The Ministry of Defence's Strategy on the challenge of Climate Change

MINISTERIO DE DEFENSA

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Introduction

When we review the security challenges and threats that might impact the defence of 21st century societies, climate change always appears in a very prominent position. It is probably one of the greatest environmental threats humanity has ever faced. Its danger is even greater due to the nature of its progress, slow but inexorable. We have not been fully aware of its implications, until its effects have begun to show themselves in all their drama.

The fight against climate change and its consequences will only be effective if a truly global effort can be made. Sooner or later, all the inhabitants in our planet will see their lives affected by environmental changes, unthinkable and disastrous weather phenomena, and humanitarian catastrophes. Only a joint effort can serve as a catalyst for a movement of solidarity and collaboration among all the peoples of the Earth. Unity in the face of a threat often tends to bring out the best in human nature and can allow us to obtain an ultimately positive result from what, without this unity, would undoubtedly be a catastrophe.

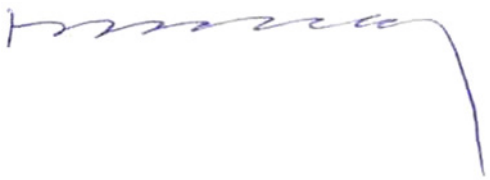
Defence cannot remain oblivious to a phenomenon that so directly affects our security. Our men and women in uniform have already demonstrated their generosity and spirit of service by assisting citizens in emergency situations brought on by climate change. However, we must carefully plan our efforts to make the most of the resources at our disposal while safeguarding the mission of the Armed Forces. This is the aim of the MoD's National Strategy on the challenge of climate change.

This document, which was created as a result of a concerted effort within the European Union, outlines the various contributions that defence can make to the fight against climate change. These include reducing emissions to help prevent it, adapting to conditions dominated by progressive climate change and managing its most harmful effects.

I would like to express my gratitude to the authors, especially to the General Directorates of Defence Policy and Infrastructure, the Joint Chief of Staff and the General Staffs of the Army, Navy and Air & Space Force who, under the coordination of the General Secretariat for Defence Policy, have participated more directly in the preparation of this Strategy. I trust that this document, as an important step in the titanic task of facing an existential challenge, will help to understand and to embark safely and

firmly on the path that will lead us to neutralise the most adverse consequences of climate change, while at the same time, we fulfil the mission of guaranteeing National Defence.

Madrid, 20 July 2023



-Margarita Robles Fernández-

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1. Situation

On April 17, 2007, during the first debate on the impact of climate change on international security at the United Nations Security Council, participants emphasised the relationship between climate change and the emergence of conflicts, particularly in the most fragile, poorest and most vulnerable countries. Although climate change is a global phenomenon that impacts the whole world, when paired with conditions like weak governance or factors such as the scarcity of resources, particularly hunger, it multiplies risks and can lead to potential sources of conflict.

Climate change is a factor that increases and multiplies the risks and threats to international security, stability and peace. Among the phenomena it may lead to, we can find internal and inter-State armed conflicts, migratory movements, the struggle for water and food resources, new pandemic outbreaks or the emergence and growth of terrorist organisations.

As a result, the climate factor is becoming increasingly important for National Security and Defence, as well as for the Armed Forces, which play an important role in crisis management and in maintaining stability and security at national and international level.

> *Climate change is a factor that increases and multiplies the risks and threats to international security, stability and peace*

Climate change will have an impact on how the Armed Forces operate and the means they need to fulfil their missions. This requires the development of adaptation measures to achieve greater resilience and maintain their capabilities and operability.

To determine how and in what areas climate change may influence Defence, the following classification of its various consequences has been established:

- More frequent and devastating extreme weather-related events.

This includes floods, storms with high winds and various devastating winter weather phenomena, such as severe winter storms, heavy snowfalls and extreme frosts.

- A reduction in rainfall and an increase of periods of drought.

Prolonged droughts and difficulties with water supplies are one of its main indicators, but also desertification, air pollution from sand and dust particles in the atmosphere, or the escalating frequency and exponential severity of forest fires.

- Significant increase in sea levels.

This may involve the flooding of ports and coastal infrastructures, as well as large areas of urban or agricultural land, the disappearance of beaches, and the destruction of dikes and breakwaters. All these factors could affect coastal navigation and lead to significant variations in nautical cartography.

- Widespread increase in atmosphere and sea temperatures.

This will imply an additional need for engine and machinery cooling, as well as increased air conditioning needs in buildings, vehicles, ships and aircraft. There will also be consequences for aircraft lift rates and acoustic propagation, along with changes in the distribution and spread of communicable diseases.

- Increasing global instability.

As a result of the lack of resources and large-scale migratory movements, brought on by regional conflicts or worsening economic conditions.

The oceanographic research vessel «Hespérides» carrying out an Antarctic Campaign. The Spanish Antarctic Campaign is a model of cooperation between different public and private institutions at the service of R+D+i, conducting various studies on climate change.

2. Consequences for Defence

The effects described above have various consequences for the Defence, among them:

- Increased frequency in the employment of the Armed Forces' capabilities both at home (more frequent extreme weather events) and abroad (increased global instability, greater frequency of natural disasters or scarcity of resources)
- The need to adapt military resources and infrastructures.
- Changes in the way the Armed Forces operate, which, in turn, affect training, doctrine, planning and the conduct of operations.

As a result of the situation described above, the Armed Forces must implement both **adaptation measures**, to continue operating effectively in scenarios greatly affected by climate change, and **mitigation measures**, to slow down the most negative effects as much as possible. The latter is in fact a collective effort to which the Ministry of Defence contributes in line with national policies, in coordination with other ministries, and in agreement with the international organisations of which Spain is a member, specifically, the United Nations, the European Union and the North Atlantic Treaty Organization (NATO).

Spain has a specialized military unit, the Military Emergency Unit, which makes it easier for the Armed Forces to be prepared to intervene anywhere in the national territory, or project abroad. This contributes to the safety and welfare of citizens, in support of State institutions and Public Administrations, in the event of serious risk, catastrophe, emergency or other public needs. That is why, the Ministry of Defence's contribution to the management of emergency situations takes on significant relevance.

It is also important that the efforts to tackle climate change, at the international, intra-European and national levels, do not jeopardise or limit the fulfilment of the missions entrusted to the Armed Forces. Ultimately, fulfilling their missions must be taken into account when developing legal frameworks, which call for coordination and cooperation with the bodies and ministries involved.

As a result, this Strategy outlines the framework for the Ministry of Defence as a whole, and the Armed Forces in particular, to orient their activities taking into account the adaptation to climate change, by

protecting their capabilities, operability and resilience to continue fulfilling their missions effectively and contributing, as far as possible, to mitigating the consequences of climate change.

In addition, this Strategy also provides a starting point for the Army, the Navy and the Air & Space Force, the Defence Staff and each of the Departments of the MoD's Headquarters, represented in the Ministry of Defence's climate change Working Group, in order for them to create and develop the action plans that come under their responsibility.

> *«This Strategy outlines the framework for the Ministry of Defence as a whole, and the Armed Forces in particular, to orient their activities taking into account the adaptation to climate change, by protecting their capabilities, operability and resilience to continue fulfilling their missions effectively and contributing, as far as possible, to mitigating the consequences of climate change»*

Army and Navy personnel deployed in the Galician mountains during Operation «Galician Sentinel», as part of the Armed Forces' joint effort to combat forest fires. It consists on surveillance patrols in the mountains that enable fires to be detected early.

3. Objectives and action principles

This Strategy has two objectives:

- First, to take all the necessary measures for the Ministry of Defence and the Armed Forces to adapt to the consequences of climate change, and in doing so, strengthen their resilience and that of the society they serve, while maintaining the military capabilities and operability required to fulfil their missions.
- Second, while upholding the Armed Forces operational requirements as the top priority, collaborate with other ministries and administrations to support State action, with mitigation measures targeted at reducing climate change.

The Ministry of Defence's capability to combat climate change is undoubtedly limited, as it is the overall quantitative impact of military action on climate, when compared to other activities carried out by society. However, the potential of the Armed Forces to act in any environment and scenario, adapting to any situation, makes them an institution of reference, allowing them to assume a position of leadership with an important social drive. Military action should serve as an incentive and galvanise other institutions, particularly civil society stakeholders and citizens, to follow their example in the fight against climate change.

The Ministry of Defence's actions on climate change will be guided by the following principles:

- Improve the operability, efficiency and resilience of the Armed Forces in a much more demanding climate scenario.
- Adopt measures that do not jeopardise the fulfilment of the missions entrusted to the Armed Forces.
- Engage in active collaboration with national, regional, and global organisations and institutions—specifically, the European Union, NATO, and the defence industry—to attain the goals.
- Reduce the logistic footprint.
- Monitor the degree of compliance with the actions set out in this Strategy and adapt them as necessary.

Canadair aircraft from the Air & Space Force of the 43rd Air Force Group. The main mission of the 43rd Air Force Group is to collaborate in extinguishing forest fires and to participate in supporting Search and Rescue Service (SAR) missions. A highly versatile aircraft which can discharge both fresh and salt water to be able to load water in the closest place to the fire.

«Adopt measures that do not jeopardise the fulfilment of the missions entrusted to the Armed Forces»

4. Organisation

Based on the structure and duties established by the applicable laws, and in an effort to provide a comprehensive approach to their response to climate change, the Ministry has established the Working Group provided for in Directive 01/2023 of 17 March of the Minister of Defence.

The Working Group's main responsibility is to draft and develop proposals for climate change action, within the parameters of Spain's international obligations and national goals.

The Working Group is chaired by the Undersecretary of Defence for Political Affairs.

The first vice-chairmanship is held by the Director General for Defence Policy and the second vice-chairmanship by the Director General for Infrastructure.

The following authorities are also participating:

- The Director General for Armament and Materiel.
- The Director General for Political Affairs.
- The Director General for Information and Communications Technologies and Systems Centre.
- The Director General for Recruitment and Military Education.
- The Inspector General for Defence Health.
- The Chief of the Joint Defence Staff.
- The Deputy Chief of the Army Staff.
- The Admiral Deputy Chief of the Navy Staff.
- The General Deputy Chief of the Air & Space Force Staff.
- The General Chief of the Military Emergency Unit.

Each member of the Working Group will encourage and coordinate the development of action plans within their area of responsibility.

5. Lines of action

The fight against climate change requires, first of all, knowledge and awareness of the problem, and subsequently the identification and adoption of workable, coordinated, efficient and sustainable actions.

In general, proactive planning and collaboration with other national and international institutions should be enhanced. To this end, the following lines of action are established to be developed in two different areas, day-to-day life, performance and preparation of the force, as well as in the field of military operations.

5.1. Day-to-day life, performance and preparation of the force

5.1.1. Data collection and analysis

The effects and consequences of climate change must be evaluated and analysed in order to predict how they will affect the normal functioning of the Armed Forces' units, both at home and in operations abroad. This analysis will be carried out internally in each area of responsibility, although it should be assisted by other public or private bodies specialised in this field in order to:

- Support research related to climate change prediction and adaptation (think tanks, etc.).
- Support scientific projects on climate change and Defence (by cooperating with research organisations such as universities, research centres, Defence University Centres, and others), or by providing access to the available databases.

Assistance will be sought from other ministerial departments and public administrations that can provide scientific and technical expertise and knowledge, particularly, from the ministerial department responsible for managing the fight against climate change. Also, it is essential to analyse and assess the effects of climate on the healthcare provided to the staff, both in preventive medicine and medical treatment.

The General Staffs will regularly carry out analytical studies on energy consumption of facilities and systems, and will oversee the creation of statistics that will enable commanders of units, centres

The «Juan Sebastián de Elcano» school ship is an observatory of the oceans and climate change. Among other types of studies, it monitors the variation of ocean temperature profiles and will record sightings of cetaceans and other species encountered in its voyage.

and barracks to programme and execute their activities based on precise data. The goal is to reduce these consumptions as much as possible, without compromising the fulfilment of their missions and tasks.

Similarly, efforts will be made to coordinate and cooperate with other nations, organisations, or institutions especially the European Union and NATO.

This system will enable the gathering and reporting of data and statistics deemed necessary and relevant for the proper monitoring of actions, in coordination with other ministries, the European Union and NATO, while taking into account the security and confidentiality required for Defence objectives in the reporting of data.

The Military Staffs will progressively establish indicators to monitor the implementation of actions and objectives in this area.

5.1.2. Education, instruction, and training measures

Workshops about the effects of climate change and the adaptation and mitigation measures implemented by the Ministry of Defence, will be included in the training and the development of curricula, as well as in specific seminars.

Further training to environmental technicians will be provided in order to enable the Defence environmental structure develop and supervise climate change mitigation measures. Similarly, environmental advisers will be trained who, in compliance with the provisions of the Strategic Compass, can be deployed in the missions of the European Union's Common Security and Defence Policy.

Training plans will be updated to cover the possible consequences of climate change and operations in extreme weather conditions. In this respect, exercises and simulations will be adapted to reflect extreme weather scenarios. We will make the most of our cooperation with other countries and organisations, particularly the European Union and NATO using, where appropriate, their courses or other training resources when available, in addition to our own.

Members of the crew of the training ship «Juan Sebastián de Elcano» collecting data.

5.1.3.External and internal communication

The communication of Defence activities under this plan will be developed through:

- A strategic communication plan on the development of concepts and actions taken by the Ministry of Defence on climate change.
- An internal communication plan to raise awareness among MoD's members about the importance and impacts of climate change on the Armed Forces.

5.1.4. Environmental awareness

The contribution of all military members is essential to slow down the effects of climate change. To this end, and in addition to the measures in the areas of education, instruction and training mentioned in 5.1.2 above, greater environmental awareness will be promoted among the staff through the dissemination and exchange of ideas on the challenge of climate change.

«The contribution of all members of the Armed Forces is essential to slow down the effects of climate change»

For the first time, the «Águila» Acrobatic Patrol has used a sustainable fuel during the air parade for the 2022 National Day. In 2018, the Air & Space Force was certified in accordance with the UNE-EN ISO 14001 standard. Along with Repsol and ITP firms, the Spanish Air & Space Force is spearheading a technical working group aimed at advancing technological endevors concerning Sustainable Aviation Fuel (biojet).

5.1.5. Reduction of emissions and waste generation at military units and facilities

The reduction of greenhouse gas emissions is aimed at minimising the effects of climate change. In addition, inadequate waste management produces large quantities of greenhouse gases. It is therefore necessary to reduce waste generation and improve waste management, in order to hasten the transition towards a sustainable and toxic-free circular economy.

In order to achieve this, the following lines of action will be considered:

- Reduce the potential environmental impact associated with the activities of the Armed Forces.
- Set emission reduction targets, in collaboration with the Ministry in charge of managing the fight against climate change.
- Improve energy efficiency, based on automatic management and the implementation of environmental and energy audits.
- Encourage collaboration with other organisations and the industry in the field of energy Research, Development and Innovation (R&D&i).

«El Ferral» Training and Exercise Area, at the «Conde de Gazola» military base in León, has begun to be repopulated with more than 25,000 local trees.

- Consider the development of Key Enabling Technologies in the field of the defence industry.
- Establish a culture in military planning departments, as well as in the defence industry, which considers sustainability and impact factors across the whole life cycle of a product, from its design, to its manufacture, service and decommissioning phases. Particular attention will be paid to ensuring that future military equipment, where feasible, will have energy-efficient and low-latency modes of operation. This will enable to maintain minimal environmental impact and a rapid operational activation capability over time, even during operational deployments.
- Increase the importance of environmental criteria in public procurement in the field of Defence.
- Optimise travel and transport during training activities.
- Protect, conserve and improve the biodiversity of ecosystems on the MoD's land/ facilities, and create carbon sinks on MoD's property.

5.1.6. Adapting organisational structures

The current Army, Navy and Air & Space Force environmental protection structure will be further improved for greater effectiveness, introducing organisational changes to ensure that the impacts of climate change are assessed in both, the planning and the conduct of operations.

5.1.7. Adapting technological, logistic and Defence industrial capabilities

The faster pace of climate change will have an immediate impact on defence equipment, particularly that already in use. In this regard, more demanding operational conditions will affect the performance and service life of equipment and weapon systems. Therefore, as mentioned in point 5.1.5, the consequences of climate change need to be considered when developing the new material and units' operational requirements, and they should be included into the General Staff's Requirements and Objectives for future equipment.

There will also be a need to adapt weaponry and material, ships, aircraft, equipment and weapon systems to this factor during the mid-life modernisations. More generally, the maintenance of equipment should be carried out taking into account the climate aspect with an emphasis on evaluating and choosing materials which minimise the maintenance workload and logistical footprint.

Adaptation and mitigation measures will be included in the development of capabilities and technologies, such as reducing the carbon footprint, using renewable and alternative energy sources, improving the efficiency in the use of water, among others.

We will foster the analysis, development and implementation of new technologies which do not aggravate climate change, while replacing obsolete ones.

Defence Health will also be integrated or coordinated with national health warning systems, including vector surveillance and control programmes.

« We will foster the analysis, development and implementation of new technologies which do not aggravate climate change, while replacing obsolete ones »

The Spanish company UROVESA has been awarded a contract from the Ministry of Defense to develop a variant of its VAMTAC SK truck equipped with a hydrogen fuel cell propulsion system.

5.1.8. Adapting infraestructure

All Ministry of Defence infrastructures may be affected by climate change to a greater or lesser extent. It is about anticipating its consequences, by identifying vulnerabilities and taking preventive action, while taking advantage of technical opportunities to improve design and construction in order to better adapt to climate variations. This forward-looking approach needs to be integrated into projects and studies for investment and adaptation of infrastructures. To this end:

- Preventive actions and forecasts will be developed to maintain the operability of infrastructures, optimise their energy consumption and study the possible use of new energy sources. This will increase their resilience and the level of protection for personnel, material and equip-

ment against climate effects. Wherever possible, energy-efficient and low-latency mechanisms shall be installed on systems and infrastructures which require energy consumption.

- A significant focus will be placed on the requirement for additional training facilities to combat flooding, snowfall and forest fires.

The use of clean energy sources such as solar energy is becoming increasingly common in the Ministry of Defence's facilities.

5.2. Scope of operation.

The field of the execution of missions and operations is the most demanding for the Armed Forces, and this will become even more complex since it is increasingly usual to operate in unfavourable weather conditions. At the same time, it is during operations where the Army, the Navy and the Air & Space Force may have to resort to more environmentally aggressive activities. The actions listed in the preceding section, as well as the more specific ones listed below, will be used in both the preparation and conduct of operations.

5.2.1. Doctrine, planning and conduct of operations

It is imperative to adjust doctrine, planning and operational procedures to take into consideration potential future scenarios in which the effects of climate change severely impair existing conditions.

This adjustment must take into account our regular participation in operations and missions within the framework of the European Union, NATO, the United Nations and other international coalitions, and requires ongoing interaction with these organisations to establish a coherent body of doctrine and procedures.

Greater priority will be given, both to the existing doctrine and force instruction and training, as well as to the ability to operate in extreme weather conditions.

The planning and conduct of operations must also be adapted, with greater emphasis on climate aspects, and the possible impacts of extreme weather events. Climate factors also need to be considered when calculating risks.

UME intervention against forest fires.

Men and women are affected by the consequences of climate change in distinct ways in some of the areas where our Armed Forces are deployed. Usually, women and girls are more vulnerable to this phenomenon, as a result of poverty or mass migration, but also because of gender roles and inequality - latent or expressed - in their own societies' cultural practices. Therefore, it is crucial to incorporate a gender perspective into policies and actions that address the impact of climate change on conflicts and humanitarian emergencies, especially in military missions and operations

contributing to peace and stability. An approach centred on people and on the management of available resources combined with the promotion of human security through greater multilateral cooperation, particularly within the international organisations of which Spain is a member, is essential to address this major challenge.

5.2.2. Force protection

The harsh and demanding conditions inherent to military operations, may be exacerbated by the impact of adverse weather conditions, which may at times be extreme. In this situation, protecting personnel from harmful weather effects will be one of the top priorities for any unit commander.

Health and logistical needs related to the consequences of climate change will need to be properly assessed prior to the deployment of personnel. There will be a gradual transition towards preventive healthcare by adopting risk mitigation measures from the pre-operational phases.

5.2.3. Logistics and materials

Materials and supplies will be adapted to wider temperature ranges than those used today. Also, there will be equipment capable of operating in extreme weather conditions.

Reducing the carbon footprint will be a priority, along with promoting the use of reusable materials and equipment, enhancing logistical management, and optimizing transportation systems to minimise emissions. Wherever possible, the use of energy-efficient and low latency mechanisms in combat, combat support and logistical support systems will be explored and put into practice.

Special attention will be given to the utilisation of low-emission fuels and the gradual conversion of means of transport to run on clean energy sources.

5.2.4. Management of emergency situations

The Ministry of Defence provides civilian authorities with emergency management personnel and means, as part of the State's response to climate change, with the aim of mitigating its effects. This may be extended abroad in the event of weather or environmental disasters requiring multinational collaboration.

Due to its level of specialisation, the Military Emergency Unit is the MoD's primary instrument for managing emergency situations and one of the most important of the State's civil protection structure. Adapting and preserving its operational capability to support civilian authorities is therefore a top priority. However, all other Armed Forces can also be employed in emergency management, and such support is expected to become more frequent as the effects of climate change intensify.

This will include evaluating the danger posed by an increase in the demand for health care and, if required, adopting appropriate reaction measures, as well as preserving the operational capa-

bility to support civilian authorities in the event of disasters or emergencies caused by climate change.

The foreseeable growing participation of the Armed Forces in emergency management will also make it necessary to analyse and take measures to ensure that the carbon footprint associated with these interventions is minimised as far as possible.

«Due to its level of specialisation, the Military Emergency Unit is the MoD's main tool for managing emergency situations and one of the most significant components of the State's civil protection structure»

UME intervention in response to floods, which are becoming more frequent due to the effects of climate change.

6. Conclusions

Climate change is a factor which increases and multiplies risks, security challenges and threats to stability and international peace.

The Strategy outlines the framework for the Ministry of Defence as a whole, and the Armed Forces in particular, to orient their activity taking into account the adaptation to climate change, by protecting their capabilities, operability, and resilience to continue fulfilling their missions effectively, and contributing, as far as possible, to mitigating the consequences of climate challenge.

The measures to be adopted must not jeopardise the fulfilment of the missions entrusted to the Armed Forces.

The contribution of all members of the Armed Forces is essential to slowing the effects of climate change.

The analysis, development and implementation of new technologies, which do not worsen climate change will be enhanced, while obsolete ones will be replaced, in all responsibility chains represented in the organisation created under the Working Group.

Photovoltaic panels were installed at the communications centre «ALMENDRALEJO» (BADAJOZ), the first communications centre of the Spanish Armed Forces to be powered by this system.

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