), accompanied by continuous EP and EO risk management during the conduct of the EU-led military O/M, is critical notably for preventing irreparable damage to sites with natural, cultural or historic significance, which would complicate the overall achievement of mission objectives[34]. Sufficient expertise is required within an HQ during the whole planning process, and in the various planning disciplines. This calls for early manning of the Operation Headquarters (OHQ)/MPCC with an EP Advisor (EP-Ad) and a CPP Advisor (CPP-Ad) and implementation of proper planning and consultation processes. Early advice to the OpCdr/Dir MPCC on all EP and EO-related issues and timely coordination with the relevant staff elements, from the earliest planning stages, is crucial in order to:

- Integrate EP and EO into the execution of an EU-led military O/M without friction, and to avoid corrections at a later stage,
- Support and protect the Commander's decision making process,
- Set up the necessary organisational and financial procedures.

19.18. Readiness

With regard to dedicated expertise in the HQ, the EU relies on early availability of EP, EO and CPP experts from the EU MS and TCNs. With regard to EP and EO deployable facilities, such as materiel, systems, machineries and related operators in the HQ, the EU relies on early availability from the EU MS. Consequently, their readiness level must match the overall readiness state of EU forces, including the EU Battlegroups[35]. Furthermore, EU MS and TCNs are responsible for the inclusion of EP and EO in pre-deployment training.

19.19. Transparency

EU-led actions, backed by political will, benefit from positive public understanding. This can be further enhanced by an effective and transparent public information policy as part of the EU comprehensive communication strategy. Proper implementation of EP and EO policies and, among others, consequent use of renewable energy sources may support a very positive image of an EU-led military O/M. With regard to adverse environmental impacts and response actions taken, they must be immediately reported to the OpCdr/Dir MPCC and to the (M)FCdr as well as to (M)FHQ EP, legal, Civil-Military Cooperation (CIMIC) and public information staff. When not jeopardizing operational imperatives or objectives, full transparency must also be achieved with HN authorities and affected communities.

19.20. Interoperability

A sufficient degree of interoperability is required to cooperate during EU-led military O/M. This also applies to the EP and EO legal framework, procedures, standards, equipment and materials. Best practices and experience from other IOs and countries[36] could be considered by the EU whenever appropriate and relevant.

[33] Expertise at this level is necessary before the military strategic (MILSTRAT) level takes over the planning process
[34] See Ref. KKK and Ref. LLL
[35] See Ref. Q
[36] Good examples are the Environmental Guidebook for Military Operations (Ref. QQQ) and the Environmental Toolbox for Deploying Forces (Ref. RRR), which were jointly developed by SE, FI and the USA, and the NATO AJEPP-2 (Ref. TTT)

19.21. Self-sustainability

In order to reduce or eliminate external flows (fossil fuels[37], water, sewage, waste) causing logistics burden and other related negative impacts (costs, potential sources of accidental pollution, noise and odor nuisance, …), to the extent possible, as a common thread, EU-led military O/M should achieve self-sustainability regarding these flows.

Several factors need to be considered in this regard: lower consumption of local resources, lower GHG emissions, energy security, resilience, force protection, force health protection, building information model (BIM)[38], energy management system, cybersecurity, use of local contractors[39] through Contractor Support to Operations (CSO)[40], image[41] and acceptance of the EU-led military O/M depending on the degree of application of the principle, etc.

19.22. Sobriety

Among other ones, sobriety – not only energy sobriety but also sobriety linked to waste, water usage and other activities and products – is an important driver for reducing energy consumption or more generally the environmental footprint.

This requires acculturation and a change of mindsets and behaviour patterns.

19.23. Overall environmental footprint[42]

Whenever there is a link with EP or EO, any EU-led military O/M's actions[43], activities and processes should be decided in the light of a multi-criteria decision analysis and a synthetic cost-benefit ratio, taking into account all their aspects (including, for products, their complete life cycle, from design and production to recycling or disposal).

If it is narrowed to a single criterion (e.g. cost or energy consumption), the decision-making process may not properly reflect the often complex reality, leaving out many other factors[44].

19.24. Environmental and energy management systems

EMS and EnMS represent valuable tools to enhance and further step up actions related to EP and EO.

EU-led military O/M should apply as far as possible standards ISO 14001:2015[45] and ISO 50001:2018[46] and their requirements, the implementation of which can be tailored to the specific requirements of the EU-led military O/M.

[37] Used for stationing forces
[38] Or similar digital tools
[39] Which, in most cases, is a solution with advantages for those who apply it, improving the good relationship with the population and promoting the development of local economy. Conversely, a dependency of the contractor on the EU-led military O/M may be created and difficult to overcome when the latter comes to an end
[40] See Ref. S
[41] Which can be positive (e.g. contribution to the local economy) or negative (e.g. the EU-led military O/M could be seen as a fortress)
[42] The environmental footprint encompasses the carbon footprint
[43] Including CSO, remedial actions after environmental damage
[44] Induced risks, decarbonisation, raw materials depletion (especially rare metals) – usually with geopolitical implications, etc.
[45] See Ref. NNN
[46] See Ref. OOO

These standards are based on the PDCA (Plan-Do-Check-Act) cycle which provides an iterative process to ensure continuous improvement.

19.25. Design for legacy

Since EU-led military O/M are not meant to be endless, their infrastructure and facilities should be appropriately managed during the redeployment phase. An outright abandonment is not conceivable, for economic, environmental and social reasons. Depending on EU-funded assets and TCNs' policy regarding repatriation of their assets, several potential options[47] may be envisaged, ranging from a complete dismantling to a turnkey handover to another user[48]. Selecting the most suitable solution requires, amongst other things, early planning integration[49] and local considerations (such as the take-over entity's capacity – technical and financial – to maintain the installations for their proper use and sustainability as well as for the safety of the people, particularly in relation to the liability for structures after their handover).

The future of EU-led military O/M compounds and bases, whatever the solution implemented, should be part of the EU's integrated approach, paying heed to local development needs where appropriate.

19.26. Traceability and documentation

Producing, recording and archiving EP and EO-related documents[50] is fundamental throughout the duration of EU-led military O/M but also after their closure, mainly for reporting and potential liability reasons.

Notwithstanding its importance, the mastery of documented information[51] should not be a complex but a smooth system.

19.27. Monitoring

To ensure effective implementation of the concept, it must be broken down into objectives and actions. The objectives cannot be achieved without monitoring them, which requires a baseline[52], accurate data and data analysis to take stock of progress. This entails inter alia the development of measurement capabilities wherever necessary, particularly water and energy meters, based on this quote (attributed to Lord Kelvin): "*If you can't measure it, you can't improve it*". Indeed, having data makes it possible to identify areas for improvement and evaluate their progress towards objectives.

The objectives defined for the EU-led military O/M can be either quantitative (e.g. decrease in fuel consumption or number of meters installed) or qualitative (e.g. implementation of an EMS and/or an EnMS or EP/EO awareness campaigns). They should be SMART ones: Specific, Measurable, Achievable, Relevant, Time-bound. The timeframe should not be restricted to achievable short-term goals; ambitious goals over a longer timeframe should not be hindered by the limited duration of the mandate of an EU-led military O/M as the latter is likely to be extended[53].

[47] Valuable thoughts and findings can be found in Ref. ZZZ, Ref. AAAA and Ref. BBBB
[48] HN, IO, Non-Governmental Organisation (NGO), etc.
[49] With the involvement of LEGAD, J4, J MILENG, J9
[50] Notably in case of environmental damage
[51] The use of a geographic information system (GIS) may be helpful and part of the documentation
[52] The baseline should always be mentioned along with the associated objective (e.g. – 20 % fuel consumption compared to the level 2 years ago)
[53] This has been the case for most of the recent EU-led military O/M (EUFOR Althea, EUTM Somalia, EUTM Mali, EUTM RCA) whose mandates have been repeatedly prolonged

In addition, as this may involve the use of networks, software and computer tools for data collection, cybersecurity risks must be properly handled.

19.28. Reporting

At all levels (POLSTRAT, MILSTRAT, operational and tactical)[54], a reporting system tailored for that level and coordinated between the different levels should be put in place within the EU-led military O/M in order to ensure both, that the EU Commanders are aware of the situation regarding EP and EO and can fulfil their responsibilities, and that the European Union Military Committee (EUMC)[55] is informed[56] about this topic[57].

To that end, EU Commanders should institute and maintain procedures for selecting relevant key performance indicators (KPIs) and dashboards and assigning the staff responsible of them.

The following main principles should be considered when choosing reliable KPIs: relevance, credibility, ease and robustness.

Special attention should be paid not to divert results stemming from the KPIs to reach another critical conclusion[58].

The reporting scheme may also be used to assess the effectiveness of the current concept and, as such, it may trigger the future review of this concept which, in accordance with the Framework for EU Military Conceptual Development[59], should be carried out as soon as necessary but no later than five years after the approval of the current version of the concept, in the light of the experience gained and progress made during the application of the concept, and, if necessary, to make proposals concerning, inter alia, objectives and KPIs, also being heedful of innovation developments and thus reflecting technological progress.

19.29. Technology watch

With regards to the “technologies” pillar of the three-tiered approach, due to the military particularities and constraints in the field (often extreme operating conditions, low maintenance requirements, lack of manpower, …), technologies should have proven their efficiency, robustness and adaptability.

A wide range of technologies (inclusive of smart meters and energy management tools) already exists and more innovations will be developed in the future[60].

It is essential to track technological progress and ensure technology watch in order to select the most appropriate technologies[61] – in particular those with a low carbon profile – for a specific EU-led military O/M, taking into account the following factors: operational dependability, autonomy, interoperability, operation in degraded mode, low maintenance spectrum[62].

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[54] Including, where appropriate, in close coordination with (ICCW) TCNs
[55] Other EU bodies (e.g. PSC) might also be interested
[56] The EU Military Staff (EUMS) may be tasked for this, which can be part of the action of introducing monitoring measures concerning the effective implementation of this concept, already foreseen in the Climate Change and Defence Roadmap (see Ref. OO – § 2.1)
[57] Aggregate relevant information and data for all EU-led military O/M
[58] This misuse may occur if the context is omitted and broader information is not provided
[59] See Ref. U
[60] In particular, the prospects for artificial intelligence seem interesting for military applications
[61] The motto should be “We must use technologies but should not be enslaved to technologies”
[62] Opposite, maintaining a wide spectrum of specific and unique technologies could generate additional costs, loss of skills, or even obsolescence and unavailability

As part of this endeavour, the EUMS and the EDA should pursue their collaboration, especially in the framework of the Energy and Environment Working Group (EnE WG)[63], the Consultation Forum for Sustainable Energy in the Defence and Security Sector (CF SEDSS) and the PESCO[64].

H. MAIN TASKS

20. When considering the media supply of an operational property, there are interfaces between the aspects, e. g. heat recovery from waste incineration, use of waste heat from electricity generators and carbonisation of sewage sludge, or use of treated black water. These interfaces are to be observed in the following in order to achieve synergy effects also with view of a conservation of resources or regard to EO.

20.1. Prevent, mitigate and minimise environmental damage

Prevention of environmental damage during EU-led military O/M should be sought first and foremost; to this end, it requires a proactive approach, which can be achieved by early consideration of EP relevant aspects in the planning process. EP needs to be seen as an integral part of the military planning process, and EP risk management is the contribution to the planning process and to the development of SOPs.

Following the principle of military necessity, the level of prevention against environmental effects can be reduced whenever a conflict between operational imperatives and EP requirements arises. However, consistently with other stated principles, once the conditions for the application of military necessity have ended and acceptable security conditions are restored, recovery actions must start as soon as possible and be performed as far as possible; this can be done in close cooperation with the HN. Other factors influencing EP prevention are security considerations and the overall environmental knowledge and awareness in the staff and the contingent, as well as the local conditions and possibilities. As EP prevention is likely to be reduced by these factors, damage cannot be avoided at all times; therefore containment and reduction are essential elements of EP. By minimising the use of pollutants and emissions into the environment (notably through the use of renewable energy sources), reducing the use of hazardous materials (HAZMAT) and using alternative materials, environmental damage can be kept manageable. In this respect, the provisions of the Directive (EU) 2019/904 of the European Parliament and of the Council of 05 June 2019 on the promotion of the reduction of the impact of certain plastic products on the environment[65] should be applied within EU-led military O/M.

20.2. Ensure sustainable water management

Water is a critical and limited resource – especially in certain areas where the EU-led military O/M may operate – and sensitive to pollution[66]. As a consequence, water management – be it production, storage, distribution and disposal – must be performed in a sustainable and environmentally sound manner, taking both into account the needs of the O/M (quantity and qualities[67]) and the potential consequences[68] for the environment and the local

[63] The EnE WG is in the process of becoming a CapTech
[64] The EOF (Energy Operational Function) project is relevant to this concept
[65] See Ref. SS
[66] That can also affect human health
[67] Different qualities depending on the use: drinking water, sanitary water, technical water, raw water
[68] Mainly depletion and pollution

population.

Therefore, while meeting operational imperatives and provided that the safety and security of the potable water can be ensured – which is linked to force protection capabilities, all options[69] should be considered in order to reduce the strain on the resource, to avoid as far as possible the intentional or accidental waste of water, to lower the logistic burden and the overall environmental footprint[70], to minimize and mitigate to the extent possible any adverse effects on the environment and human health (especially but not exclusively due to mismanagement of HAZMAT not preventing such materials from reaching surface water, groundwater, waste water or rain/storm water systems).

The task can only be successfully completed if it is looked at during the initial planning phases, also leveraging the environmental baseline study (EBS)[71] to be carried out. Furthermore, a water management plan and a waste water management plan[72] (which are interrelated) should be set up.

20.3. Conduct environmentally sound management of waste

Bearing in mind that the ultimate goal is the protection of human health and the environment, and considering that any waste that can be reused to make an EOD will have to receive independent treatment, waste management is mainly a logistic task[73], which is to be conducted in close cooperation between the TCNs and the HN, whenever possible through the (M)FCdr. It emanates mainly from dumping of human waste, wash and rinse water, petrol/oil/lubricants (POL) and HAZMAT spills and releases, open burning, emissions from fuel and coolants, fumes, generation of solid waste and improper handling of health-care waste. The following list, known as the 6 Rs, illustrates the waste management measures (waste hierarchy) in a descending priority order:

- Rethink
- Refuse
- Reduce
- Reuse or repair,
- Recycle or recover,
- “Rubbish” (i.e. disposal and shipment).

Enhancing knowledge and awareness among the staff[74] (especially those dealing with procurement) and the contingent on waste implications and stakes (use and depletion of limited natural resources, energy use during the

[69] Some examples of options: choice of an efficient water treatment system, on-site bottled water production, minimising or even avoiding water loss by monitoring the distribution loop and pinpointing and mending leaks, installation of water meters, awareness and behaviour campaign for water conservation, SOP on water usage, installation of specific water devices optimising the use of water (mixer taps, push buttons, timed shower heads, dual flush toilets, …), installation of waterless urinals, rainwater harvesting and use (for dust suppression, irrigation, construction or firefighting for example), grey water reuse, treated wastewater reuse, vehicle wash rack with recycling, bespoke waste water treatment systems – which can be different and tailored to the stage of the O/M, its intended duration and the size of the camp – taking into account the local climate (temperatures, dust, storm water, …), offsite use of mobile waste water treatment systems, proper discharge of effluent created during water production, waste water testing, outsourcing solutions, …
[70] Mainly for the production and the transport of the water
[71] See § 31
[72] Incorporated into the overall EMP (see § 32)
[73] See Ref. L
[74] Both at OHQ/MPCC and (M)HFQ levels

product transformation process and its transportation, energy-intensive recycling process, time taken by waste items to decompose, water sources and marine pollution, air pollution from incinerated waste, circular economy, human health, …) is the first step towards thinking in a different way[75] and tackling waste issues in a more holistic way [76].

Knowing that the best waste is the one you do not produce and following the "due diligence and precautionary action" principle, waste should be primarily avoided (also for cost reasons). An assessment of unnecessary waste should be performed, leading to potential preventive and corrective actions[77].

If prevention is impossible, where appropriate, the waste should be reused, repaired, recycled or recovered. Close coordination with the HN must be sought regarding legal reusing options (such as the sale or donation of goods to charities or HN companies for safe reuse by the local population), recycling possibilities – to be combined with the selective sorting and separate collection to be set up within the EU-led military O/M facilities[78] – and recovery[79] opportunities (e.g. the use of food waste for composting for local identified entities). These "external actions", acting as catalysts for the local economy and people's livelihoods[80], can also serve to give a positive image of the O/M and thereby increase acceptance.

As outlined above, the rule of thumb for waste is that waste reduction is always better – and certainly more cost efficient – than even the most sophisticated method of disposal. This can only be achieved when the waste problem is addressed from the very first stage of the O/M. Therefore, successful implementation of preventive measures depends on early consideration of EP aspects. The establishment of an environmental risk management during the planning stage, and proper waste management and monitoring during the conduct phase is of great importance to mitigate EP incidents. For this purpose, a comprehensive waste management plan[81][82], which includes all waste streams and covers waste from the point of generation to the waste management measures, should be developed as a basis for all related orders and directives.

Special attention needs to be given to the handling, storage, transportation and disposal of hazardous waste[83] – including health-care waste[84], as special legal and other requirements apply.

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[75] Aiming at a change of mindset and daily routine

[76] Carrying out a waste audit may be useful, allowing to see areas that cause the most waste streams and how waste is currently managed

[77] Some examples of actions: sticking to the strict need, refusing or reducing disposable items and overpackaging, establishing in procurement weighted award criteria related to waste reduction or the lifespan of goods, designing tender specifications, printing as much as possible double-sided and two pages per sheet and only printing what is really necessary, using recycled paper, …

[78] The selective sorting and separate collection are useful not only for recycling but also for the other waste management measures and for traceability. They entail appropriate and properly managed storage locations

[79] Information about the HN facilities (and their standards) available for recycling and recovery of wastes should be provided by the HN

[80] Special attention should also be paid to the potential "perverse effects" of establishing a dependency, leading to a vacuum at the end of the O/M

[81] Incorporated into the overall EMP (see § 32)

[82] The plan should also heed the risk of leakage of information or material that could become useful to the opposing forces due to mismanagement of classified or other waste

[83] Whenever required, adequate personal protective equipment (PPE) must be used

[84] Health-care waste categories according to Ref. EEE

Disposal and ultimately shipping should only be used as a last resort. Solid waste should be disposed of, in compliance with the legal provisions, by incineration (preferably within the framework of waste-to-energy programs and for the benefit of the O/M) or in appropriate landfills in close proximity to the location where the waste originated, especially to minimize the risks associated with waste transport. If unavoidable, transboundary shipments of waste to the EU or other States must be conducted in accordance with applicable legislation[85].

To demonstrate EU's moral commitment, according to the corresponding principle, whatever the waste management measure, waste traceability is to be performed, in particular through the use and archiving of waste tracking slips, whether or not these are legally compulsory.

20.4. Achieve energy optimisation

Energy supply is essential for any EU-led military O/M. Even now, military O/M rely almost entirely on fossil fuels and primary batteries to supply the necessary energy. The longer the duration and the more complex the O/M, the more dramatically the burden on the logistic supply chain increases. In practice this implies the following:

- The environment is heavily burdened from the subsequent hazardous emissions associated with the logistical transport and usage fossil,
- The dependency constrains the operational effectiveness in terms of endurance, flexibility, autonomy and degrees of required mobility,
- EU-led military O/M are not only susceptible to fluctuations in fuel prices but also hampered by the compelling cost of fuel convoys. The fully burdened cost of fuel is a measure of these two parameters and may contribute significantly to the overall cost[86] of an EU-led military O/M,
- Supply convoys introduce risks with regard to the safety of personnel in theatre and increase the force protection needs, which in turn increase the logistic footprint while decreasing agility,
- The protection required to mitigate risks to the safety of personnel further degrades the operational effectiveness as the military personnel involved in the convoy protection is unavailable for other tasks,
- As the continued success of an EU-led military O/M depends on constant energy supply, the TCNs depend on the continuous delivery from fuel supplying States,
- A more efficient approach to sustainable energy supply is needed in EU-led military O/M in order to become less vulnerable and more flexible[87]. This could be achieved both by reducing the energy consumption and by increasing EE while paying attention to military particularities and operational constraints.

Achieving EO[88] necessitates behavioural, organisational and technological enhancements[89]. Reducing the energy use comes together with reducing the

[85] For transports to the EU, the Regulation on Shipments of Waste of the European Parliament and Council (Ref. BBB) apply (as far as possible when taking into account the exemption clause of Article 1(3)(g)), for shipments to other States the Basel Convention (Ref. CCC.) – for the parties to this Convention – and the OECD Decision (Ref. DDD) – for the countries to which the OECD Decision applies

[86] Other expenditures (such as accommodation, CIS or medical services) may be predominant

[87] Other advantages are to extend the operational life of the generators and to increase the time between scheduled generator maintenance tasks

[88] It is important to acknowledge the dynamic aspect of EO as it involves a virtuous circle

[89] An energy management handbook is being developed by NATO ENSEC CoE (Energy Security

energy needs (of buildings) and improvements in the efficiency of appliances and equipment.

In terms of human factor, feedback from partner armed forces show that changes in behaviour have a very significant influence on energy consumption[90]. One major concrete application would be to switch off air-conditioning devices whenever possible, especially when unneeded, as they often come as the first energy consumers, thus resulting in gains.

In terms of organisational measures and procedures, besides appropriate and enforced SOPs, an EnMS[91] should be set out. A specific training to effectively handle an EnMS could be of interest[92].

In terms of using best available and proven technologies, this would encompass both the energy supply (including the introduction of novel alternative – particularly renewable[93] – energy sources and technologies alongside conventional ones, together with efficient storage and distribution architectures) and the energy handling (including – where appropriate automated – energy management devices as well as structural improvements such as better thermal insulation, easy and cost-effective use of LED bulbs, or implementation of an energy performance criterion when purchasing certain energy-intensive equipment and appliances[94])[95]. As specified in the "monitoring" principle, metering and data[96] analysis[97] is the basis for EO because energy usages and consumption should be analysed from measurements and other data[98] to find out what are the potential and significant opportunities for improvement.

It should also be mentioned, the EUMS being an end-user to the NATO Science for Peace and Security Project G5525 – Camp Energy Efficiency, the great opportunity for an EU-led military O/M to proceed with a simulation tool to perform energy studies, and possibly to use temporarily a universal deployed camp energy metering kit in coordination with a co-directing nation of this NATO project. This option should respect the principle of inclusiveness for all EU MS.

All this would result in more efficient, possibly also more effective EU-led military O/M and in a more sustainable manner. It would also result in a significant reduction in hazardous emissions and pollution to the air, ground

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Centre of Excellence). It can be an useful document at operational and tactical levels

[90] See also Ref. SSS

[91] The EnMS can entail actions for the design and building of the infrastructure of camps

[92] The EDA has developed the Defence Energy Managers Course (DEMC) with the application of defence-specific EnMS based on the ISO 50001 standard

[93] Outcomes of the installation of photovoltaic solar panels at EUTM Mali are promising; they could be further developed, where appropriate, for EU-led military O/M, inclusive of in parking areas as photovoltaic shadehouses

[94] E.g. power generators, air-conditioning equipment, laundry dryers, kitchen appliances

[95] Other solutions exist and can be implemented: shading of air-conditioning units, windows and other equipment (e.g. refrigerated or CIS containers), over-roofing, motion sensitive light switches, ground air cooling/heating, tackling thermal leakage, bioclimatic design, microgrid, power factor correction, correct equipment operation, etc.

[96] Excerpt from ISO 50001 (Ref. OOO): "Data can range from a simple numerical count up to complete monitoring and measurement systems connected to a software application capable of consolidating data and delivering automatic analysis"

[97] With the associated baseline

[98] Please note, it is not just raw metering data; it must be correlated with other factors (weather, number of people present, etc.) in order to be able to carry out a relevant analysis and plan consistent actions

and water, and therefore contributing to improving indoor and outdoor air quality.

20.5. Protect environmental protection essential installations

When deployed, EU military forces should protect EP essential installations and resources within an operations area in order to preserve them for the future and to allow sustainable development. EP planning should take into account both preventive and protective measures to counter attacks (where appropriate) as well as to avoid damage by own forces against installations and resources indispensable to the survival of the civilian population. This includes – inter alia – food storages, drinking water installations (wells, purification plants, distribution system), water supply sources[99] (e.g. rivers, lakes) and systems, waste water installations, energy facilities (generation, storage, distribution) and medical supplies.

20.6. Protect cultural property

Pursuant to international law[100], the term "cultural property" covers, irrespective of origin or ownership:

(a) movable or immovable property of great importance to the cultural heritage of all people, such as monuments of architecture, art or history, whether religious or secular; archaeological sites; groups of buildings which, as a whole, are of historical or artistic interest; works of art; manuscripts, books and other objects of artistic, historical or archaeological interest; as well as scientific collections and important collections of books or archives or of reproductions of the property defined above;
(b) buildings whose main and effective purpose is to preserve or exhibit the movable cultural property defined in sub-paragraph (a) such as museums, large libraries and depositories of archives, and refuges intended to shelter, in the event of armed conflict, the movable cultural property defined in sub-paragraph (a);
(c) centers containing a large amount of cultural property as defined in sub-paragraphs (a) and (b), to be known as "centers containing monuments".

The protection of the cultural property within an operations area is a legal obligation under international law[101], which prohibits any use of cultural property and its immediate surroundings or of the appliances in use for its protection for any military purpose that is likely to expose it to destruction or damage, and forbids directing any act of hostility against such property, unless imperative military necessity. International law also calls for prosecution of serious violations. Recent conflicts (e.g. Libya, Syria or Iraq) highlighted the requirement to incorporate protection of cultural property in the operational planning process. It is essential that the EU ensures, enforces and promotes these values wherever it may operate, including in EU-led military O/M.

The inclusion of CPP aspects in planning and conduct of military O/M is not only a legal obligation under international law; it is also advantageous for the achievement of the mission objectives. First and foremost, preservation of the cultural sites of the population within an operations area maintains the morale high ground for own forces and contributes directly to the "winning of hearts and minds" among the local population in theatre, as well as the ongoing public and political support back home in the TCNs. From a humanitarian as well as from a historic point of view, it is of great importance to safeguard and respect the common sites of human culture, and especially archaeological,

[99] Not only used for drinking purposes but also for hygiene, irrigation, etc.
[100] Article 1 of The Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict (Ref. KKK)
[101] See Ref. VV, Ref. KKK and Ref. LLL

historic and religious sites. Furthermore, CPP reduces the insurgents' ability to raise revenue from looting. Finally, it facilitates the transition process and fosters the re-development of cultural pride and identity of the local population[102].

Like EP in general, the task calls for early consideration in the planning process and for close cooperation with local civil authorities and persons, such as historians and museum personnel, notably for knowledge of cultural property entered in the "International Register of Cultural Property under Special Protection"[103] and its location. The protection of cultural property is to be consistently addressed in all planning and conduct phases of CSDP military O/M, including measures ensuring that the necessary CPP expertise is available to the EU-led military O/M at every headquarters levels. Furthermore, the EU Commander should consider measures to prevent – and if possible protect from – criminal acts related to cultural property, such as theft, looting or vandalism as prescribed by the applicable international humanitarian law.

20.7. Protect biodiversity and natural resources

Biodiversity describes the variability among living organisms and includes the diversity between species and ecosystems. Included are biological resources, fauna and flora (especially threatened species), ecosystems (for example wetlands), critical habitats, conservation areas and bird areas and routes[104]. The international legal framework is provided by the UN Convention on Biological Diversity[105], which entered into force on 29 December 1993. Its main objectives are, inter alia, the conservation of biological diversity, and the sustainable use of the components of biological diversity. The biodiversity and natural resources in an operations area are of significance for sustainable development, enhanced prospects for post-conflict recovery of conflict areas and for climate change resilience. Both issues are important factors for lasting stability once a conflict has been solved. Ecosystem degradation and biodiversity loss caused by a significant damage in an operations area are likely to impact the livelihood of the local population by cutting their food supplies. If the damage to the flora is widespread, it could potentially increase the effects of climate change by a reduced ability of GHG absorption. The biodiversity and natural resources therefore deserve protection that needs to be considered during the planning and conduct of EU-led military O/M.

I. LEGAL FRAMEWORK

21. EU-led military O/M are conducted based on the SOFA[106], which could be complemented by a technical arrangement (TA). Subject to the SOFA, HN's environmental law must be respected. The OpCdr/Dir MPCC or (M)FCdr can issue complementary and additional directives, in the broader context of the standardization of European documentation relating to EP.

22. The EU Commander is responsible for all appropriate measures within his/her

[102] See Ref. MMM
[103] See Article 9 of The Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict and Article 12 of its First Protocol (Ref. KKK)
[104] The "World Heritage List" (mentioned in Article 11 of the Convention Concerning the Protection of the World Cultural and Natural Heritage – Ref. LLL), which includes sites with outstanding universal value, may also serve as a reference
[105] See Ref. FFF
[106] Pursuant to Articles 37 of the TEU and 218 of the TFEU (Ref. A)

power to ensure the observance of relevant environmental obligations, and for their inclusion in the OPLAN or MPLAN.

23. Each TCN is responsible and accountable for the actions of its own forces[107] ("polluter pays" principle), based on international agreement obligations, its own national laws and regulations and taking into account the HN legislation (laws, regulations limitations and constraints). When an individual TCN has EP or EO standards that are more stringent than (but do not contravene) local ones, the more stringent should be applied by that TCN. Each individual civilian and military member of an EU contingent is accountable for ensuring that his/her behaviour is in full compliance with the overall EP and EO objectives of the specific O/M, the EP and EO principles outlined in this concept, the SOFA/TA and the respective laws.

J. DUTIES AND RESPONSIBILITIES

24. EP, EO and CPP expertise must be available at all levels to support the EU Commanders and their staffs. Therefore, the EP-Ad/CPP-Ad and the EP Officer (EPO)/CPP Officer (CPPO) must be part of the Crisis Establishment respectively of the OHQ/MPCC and the (M)FHQ. Personnel in charge of EP and EO and division of responsibilities need to be clearly defined early in the planning process.

25. The EP-Ad should be preferably military (but could also be civilian) personnel with experience in operational planning and with EU-led military O/M, in possess of appropriate technical knowledge supported by legal fundamentals and demonstrating motivation and willpower. The CPP-Ad could be both military and civilian personnel with experience in operational planning and with EU-led military O/M, in possess of appropriate legal knowledge and demonstrating motivation and willpower. The positions of the EPO and the CPPO at (M)FHQ level should preferably be filled with an officer[108]. Further civilian experts could be additionally provided by TCNs or contracted for specific purposes (for example chemists, biologists, physicians, archaeologists).

26. Among the EP, EO and CPP experts made available, it is at the EU Commander's discretion to decide upon the position of the EP-Ad/CPP-Ad in the OHQ/MPCC, respectively the EPO/CPPO in the (M)FHQ. Due to the overall accountability of the Commander in the case of a severe environmental or cultural damage, they need immediate and direct access to the Commander whenever required to prevent or contain the damage. On the other hand, to allow that EP and EO aspects are included in the different steps and strands of the staff work, they need to closely cooperate with the respective staff personnel and they should actively claim their involvement. For the OHQ/MPCC level, it is suggested to incorporate the EP-Ad/CPP-Ad in the Specialist Staff. For the (M)FHQ level, it is suggested that the EPO reports to Deputy Chief of Staff (DCOS) Support as part of the military engineering (MILENG) staff, whereas the CPPO should be collocated with the Operational Planning Branch or the Targeting Cell, and she/he should report to DCOS Operations.

27. The EP, EO and CPP competence table hereafter provides guidance to EU Commanders at all levels of command.

[107] Except in specific and officially/legally defined cases where individuals may be personally liable
[108] With EP experience and training for the EPO

Level	Assignment	Duties and responsibilities
Political-Strategic level	EUMS	The EUMS is responsible for the regular review and update of this concept when deemed necessary, monitoring its implementation and reporting. The EUMS provides EP and EO inputs during the early stage of the planning of EU-led military O/M. As appropriate, the EUMS participates in the "EU military EP/EO community"[109]. The EUMS collaborates with partners (notably the EDA) to ensure technology watch which is appropriate and relevant to EU-led military O/M.
Military Strategic level *OHQ/MPCC*	OpCdr/Dir MPCC	The OpCdr/Dir MPCC is responsible for consideration of EP and EO aspects in her/his Commander's Intent and for issuing an Environmental Policy for the EU-led military O/M.
	EP-Ad CPP-Ad[110][111]	- Put the mission objectives into perspective with regard to EP and EO - Advise the OpCdr/Dir MPCC - Propose inputs to be included in the SOFA or similar arrangement with the HN - Study prior LL and develop new ones (including by analysing after-action reports – AARs) - Draft, regularly review and update OHQ/MPCC EP and EO SOPs or similar documents - Collaborate with other staff members, participate actively in the planning phase and during the conduct of the O/M and ensure that all relevant EP and EO concerns are implemented in the staff work - Collaborate with public information staff for strategic communications - Contribute; when appropriate, to the LL process - Participate in the "EU military EP/EO community"

[109] See § 32
[110] The EP-Ad and the EPO have duties and responsibilities assigned by the EU Commanders for the tasks mentioned in § 20.1 to § 1.20.5 and in § 1.20.7 while the CPP-Ad and the CPPO have duties and responsibilities assigned by the EU Commanders for the tasks mentioned in § 1.20.6
[111] Full details of the EP-Ad and the CPP-Ad duties, essential and desirable qualifications are to be found in the respective job descriptions (to be updated to reflect the duties specified in this concept) in Annexes of Ref. X

Level	Assignment	Duties and responsibilities
		- Maintain and archive pertinent documents and records (including AARs) - Prepare the documents necessary for their own handover process - Give guidance during EPO/CPPO handover process
	EP-Ad	- Develop an EMS and an EnMS with monitoring and reporting structures, systems and procedures (ICCW with EPO and national support elements – NSE) - Provide guidance to HQs on environmental and energy issues in conjunction with LEGAD, as required - Provide environmental and energy contribution to OPLAN or MPLAN - Coordinate with EPO for implementing “design for legacy” principle
	CPP-Ad	- Provide guidance to HQs on CPP issues in conjunction with LEGAD, as required - As appropriate, coordinate with POLAD, LEGAD and other specialists in order to fulfil or highlight particular points in the OHQ/MPCC’s orders - As appropriate, check procedures, programs and standards used by the EU forces to ensure compliance with the CPP particularities
Operational level (M)FHQ[112]	(M)FCdr	The (M)FCdr is ultimately responsible for the integration of EP and EO considerations during the training and planning for an EU-led military O/M, and during the conduct of O/M within the Area of Responsibility (AOR). He/she also checks that the available forces under his/her command have received by the respective TCN the basic EP and EO awareness, necessary specific updates and technical training consistent with the mission and the theatre prior to the deployment phase. The (M)FCdr should therefore be aware of all applicable policy, and should define the policy requirements, for example through a Memorandum of Intent, published SOPs or other similar directives. Consideration should be given to TCNs’ requirements, EU policy, and force-specific directives. References to all relevant policy should be included in the OPLAN or MPLAN.

[112] According to Ref. H, MFHQ is both at operational and tactical levels

Level	Assignment	Duties and responsibilities
	EPO CPPO[113]	- Put the mission objectives into perspective with regard to EP and EO - Advise the (M)FCdr - Study prior LL and develop new ones - Draft, regularly review and update (M)FHQ EP and EO SOPs or similar documents - Ensure initial, current and final site conditions are accurately and correctly assessed and documented (by performing an EBS and an Environmental Closeout Study – ECS[114]) - Identify specific EP and EO information required for the planning and conduct of the O/M - Collaborate with other staff members, participate actively in the planning phase and during the conduct of the O/M and ensure that all relevant EP and EO concerns are implemented in the staff work - Support agencies, stakeholders and experts - Train and educate staff personnel and contingent members in the proper application of EP and EO principles and standards, including through the implementation of good practices - Collaborate with public information staff for strategic communications - Contribute; when appropriate, to the LL process - Participate in the “EU military EP/EO community” - Maintain and archive pertinent documents and records (including AARs) - Prepare the documents necessary for their own handover process - Send to EP-Ad/CPP-Ad an AAR

[113] Full details of the EPO and the CPPO duties, essential and desirable qualifications are to be found in the respective job descriptions (to be updated to reflect the duties specified in this concept) in Annexes of Ref. X
[114] See § 34

Level	Assignment	Duties and responsibilities
	EPO	- Understand all applicable legal and policy EP requirements, with the support of LEGAD - Serve as the primary point of contact for environmental and energy matters - Develop an EMS and an EnMS with monitoring and reporting structures, systems and procedures (ICCW with EP-Ad and national support elements – NSE) - Lead the environmental planning for mission sustainability - Identify environmentally and energy-related supplies and equipment - Establish and implement an Environmental Management Plan (EMP), including inter alia a water management plan, a waste water management plan and a waste management plan - Lay down a procedure to assess the overall environmental footprint of the O/M - Advocate for energy resource conservation - Liaise, with the support of J9, with civil environment (including liaison with EU delegation – EUDEL, IOs, NGOs) regarding EP and EO - Develop and update a list of natural resources within the AOO that could be affected by the O/M and ensure implementation of the list in the overall OPLAN or MPLAN - Coordinate environmental mitigating and remediation measures with CC EPO - Plan for mission completion, base camp closure and associated tasks
	CPPO	- Understand all applicable legal and policy CPP requirements, with the support of LEGAD - Develop and update a list of protected cultural property within the AOO and ensure implementation of the list in the overall OPLAN or MPLAN - Coordinate with HN and civilian actors in the AOR (esp. museums, archaeological and religious sites)

Level	Assignment	Duties and responsibilities
Tactical level	Component Cdr (CC Cdr) Battalion Cdr (Bn Cdr) Naval Task Group Cdr	The Commanders on the tactical level need to be familiar with the EP and EO policy, guidance and orders from the OHQ/MPCC/(M)FHQ, in order to ensure full implementation of EP and EO aspects during the conduct of the O/M. They are responsible for the training of their troops and their EP and EO awareness. The CC Cdr is supported by the CC EPO (level 4/3). The Bn Cdr's/Naval TG Cdr's are supported by their designated EP Point of Contact (EP PoC) within their staffs.
	Troop Contributing Nations (TCNs)	TCNs should provide appropriate EP and EO education and training to their forces. NSE should provide appropriate EP, EO and CPP expertise in their staff to plan, coordinate and control unit level EP and EO measures. A CPP-Ad should be appointed for O/M with a high risk of damage to cultural heritage.
	CC EPO	- Put the mission objectives into perspective with regard to EP and EO - Advise the CC Cdr - Coordinate with EPO and CPPO for implementing EP and EO principles and standards - Train and educate staff personnel and contingent members in the proper application of EP and EO principles and standards, including through the implementation of good practices[115]

[115] Field cards, as educational material, may be helpful and distributed to contingent members

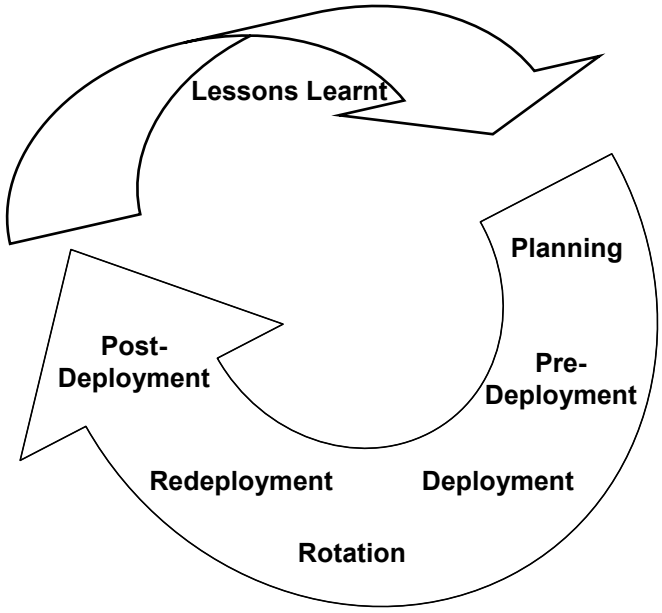
K. IMPLEMENTATION IN PLANNING AND CONDUCT

28. EP and EO policy for EU-led military O/M broadly defines the role of the parties involved in EP and EO planning and execution, and often includes the following elements:

- The tenet that EP and EO is every individual's responsibility,
- Compliance with applicable legal requirements, including international agreements, subject to any exceptions and limitations,
- Recognition of the importance of EP and EO planning,
- The goal to avoid any environmental damage respective to maintain the mission related impact at a sustainable level for the environment,
- The respect for local environmental standards.

29. EP and EO considerations should be undertaken throughout all phases of EU-led military O/M.

Figure 1: The phases of an EU-led military O/M (Operational Cycle)



30. Planning

EP and EO considerations [116] for EU-led military O/M should be incorporated into each phase of the planning process.

The EUMS, through its Crisis Planning Team (CPT), may be involved in a Fact Finding Mission (FFM) in order to collect and assess all required information.

Initial environmental analyses are instrumental in facilitating early, informed decision making so that the OPLAN or MPLAN and other deliberate planning documents account for known environmental risks and other relevant concerns. The annexes connected with the OPLAN or MPLAN are more detailed planning documents for selected functional areas. A typical OPLAN or MPLAN must include an EP and EO paragraph and annex. The EP and EO Annex[117] should detail the roles and responsibilities for EP and EO management throughout the chain-of-command. In addition to the EP and EO Annex, there may be other annexes of interest (e.g.

[116] As outlined in the paragraphs « Main tasks »
[117] An example is provided in Appendix 2 of the Environmental Guidebook for Military Operations (Ref. QQQ)

MILENG, CIMIC, Medical, Logistics, HNS). The initial EP and EO analysis for the OPLAN or MPLAN typically consists of four key tasks:

- Identify EP and EO requirements and limitations,
- Identify "who, what, why, and when" of EP and EO considerations,
- Develop and prioritize EP and EO Courses of Action (COAs) for the Concept of Operations (CONOPS) and Statement of Requirements (SOR),
- Identify EP and EO resources needed.

The duration of the EU-led military O/M also has a significant impact on EP and EO considerations and resources required for EP and EO sustainability, although it is important to note that requirements may be event-driven rather than time-driven. Even under the most austere conditions, there are minimum environmental standards for the protection of human health and the environment. As the O/M stabilizes and resources become more available, the ability to comply with more protective or higher standards will increase in steps, resulting in an overall increase in EP and EO stewardship. This scalable approach to EP and EO considerations is critical in the development of flexible COAs for EP and EO sustainability, while maintaining minimum environmental standards for the protection of human health and the environment.

Due to the transversal nature of EP and EO, environmental, energy and CPP staff needs to operate in a very close interface with all other staff areas to establish the required coordination of resources and support for the EP and EO plans. The extent of this interface is shown in diagrammatic form at Figure 2. The list demonstrates the areas where the EP-Ad, CPP-Ad, EPO and CPPO need to work with other staff areas (not only during the planning phase but also during the other phases of the EU-led military O/M).

Figure 2: Illustrative interface between EP/EO and other staff functions

Specialist Staff/Command Group[118]

International law (e.g. environmental conventions)	Legal affairs Public affairs

Command Group Support Staff/Command Group

Environmental Incident Reporting System[119]Reporting	

J1 – Personnel

EP, EO and CPP personnel qualifications	EP, EO and CPP personnel assignments

J2 – Intelligence

Environmental factors	Geographic factors: climate, terrain Geopolitical factors

J3 – Operations

Equipment development Contingency plans Operational planning	Major incident plan Current & future operations Targeting

J4 – Logistics

Movement HNS Supply and resupply Equipment support	Procurement Accommodation

[118] Respectively at OHQ/MPCC and (M)FHQ levels

[119] The Environmental Incident Reporting System is an information management process, with the Information Management Cell (IM Cell) being in charge. According to the EU OHQ-MPCC and FHQ Manning Guide (see Ref. X), IM Cell is respectively part of the Command Group Support Staff for the OHQ/MPCC and the Command Group for the (M)FHQ

J MILENG

Management of infrastructure Power supply Water production, storage and distribution Storm water management Design for legacy	Disposal of unexploded ordnance/device Waste/sewage disposal Waste separate collection storage locations

J5 – Plans

CONOPS' EP and EO part Force generation EP and EO assets	OPLAN or MPLAN's EP and EO part Reports & information to EU MS and TCNs

J6 – Communications

Energy management devices	Cybersecurity

J7 – Training

EP and EO training and awareness	Lessons learnt

J8 – Finance & Budget

Contracting support HNS	Waste/sewage disposal procurement

J9 – Civil-Military Cooperation

Cooperation and liaison with civil environment (including liaison with EU delegation – EUDEL, IOs, NGOs) CIMIC activities	Religious and socio-cultural factors Winning of hearts and minds Integrated approach Design for legacy

J Medical

Force health protection (including infectious diseases, food and water control) Occupational medicine	Health-care waste management Hygiene control Medical maintenance of industrial health and safety standards, including examination of personnel

31. Pre-Deployment

In the pre-deployment phase, risk assessments are conducted to identify and quantify the risks to military personnel and to the environment arising from conditions within the proposed area of EU-led military O/M. The environmental risk assessment determines the extent to which EU-led military O/M may significantly and permanently affect the environment or well-being of the local community, or be exploited by adverse Information Operations against the EU. In conducting risk management, preliminary surveys, such as a site-specific EBS [120][121][122], should be undertaken (preferably by the (M)FHQ) prior to troop mobilization and deployment to validate COAs and the OPLAN or MPLAN's EP and EO Annex and to further document and assess the initial site conditions with respect to human health and environmental considerations.

[120] The EBS is part of the EMS

[121] Optimally, the EBS will be conducted during the pre-deployment site reconnaissance, but in any case it should be conducted no later than 30 days after the initial deployment

[122] Useful information for the planning and conduct of the EBS may be found in EUFOR Althea SOP 6270 (Ref. DD), the Environmental Guidebook for Military Operations (Ref. QQQ) and NATO AJEPP-6 (Ref. WWW)

As the force prepares to mobilise, EP, EO and CPP officers and planners should check that all available forces have received proper EP and EO training by the respective TCN. Furthermore, they should identify environmentally and energy-related supplies and equipment[123] required to support the mission in light of the OPLAN or MPLAN's EP and EO Annex, reports from site reconnaissance or pre-deployment site surveys, intelligence assessments, and known facts about existing conditions in the deployment area.

EP, EO and CPP planners should also work closely with engineers and logisticians to determine the extent to which resources (manpower, funding, equipment and supplies) are available for EP and EO, and identify the limitations and constraints of those resources. EP and EO logistics resources needed, mainly in the areas of infrastructure building and management, waste disposal and energy production, may be provided by military logistics capabilities committed by the TCNs during the FG process[124] or provided through CSO or HNS agreements.

32. Deployment

Once troops are deployed, it is important to establish and continuously communicate[125] the roles, responsibilities and standards for effective EP and EO management, and to maintain records of site assessments, decisions made in the field, environmental incidents, and specific actions taken. The creation and periodic updating by the (M)FHQ of such a deliberate, written EMP[126][127] is essential. This plan is, in fact, a consolidation of multiple programs and procedures that are integrated both horizontally and vertically within the overall mission execution. Such a plan aims at institutionalising environmental policy, standards and procedures throughout the whole EU contingent, which would allow an even more formalized approach to EP and EO and to SD in the operations area. It should lay out clear and measurable EP and EO procedures, standards and guidance for that specific EU-led military O/M. An effective EMP must be approved by the EU Commander and should include, at a minimum, the following recommended elements:

- Environmental roles and responsibilities,
- Environmental management board,
- Applicable environmental protocols, SOPs and best management practices, checklists, training requirements and training deficiencies,
- Auditing of compliance, specifying the usual frequencies of periodic (and exceptional) checks, their objectives, responsibilities, reports and actions to be carried out with their deadlines (immediate, short, medium and long term),
- Reporting, recordkeeping & archiving,
- EMP evaluation and updating process.

From the perspective of the EMP, Annex A illustrates the generic process for establishing, executing and reviewing appropriate actions for any type of environmental consideration (protocol).

[123] Examples are provided in Appendix 4 of the Environmental Guidebook for Military Operations (Ref. QQQ)
[124] Military capabilities should be the foremost option
[125] This internal communication action is essential to get people's buy-in and can take on different aspects such as information provision, display of energy saving results, exemplary projects or onsite activities
[126] The EMP is a key component of the EMS
[127] Useful information for drafting an EMP may be found in EUFOR Althea SOP 6270 (Ref. DD), the Environmental Guidebook for Military Operations (Ref. QQQ) and NATO AJEPP-6 (Ref. WWW). Although more demanding than EMS, an example for civilian environmental management programs is the EU Eco-Management and Audit Scheme (EMAS) which was adopted by the EU (Ref. PPP)

The EMP, serving as a guidebook, could also help inexperienced personnel assigned to duties for which they have no formal training or experience to better understand the tasks associated with their assigned duties and the rationale behind the tasks.

As other EU-led military O/M may face similar concerns and issues, sharing information and good practices amongst EU-led military O/M may be of mutual benefit[128].

33. Rotation

Rotation of forces means the relief in place and Transfer of Authority (TOA) of forces by the same TCN. In preparation for the rotation of forces, the designated EU Commander's EP-Ad, CPP-Ad, EPO and CPPO, must prepare to transfer key information and responsibilities to the replacement[129][130], so as not to lose the experience gained during a tour of duty but rather to capitalise on it. Incoming and out-going EP-Ad/EPO deployments should overlap for a sufficient amount of time if possible, in order to transfer important files, documents, agreements, SOPs, Commander's Guidance, contracts, etc., and to discuss any current and past significant environmental and energy issues.

In addition, EPO and CPPO should provide the respective EP-Ad and CPP-Ad with an AAR[131] highlighting the main topics and issues addressed and the main actions taken during her/his tour.

34. Redeployment

Once the decision has been made to redeploy forces and close or transfer a site, the planning for the site transfer or closure should begin. It is important to remember that site closure and transfer to the original owner or to another nation as part of the force redeployment affect both parties. Unnoticed or undocumented contamination could influence future land use and lead to unforeseen liability issues. It is therefore essential to properly assess and document the final condition of the site as part of the redeployment and camp closure process to determine the extent to which the site was damaged by the force and if there are legal or health and safety concerns and obligations.[132]

In case of redeployment with transfer to another TCN, the same tasks mentioned for a rotation phase apply.

The first step of the environmental closure process, with the ECS[133], should include a desk study with an associated site visit in order to identify possible environmental risks. If risks are evident, the study should be followed by a second phase consisting of a site survey and possibly a third phase describing necessary actions. This should happen in cooperation with those nations or the original owner that take over the site and the results should be approved by them.

[128] The creation of an "EU military EP/EO community" would be stimulating. This could also be extended to Civilian Planning and Conduct Capability (CPCC) and EU-led civilian missions to enhance and strengthen civilian-military synergies

[129] This handover process should be in written form (with a template made available at HQ level) and traceable, with the EMP being the main guidance document

[130] Table 5-1 of the Environmental Guidebook for Military Operations (Ref. QQQ) may serve as a basis

[131] A template is provided in Appendix 15 of the Environmental Guidebook for Military Operations (Ref. QQQ)

[132] "Site closure" means the transfer of property from the TCN back to the HN or to the original owner. "Site transfer" refers to the handover of property from one TCN to another

[133] Useful information regarding the ECS may be found in EUFOR Althea SOP 6270 (Ref. DD) and NATO AJEPP-6 (Ref. WWW)

35. Post-Deployment

This refers to all actions to be taken after forces have withdrawn completely from the AOO. The vital functions of this phase are typically executed outside the AOO, in the OHQ/MPCC. Post-deployment functions include properly archiving important documents at all levels (strategic, operational and tactical), reviewing operational EP and EO management, collecting LL and monitoring the environmental status in the AOR if necessary.

36. Lessons Learnt

Throughout all stages of an EU-led military operation's or mission's life cycle, the importance of identifying and documenting lessons observations from all phases of the O/M is paramount[134]. The foundation and process for the collection, management and development of lessons observations from all EU-led military O/M is detailed in the EU Military Lessons Learnt at the Political Strategic Concept[135]. Additionally, further detailed information is available in OHQ/MPCC/(M)FHQ LL Standard Operating Procedures[136] and in the relevant OPLAN or MPLAN and includes, but is not limited to:

- OHQ/MPCC/(M)FHQ lessons structures and organisations,
- Lessons collection effort requirements,
- Provision of lessons support, which is determined by the operational phases,
- Transferring of relevant lessons both between rotations and from theatre to the TCNs' joint forces command.

The CSDP lessons and best practices portal (available through the classified EU Wide Area Network) contains the EUMS Lessons Management Application (ELMA[137]). This LL database management tool should be utilised for the recording and development of lesson observations.

L. ENVIRONMENTAL PROTECTION AND ENERGY OPTIMISATION ASSOCIATED ACTIVITIES

37. Training and education

EP and EO awareness-raising training and education should be pragmatically incorporated into existing national military personnel training programs through individual, collective and continuing education. Time should be allocated during pre-deployment for training on EP and EO to ensure an understanding and a commitment to act in an environmentally and energy responsible way. It is particularly important to conduct an early analysis of EP and EO training requirements so that pre-deployment training may be modified or adjusted to address any identified shortfalls or deficiencies. In addition, subject matter expert seminars and courses for EU personnel[138] could be conducted by the EU[139] or an EU MS to enhance the overall knowledge within areas related to EP and EO. Furthermore, all courses on EU-led military O/M should include a more or less

[134] AARs may be part of the LL process
[135] See Ref. P
[136] See Ref. AA and Ref. BB
[137] According to Ref. P, ELMA contains lessons observations from all CSDP military activities (including Operations, Missions, Exercises and Trainings) and acts as the management tool for the collection, management and development of all military lessons from CSDP activities, via improvement actions
[138] EP, EO and CPP staff should not be the only training audience
[139] ESDC (European Security and Defence College) is the main training actor at EU level providing military training in the field of CSDP, complementing the national efforts in the field of training and education

substantial EP and EO component to broaden the training audience. Besides, an awareness campaign on EP/EO-related matters should be conducted for all newcomers in the field and additional training needs to be accomplished after deployment as new equipment, processes and situations dictate.

The figure of the EP-Ad therefore requires interdisciplinary training (technical-scientific and legal) and constant and timely updating, preferably under the supervision of the ESDC.

Like Women, Peace and Security/Gender perspective aspects or international humanitarian law, regularly mainstreaming EP and EO considerations into EU exercises (such as MILEX series) could facilitate the planning workflow and ultimately strengthen the effective implementation of the concept.

38. Military engineering

MILENG Support to EP and EO focuses mainly on the development or utilization of "environmentally friendly" infrastructures, waste and sewage plants, sustainable water and power installations, and of remediation solutions for mitigating the impact of military activities on environment[140].

39. Logistics

EP and EO have several implications for the execution of logistic functions in support of EU-led military O/M, which must be taken into account[141].

39.1. Real Life Support

EP and EO put high demands on real life support, and particularly on the logistic tasks of waste management and energy generation.

39.2. Logistic chain

EP and EO can influence the logistic chain both in positive and negative ways. The rectification and disposal of environmental damage requires additional transport, whereas EO (including the use of renewable energies) may potentially reduce transportation to and within the theatre of operations.

39.3. Funding and contracting

If the capabilities are not provided either by TCNs[142] or the HN, CSO[143] for EP and EO is requested in order to execute the contracting process for engineer works and infrastructure projects, and to co-ordinate with other contracting agencies involved. EP and EO staff should contribute to the development of requirements by the designated contracting authorities at all levels. The defined EP and EO standards apply for the military as well as for the civilian contractors and their activities. Contracts in support of initial military O/M must include expected EP and EO standards. As the number and quantity of supporting contracts grow, operational planners must ensure that contracts have measureable and enforceable EP and EO standards[144]. It should also be considered that payments made to contractors/sub-contractors may be channelled to opposing forces or organized crime.

[140] See Ref. K and Ref. Z
[141] See Ref. L
[142] Resort to HNS and/or CSO may be envisaged if TCNs' capabilities are non-existent, insufficient, unsuitable or unavailable
[143] See Ref. S
[144] Procurement rules regarding environmental performance and environmental characteristics may be used in that sense

39.4. Host Nation Support

Continuous cooperation and coordination should be maintained with the HN during the EU-led military O/M, in order to assure an efficient EP and EO support work[145].

40. Civil-Military cooperation and coordination

The support of CIMIC activities must be clearly defined in order to support the Commander's intent and to avoid the dilution of EP and EO effort in tasks not essential to the implementation of the mission[146]. Cooperation and coordination may also be sought where appropriate with EUDEL, CPCC, EU-led civilian missions, IOs (in an inclusive way for all EU MS) and NGOs.

41. Information operations and public information

The EP-Ad/CPP-Ad and the EPO/CPPO often provide essential services, to meet both military and civilian requirements during and after the EU-led military O/M. In that sense, as visibility and credibility multipliers, EP-Ad/CPP-Ad and EPO/CPPO may be considered part of the Information Operations[147] and Public Information effort. If decided and not jeopardizing the safety and security of the force, EP and EO could be incorporated into the Information Operations coordination process to promote the operational outcome. It should rely on intelligence assessments on environmental vulnerabilities and threats coming from media/social exploitation directed against the force.

42. Rules of engagement

Operational activities can have a great impact on an AOO in shaping the environment. The EP-Ad/CPP-Ad and the EPO/CPPO may support the ROE officer in developing EP and EO considerations for ROE. In consequence, EP and EO-related ROE have to be very clear and unambiguous, in terms of restrictions, limitations and authorised actions.

43. Force protection

By achieving EO (notably through the increase of use of renewable energy sources) during EU-led military O/M, fuel transport to and within the theatre could be significantly reduced. As a result, fewer convoys would need to be protected, which would significantly lessen the risk for own forces, and furthermore would increase operational efficiency and agility (hence lower vulnerability), making it possible to allocate the resources no longer needed to other operational tasks.

44. Preventive medicine

The interrelationship between environmental and human health considerations needs to be considered.

M. FACTORS AFFECTING ENVIRONMENTAL PROTECTION AND ENERGY OPTIMISATION

45. Capability development

Strongly associated with O/M is materiel. Like other types, the EU relies on EU MS for EP and EO deployable materiel during EU-led military O/M.

[145] See Ref. M
[146] See Ref. O
[147] See Ref. T

In their national defence planning processes, EU MS should further examine EP and EO capabilities which could benefit environmental and energy policies, both for national and EU-led military O/M.

The EU framework[148] is relevant to this process and cooperation among EU MS should be sought, especially through PESCO, in order to address capability shortfalls.

Besides, EU MS are encouraged to include environmental design considerations[149] in defence equipment procurement with the aim of responsible acquisition of materiel.

46. Standardisation/Interoperability

Equipment and materials vary amongst EU MS, covering many functions, with little standardisation. Even if some tasks are similar, the structures, organisations and procedures often differ between EU MS. It is essential to understand the differences in national organisations, policies, tasks and procedures. It is probable that national standards and regulations vary among EU MS, and that these national standards are stricter than those standards of the HN. Awareness of these issues will benefit the EU-led military O/M. Exchange of information and training is key in this regard, in order to improve the interoperability. These effects could be mitigated by defining quantifiable environmental standards for CSDP O/M (EU CSDP EP standards) and by monitoring the potential level of environmental damage. These EU CSDP EP standards need to be consistent with environmental standards defined by the UN and NATO. They should be included in the EU OHQ/MPCC and (M)FHQ SOPs.

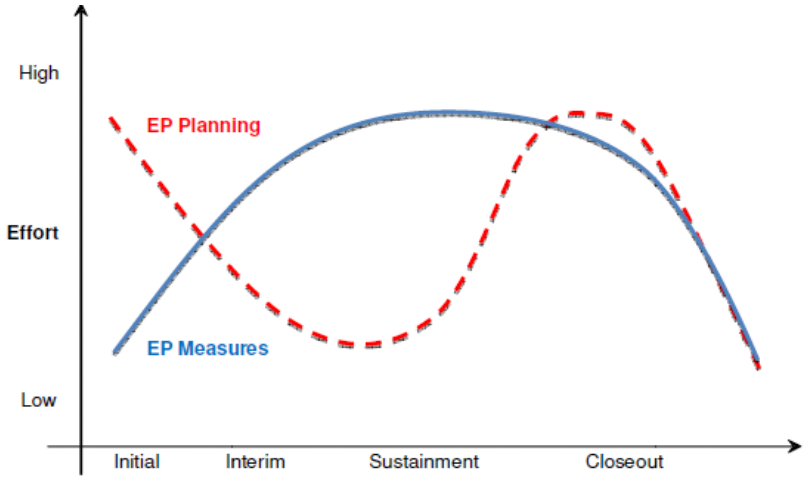
Furthermore, in order to have fully interoperable European contingents, it would be useful to establish a European network for the analysis of the life cycle of materials purchased from all MS with a Green Public Procurement (GPP)-oriented policy.

47. Operational Environment

The type of O/M and the likely evolution of the situation helps to determine the type of EP and EO tasks and the required capabilities to deploy. The operational environment results from numerous parameters, each with its own influence. EP and EO considerations and planning aspects depend on the quality of the operational environment, resulting from the mix of these parameters and becoming more important with challenging conditions.

Figure 3: Stages of an operation or a mission vs. EP and EO efforts

[148] Headline Goal Process (HLGP), Illustrative Scenarios (IS), Requirements Catalogue (RC), Force Catalogue (FC), Progress Catalogue (PC), Capability Development Plan (CDP)
[149] Considerations from the outset regarding the consumption of resources and the environmental and energy impact of products created during all phases of their production, distribution, use and disposal (life-cycle of materiel)


High
Effort
Low
EP Planning
EP Measures
Initial
Interim
Sustainment
Closeout

48. Limited resources

48.1. Local resources

EU-led military O/M are likely to be undertaken in areas with scarce local resources, such as potable water or water for other human uses[150]. Competition for limited local resources amongst EU MS, international, national and local contractors, IOs and NGOs involved directly or indirectly in EU-led military O/M, can have negative impacts on the availability of resources and subsequently the social and economic environment, particularly where resources are in high demand. This requires coordination at the highest level of activity and cooperation between the actors involved, in an inclusive way for all EU MS, in order to assess the potential impacts, to ensure resources are used in the most effective manner to avoid their deterioration, and to determine additional mitigating measures.

48.2. Operational resources

Scarce operational resources for military support of EP and EO must be kept under central control for use where and when most required. Operational planners have to pay regard to this, check and revise the planning process on a continuous basis.

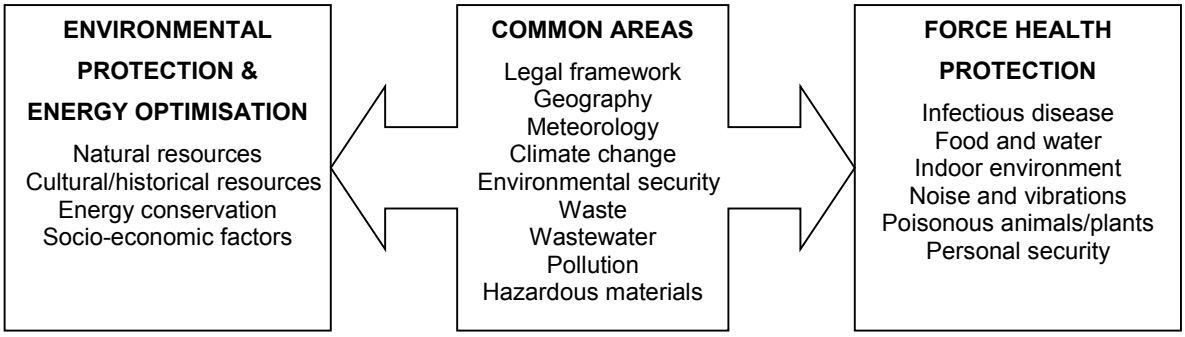
48.3. Funding

The successful implementation of EP and EO tasks depends largely on timely and sufficient funding, because costs for specific material, for infrastructure and related services may sometimes be high. Close cooperation and coordination with financial staff is required, and all alternatives that produce effective and efficient solutions at lower cost must be considered, even though financial aspects should not be the only ones.

49. Environmental health and safety aspects

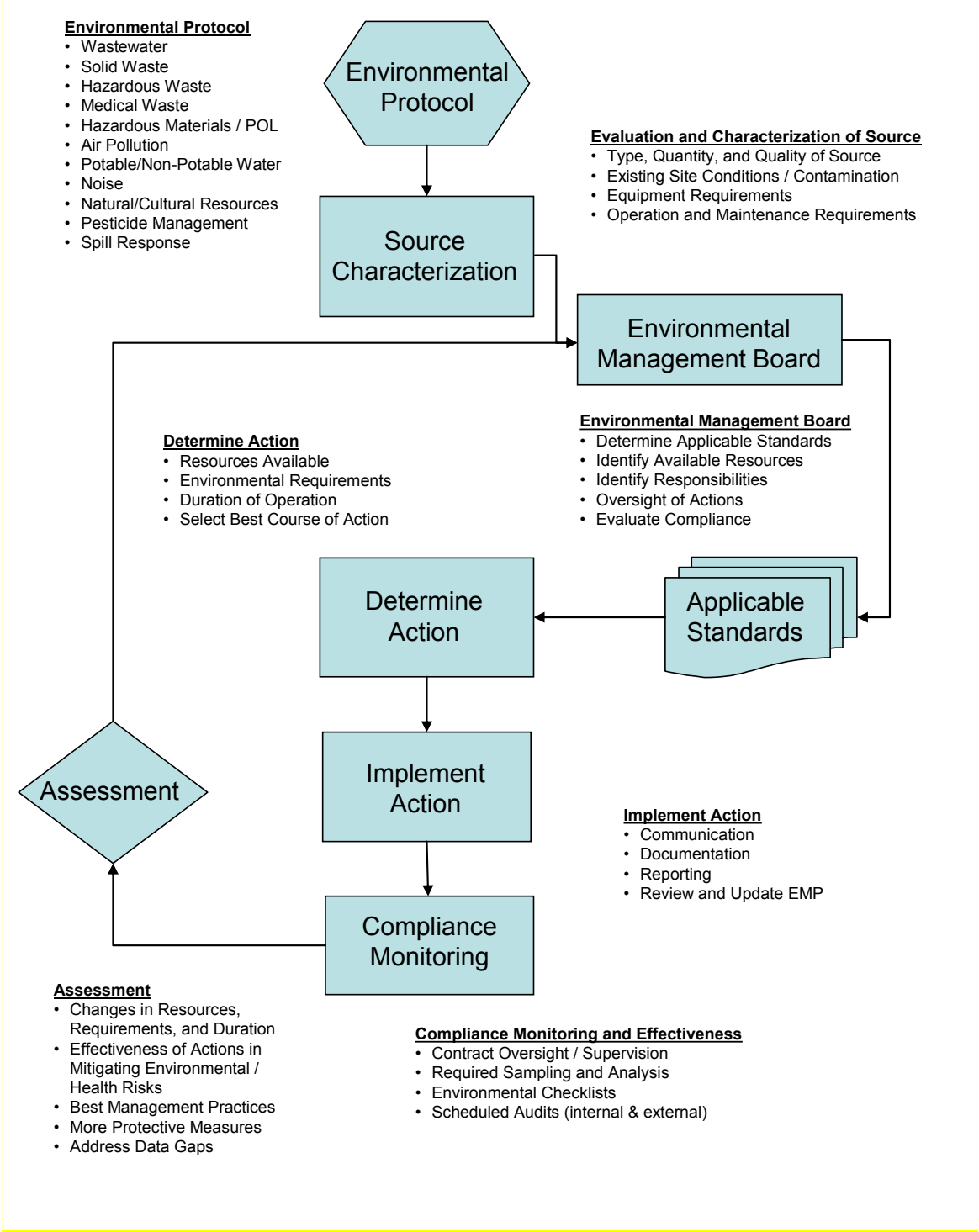
The nexus between elements of EP and EO and environmental health and safety is apparent (Figure 4) and has to be addressed accordingly.

Figure 4: Interrelationship between EP and EO and Force Health Protection



[150] E.g. sanitary, agricultural, …

ANNEX A: ENVIRONMENTAL STANDARDS PROCESS



ANNEX B: LIST OF ACRONYMS

AAR	After-Action Report
AJEPP	Allied Joint Environmental Protection Publication
AOO	Area Of Operations
AOR	Area of Responsibility
BIM	Building Information Model
Bn Cdr	Battalion Cdr
CC Cdr	Component Cdr
CDP	Capability Development Plan
CF SEDSS	Consultation Forum for Sustainable Energy in the Defence and Security Sector
CIMIC	Civil-Military Cooperation
COAs	Courses of Action
CONOPS	Concept of Operations
CPCC	Civilian Planning and Conduct Capability
CPP	Cultural Property Protection
CPP-Ad	CPP Advisor
CPPO	CPP Officer
CPT	Crisis Planning Team
CSDP	Common Security and Defence Policy
CSO	Contractor Support to Operations
DCOS	Deputy Chief of Staff
DEMC	Defence Energy Managers Course
Dir MPCC	Director of the MPCC
EBS	Environmental Baseline Study
ECS	Environmental Closeout Study
EDA	European Defence Agency
EE	Energy Efficiency
ELMA	EUMS Lessons Management Application
EMAS	Eco-Management and Audit Scheme
EMP	Environmental Management Plan
EMS	Environmental Management System
EnE WG	Energy and Environment Working Group
EnMS	Energy Management System
ENSEC CoE	Energy Security Centre of Excellence

EO	Energy Optimisation
EOF	Energy Operational Function
EP	Environmental Protection
EP-Ad	EP Advisor
EPO	EP Officer
ESDC	European Security and Defence College
EUDEL	EU Delegation
EUGS	EU Global Strategy
EUMC	European Union Military Committee
EUMS	EU Military Staff
FC	Force Catalogue
FCdr	Force Commander
FFM	Fact Finding Mission
GHG	Greenhouse Gas
GIS	Geographic Information System
GPP	Green Public Procurement
HAZMAT	Hazardous Materials
HLGP	Headline Goal Process
HN	Host Nation
HNS	Host Nation Support
ICCW	In Close Coordination With
IM	Information Management
IOs	International Organisations
IS	Illustrative Scenarios
IUCN	International Union for Conservation of Nature
KPIs	Key Performance Indicators
LL	Lessons Learnt
MFCdr	Mission Force Commander
MILENG	Military Engineering
MILSTRAT	Military strategic
MPCC	Military Planning and Conduct Capability
MPLAN	Mission Plan
MS	Member States
NGO	Non-Governmental Organisation
NSE	National Support Elements
OHQ	Operation Headquarters

O/M	Operations and Missions
OpCdr	Operation Commander
OPLAN	Operation Plan
PC	Progress Catalogue
PDCA	Plan-Do-Check-Act
PESCO	Permanent Structured Cooperation
PoC	Point of Contact
POL	Petrol/Oil/Lubricants
POLSTRAT	Political-strategic
PPE	Personal Protective Equipment
RC	Requirements Catalogue
ROE	Rules Of Engagement
SD	Sustainable Development
SDGs	Sustainable Development Goals
SMA	Sustainable Military Activity
SOFA	Status of Forces Agreement
SOPs	Standard Operating Procedures
SOR	Statement of Requirements
TA	Technical Arrangement
TCNs	Troop Contributing Nations
TEU	Treaty on European Union
TFEU	Treaty on the Functioning of the European Union
TOA	Transfer of Authority