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CLIMATE CRISIS, ARMED FORCES AND ENVIRONMENTAL PEACE

Authors: Pere Brunet · Chloé Meulewaeter · Pere Ortega

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Centre Delàs d'Estudis per la Pau
Carrer Erasme de Janer 8, entresol, despatx 9
08001 Barcelona
T. 93 441 19 47
www.centredelas.org
info@centredelas.org

Authors: Pere Brunet, Chloé Meulewaeter, Pere Ortega

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EXECUTIVE SUMMARY

The ecological crisis is undoubtedly a global threat and, thanks to pressure from social movements and the scientific community, governments and international institutions have finally recognized it as an existential threat.

But global capitalism, despite disguising itself in green and applying some protection measures, continues with its model of exploitation of non-renewable resources, using armed forces to subdue and if necessary repress the resistance to the plundering of the subsoil resources by the communities that inhabit these territories. Year after year, the resources of the military capabilities of the powerful countries increase with the aim of controlling the access to the resources they need to continue developing their economies.

This report continues and complements the research work begun in Report 47 of the Delàs Centre, analysing the relationship among power structures, militarized security and the environmental crisis, to then study in detail the environmental footprint of the military economy and the carbon footprint of the military sector in Spain (armed forces and military industry), addressing one of the main threats looming over humanity: the growing use of military force to impose the political / economic model and to repress the resistance of those who oppose that model. Also studying the environmental damage and GHG emissions arising from military activities and placing emphasis on the sectors surrounding the military economy – sectors analysed are those for which information is available to quantify them -. These are some of the main conclusions:

- The **causes of the current climate and environmental crisis are concentrated in a few countries** (China, USA, Europe, India, Russia and Japan, which emit 66.9% of the world total) and in very specific economic sectors: production and energy use, transportation and land

use. This is the consequence of the maintenance and improvement of the "way of life" of countries of the global North (and above all, that of their elites who hold power) at the cost of the total disregard of the populations of the global South, and at the cost of the depletion of the resources of the planet, resulting on a continued worsening of the ecological and environmental crisis.

- **Militarized security** plays an essential role in the constant worsening of the global environmental crisis. A role that consists of **protecting all non-democratic power agents** (extractive transnational corporations, large financial entities, military industry) that, with often unspeakable objectives of continuous growth for the personal benefit and profit of their ruling minorities, break the social and eco-planetarium equilibriums. A protection of the few that excludes the great majority of the population, through the so-called national security. A protection that is essential, because without it, the predatory system of resources that is threatening the planet and its biological system could not exist. The 23 countries that manufacture and export 97.8% of weapons worldwide, with only 35.48% of the world's population, are home to the 50 global economic agents that control more than 63,000 transnational companies worldwide (39.78% of the total) and generate 67.1% of all global greenhouse gas emissions. National security schemes, under the pretext of preserving "national interests", actually what they really protect are the economic interests of certain elites of large corporations, along **with the lucrative interests of those who pull the strings of the military-industrial complex**. .

- **The national security system**, with the help and protection of the armed forces and the military-industrial complex to the activities of the non-democratic structures and organizations of power that are continuously increasing the planetary environmental crisis, **should be considered instrumentally responsible** of the vast majority of current emissions, as well as the environmental crisis in all its areas.

- **The military environmental footprint** includes carbon footprint (GHG emissions), toxic remnants of war, and damage to ecosystems.

- **The main source of military GHG is the combustion of fossil fuels from military vehicles**, especially those of the Air Force. The carbon footprint of EU military spending in 2019 was estimated at around 24.8 million tCO_2e, which is equivalent to the annual emissions of approximately 14 million cars.

- **Toxic remnants of war** are produced throughout the "conflict cycle" (peace - war - post-war), and pollute the land, water and atmosphere, with effects that **can last for a long period of time**, with consequences on human life, flora and fauna.

- The **damage to ecosystems caused by military air, naval and land operations**, documented in the report, may be responsible for the alteration of ecosystems: destruction of habitats, diseases, mortality and even extinction of plant and animal species.

- Considering that the GHG emissions of the Spanish Armed Forces follow similar parameters to those of countries such as France and Germany, it is estimated that **Spain emits an average of 7.46 tCO_2 for each of its 120,000 military personnel**. If the emissions of Scope 1 and 2 are added to those of Scope 3 to measure the final carbon footprint, then indirect emissions total 1,900,000 tCO_2, and emissions rise to 23.3 tCO_2 for each Spanish military. A considerable figure that places the Spanish armed forces in GHG emissions at the same level as the rest of the European armed forces. In relation to the Spanish military industry, **Navantia**'s emissions were 14,148 tCO_2 in 2019, while the total emissions of the transnational **Indra** was 92,878 tCO_2 in the same year 2019. The military emissions of **ITP Aero** in 2018 are estimated in 1,316 tCO_2 while those of the **Airbus** group amounted to 48,970 tCO_2.

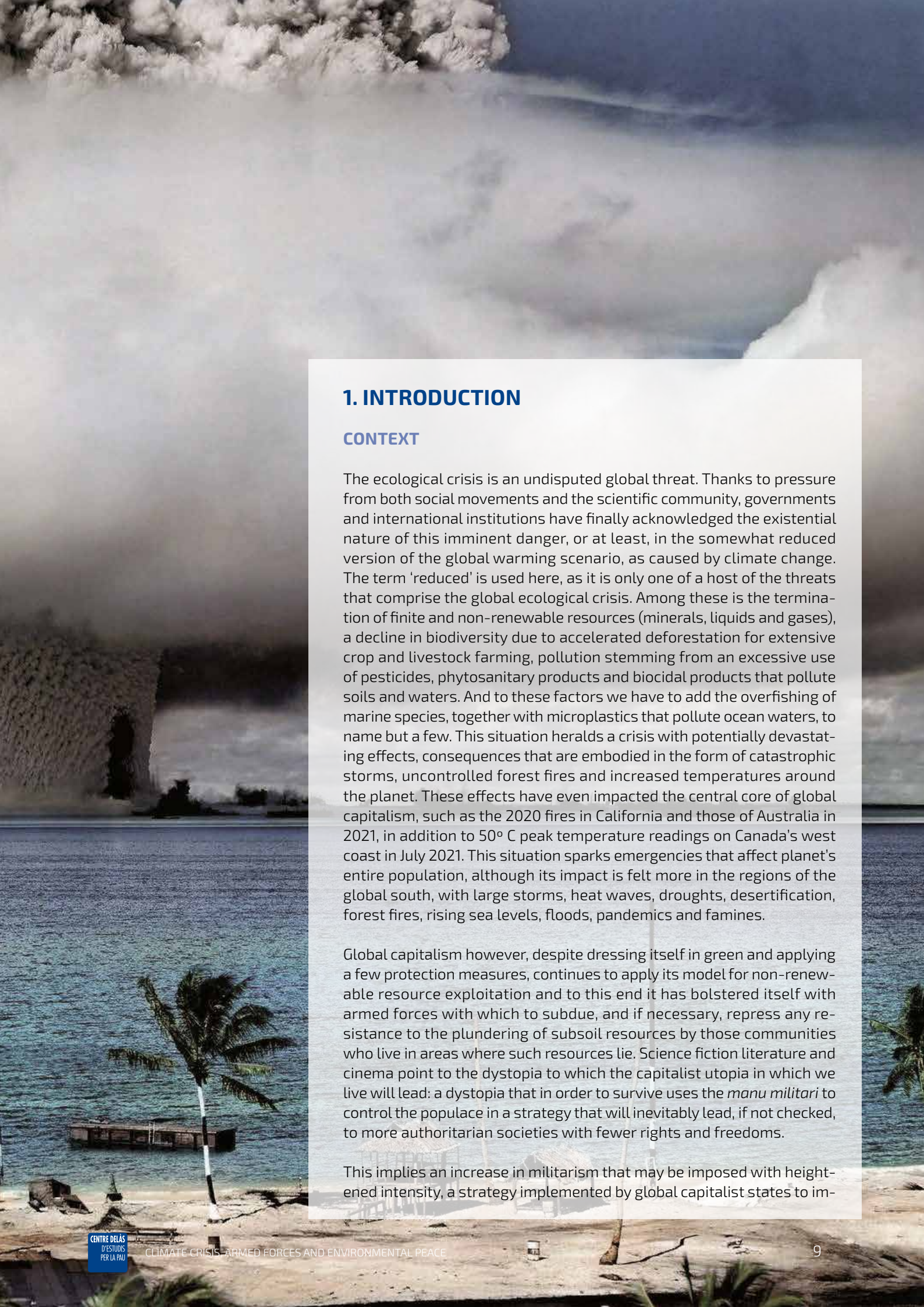
- **The Spanish Government must enforce the GHG emissions protocol** both for all business sectors in general, as well as for military industries in particular, as well as for all agencies dependent on the Ministry of Defence and, especially, the armed forces. Without rigorous monitoring, it will be impossible to comply with the reduction of the ecological footprint committed to in the environmental policy objectives of the 2015 Paris agreements.

- It is necessary to speak of **environmental peace**, especially since the appearance of the new geological stage that the planet is experiencing, the Anthropocene, a stage caused by the aggressions developed since the Industrial Revolution by human action and that has altered life in the biosphere .

- The ecological crisis and its most visible part, climate change, should be the object of study in **peace research from an ecofeminism and post-violent perspective**, because the ecological crisis is undoubtedly a multiplier of threats to humanity and In that sense, also for peace. Threats that become visible through multiple phenomena that alter the life of the planet and cause great fa-

mines and massive migrations. That is why it is necessary for peace research and social movements to care and confront the aggressions that are being perpetrated against nature and that are the cause of multiple conflicts that erode environmental peace.

The human security of all the people of the planet cannot be based on the current militarized technologies of national security that allow the plunder of the planet while exercising violence against "the others", in this global village that we all share and in which we are all **us**. In this sense, we understand that **actions for the climate and the environment should include in their discourse the need for a reduction in world military spending** that will make it possible to reduce the production of arms and arms exports, as well as the **transfer of current military resources towards action programs to address the great global challenges** that affect us.



1. INTRODUCTION

CONTEXT

The ecological crisis is an undisputed global threat. Thanks to pressure from both social movements and the scientific community, governments and international institutions have finally acknowledged the existential nature of this imminent danger, or at least, in the somewhat reduced version of the global warming scenario, as caused by climate change. The term 'reduced' is used here, as it is only one of a host of the threats that comprise the global ecological crisis. Among these is the termination of finite and non-renewable resources (minerals, liquids and gases), a decline in biodiversity due to accelerated deforestation for extensive crop and livestock farming, pollution stemming from an excessive use of pesticides, phytosanitary products and biocidal products that pollute soils and waters. And to these factors we have to add the overfishing of marine species, together with microplastics that pollute ocean waters, to name but a few. This situation heralds a crisis with potentially devastating effects, consequences that are embodied in the form of catastrophic storms, uncontrolled forest fires and increased temperatures around the planet. These effects have even impacted the central core of global capitalism, such as the 2020 fires in California and those of Australia in 2021, in addition to 50º C peak temperature readings on Canada's west coast in July 2021. This situation sparks emergencies that affect planet's entire population, although its impact is felt more in the regions of the global south, with large storms, heat waves, droughts, desertification, forest fires, rising sea levels, floods, pandemics and famines.

Global capitalism however, despite dressing itself in green and applying a few protection measures, continues to apply its model for non-renewable resource exploitation and to this end it has bolstered itself with armed forces with which to subdue, and if necessary, repress any resistance to the plundering of subsoil resources by those communities who live in areas where such resources lie. Science fiction literature and cinema point to the dystopia to which the capitalist utopia in which we live will lead: a dystopia that in order to survive uses the *manu militari* to control the populace in a strategy that will inevitably lead, if not checked, to more authoritarian societies with fewer rights and freedoms.

This implies an increase in militarism that may be imposed with heightened intensity, a strategy implemented by global capitalist states to im-

pose their domination over the Earth's ever-scarcer resources. This is a policy these states need so as to continue with their predatory consumption model.

Militarism as an ideology is however impossible to measure in quantifiable terms, as in the social sciences, regardless of a substantially empirical sociological, psychological, economic or historical analysis, where an approximation is possible, it cannot be calculated in terms of the formal sciences (logics and mathematics). Therefore, when it comes to quantifying the ecological footprint of the entire military structure as a whole, it is more appropriate to refer to the armed forces, as militarism involves a conduct or deviation that occurs within armies in order to impose their plans on civil power (Ortega, 2018). Having said this, militarism is still gaining influence, and with ever-greater intensity in the capitalist societies of the current globalized world, a fact that can be seen when we observe how state military power has been reinforced, and the use of military violence has been (and is still) chosen to resolve the conflicts that capitalism itself creates. As such, these military capabilities increase year after year, with the aim of controlling access to the resources they need to continue developing their economies. This situation is the reason why this text tackles one of the main threats currently looming over humanity; the increasing use of military force to counter societal reactions and the social effects of climate change, especially GHG emissions produced by military activities, while highlighting those areas involving the military economy. Although not all these areas have been covered, at least those on which information is available have been analysed in order to quantify them.

Several international regulations have been established that present action objectives that aim to restrict further planetary temperature increases. The United Nations Framework Convention on Climate Change (UNFCCC) came into force on 21 March 1994; it is currently ratified by 197 countries. It was the first international regulation to warn about the environmental crisis when no extensive scientific consensus on this issue existed as it does today. The convention's main aim was to achieve "the stabilization of greenhouse gas concentrations in the atmosphere at a level that prevents dangerous anthropogenic interference to the climate system" (United Nations, 1992). In 1997, the Kyoto Protocol was incorporated into the treaty, to establish action objectives and legally binding measures. In 2015 the Paris Agreement was added to the treaty, which established its current objectives on limiting future global temperature rises to 1.5 °C. The Kyoto Protocol however explicitly excluded CO_2 emissions from military activities from the reporting targets due to pressure from the great powers. In the Paris Agreement, although military GHG emissions were included in the emission reduction targets, the criteria on publishing data related to military activity was left to the discretion of each state. Despite this, UNFCCC reporting guidelines dictate that GHG emissions must be reported in the clearest manner possible (Parkinson & Cottrell, 2021).

This report is a continuation of, and an addition to, the research work that began with Report 47 from the Delàs Centre,[1] which analysed the relationship between power structures, militarized security and the environmental crisis, before studying the environmental footprint of the military economy and the carbon footprint of the military sector in Spain in detail. This report ends with several proposals for positive peace that relate to environmental peace, analysing the anthropocenic vision (from the term 'anthropocene'[2]) and its relationship with ecofeminism and human security.

THE RELATIONSHIP BETWEEN POWER STRUCTURES, MILITARISED SECURITY AND THE ENVIRONMENTAL CRISIS

This introductory section seeks to reveal that the cause of the current climate and the environmental crisis (using data and several specific examples) in just a few countries and in highly specific economic sectors, is effectively destroying the planet. It also reveals that the rights of the vast majority of people are being ignored, that the main agents in this crisis are a few transnational power centres that act outside the scope of democratic institutions, that the situation may almost certainly lead us to an irreversible and suicidal dynamic within just a few decades, and that this entire system imperatively demands a military security system that guarantees the preservation of these agents' interests.

THE ENVIRONMENTAL CRISIS, THE CURRENT SITUATION AND PERSPECTIVES

Over ten years ago, a scientific team led by Johan Rockström (Rockström, 2009) proposed nine limits that must not be surpassed by humanity at a planetary level in order to stay within a safety threshold that would allow current and future life to continue in acceptable conditions. These suggestions included limiting the concentration of greenhouse gases, avoiding the degradation of the biosphere's ecological

1. Meulewaeter, Chloé and Brunet, Pere Eds. (2021), "Militarism and Environmental Crisis: A Necessary Reflection", Report 47, Delàs Centre for Peace Studies. Available at: http://centredelas.org/publicacions/militarismoycrisismedioambiental/?lang=es
2. Anthropocene, according to some scientists is the current, new planetary geological stage, one that is characterised by the aggressions carried out by human activity on the biosphere.

functions, while preserving its biodiversity, controlling the biochemical contributions of nitrogen and phosphorus, forest surface areas and soil use, limits on the acidification of the oceans and ozone levels in the stratosphere, regulating the use of fresh water, limiting the concentration of aerosols in the atmosphere, and controlling pollution with respect to new substances, such as plastics, nuclear waste, and others.

The current situation however has worsened and is a cause for deep concern. In 2018, a scientific article by Will Steffen, Johan Rockström, Hans Joachim Schellnhuber and other authors (Steffen, 2018) used a wealth of evidence and verifiable facts to conclude that we are facing the danger that, in coming decades, we will cross the irreversible limit that would lead to a destabilization of the biosphere on a planetary scale. If our actions on a global scale are not radical enough, we could exceed a warming limit of 1.5 degrees and reach temperatures 2 degrees higher than the average temperature during the pre-industrial era. This would activate non-linear dynamics, with interactions and feedback that currently remain "dormant" and that humanity could no longer control: radical changes in the bacterial system, extreme loss of biodiversity, methane emissions, the loss of "permafrost", the acceleration of processes, desertification and melting of the poles, uninhabitable regions and new pandemics. In this scenario the biosphere could be pushed into an uncontrollable domino effect that according to estimates, could lead to an average temperature rise of 4 or 5 degrees above the temperature of the pre-industrial era. In short, an anthropogenic warming of about two degrees would lead to a subsequent automatic and inevitable warming of another two degrees or more.

Experts and scientists explain that future prospects depend on the decisions and actions that we take over the next few years on a global scale. Humanity requires urgent, effective and coordinated action plans. As if otherwise, and a warming of two degrees activates the uncontrolled cascade of changes that the study has predicted (Steffen, 2018), Hans Joachim Schellnhuber (the co-author of the study) considers that the humanitarian catastrophe would be of such magnitude that the world population could fall drastically from today's 7,500 million to about 1,000 million inhabitants. We need not state which regions and countries of the planet would be affected.

THE GEOGRAPHICAL AND SECTORAL DISTRIBUTION OF GREENHOUSE GAS (GHG) EMISSIONS

Contributions to global warming and the environmental crisis are clearly not the same across the board. In the publication by Meulewaeter & Brunet, 2021 the 23 countries that manufacture and export 97.8% of weapons worldwide were studied and it was found that these countries, which account for 35.48% of the world's population, host 50 global economic agents that control 39.78% of all transnational companies and generate 67.1% of all global GHG greenhouse gas emissions.

In this study we have analysed the 6 countries and major global players (the EU-27 together with the United Kingdom is considered as one of these six players) that appear in Table 1, with a similar conclusion: all of them together generate 66.9% of all global CO_2 emissions and, by extrapolation, GHG.[3]

It is significant that only the 5 countries shown in Table 1, together with Europe, generate more than two thirds of the world's total CO_2 emissions. This data comes from the European Union's EDGAR database with the addition of emissions from the military sector

3. According to Hannah Ritchie and Max Roser (Ritchie, 2021), CO_2 accounts for 80.0% of total GHG emissions, followed by methane (12.2%). Therefore, current global GHG emissions in tons of CO_2 equivalent (CO_2e) can be calculated by multiplying the emitted tons of CO_2 by a factor of 1.25 (where 1.25 = 100/80)

Table 1.The CO_2 Emissions of the Main Countries

	Habitants (millions)	Total CO_2 (Mt)	Per capita CO_2 (tons)	% of total CO_2	Militar CO_2 (Mt)
China	1,420	11,530	8.12	30.3	
United States	329	5,106	15.52	13.4	212
UE-27 + UK	520	3,364	6.47	8.7	24.83
India	1,369	2,601	1.9	6.8	
Russian Federation	144	1,792	12.45	4.7	
Japan	127	1,154	9.09	3.0	

Source: Prepared by EDGAR (https://edgar.jrc.ec.europa.eu/).
Emissions from the EU-27 + UK military sector come from (Parkinson, 2021), while emissions from the US military sector can be found in Meulewaeter, 2021: p. 39.
Mt: millions of tons. 2019 data excluding US military emissions, corresponding to 2017.

from (Parkinson & Cottrell, 2021) and (Meulewaeter & Brunet, 2021). Table 1 shows that, with the exception of India, per capita emissions in these countries exceed 6 tons of CO_2 per year.

Table 2, on the other hand, is based on data from obtained from 2016 *Our World in Data* databases[4] and compares the annual per capita GHG emissions, in equivalent tons of CO_2 (CO_2e) by sector. It includes countries in Asia (China), North America (USA), Europe (Spain, Germany, France and Italy) and Africa (Nigeria and the Democratic Republic of the Congo):

Spain and France (together with Nigeria) are the only countries in Table 2 where emissions from the transport sector exceed those of energy production. The case of France is explained by its strong dependence on nuclear power generation, while in the case of Spain, the table shows an excessive dependence on road transport (as with Germany and the US). In all events, the comparison between the joint Transport + Energy emissions of the first six countries with those of the two African countries is alarming and unacceptable.

From a global standpoint, the study by Hannah Ritchie and Max Roser (Ritchie, 2021) shows CO_2e emissions by sector, and reveals that 73.2% of these emissions are from energy production and use, while 18.4% come from land use. The energy-related 73.2% includes industrial use (24.2%), road transport (11.9%) and domestic use (10.9%), while the 18.4 % from land use comprises emissions from agriculture, changes in land use and deforestation, together with the food industries. Rail transport, which accounts for only 0.4% of emissions, is a clearly underused sector. In terms of Spain in a national context, according to MITECO[5] and the corroborated data from Table 2, that the sector with the highest level of GHG emissions in 2019 was road transport (26.9%), followed by industrial activities (24.3%), electricity generation (13.7%), agriculture and livestock farming (12.0%), fuel consumption in the residential, commercial and institutional sectors (8.9%), and waste (4.4%). In terms of gases, CO_2 accounts for 80.0% of all GHG emissions, followed by methane (12.2%). This information may be reviewed together with that available on the *Global Footprint Network*.[6]

The majority of global CO_2 emissions (89%) stem from the use of fossil fuels, especially in terms of heat and electricity generation, transport, manufacturing and consumption.[7]

4. Our World in Data (2021), "Per capita greenhouse gas emissions: where do our Emissions come from?" - Available at: https://ourworldindata.org/emissions-by-sector#per-capita-greenhouse-gas-emissions-where-do-our-emissions-come-from (Consultation: 27 June 2021)
5. National Inventory of Emissions to the Atmosphere. Greenhouse Gas Emissions", the Ministry for the Ecological Transition and the Demographic Challenge, National Inventory of Greenhouse Gases, Series 1990-2019. Available at: https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/temas/sistema-espanol-de-inventario-sei-/Inventario-GEI.aspx - Report Summary: https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/temas/sistema-espanol-de-inventario-sei-/documentoresumeninventariogei-ed2021_tcm30-524841.pdf
6. Footprint Network (2021): Global Footprint Network's National Footprint and Biocapacity Accounts: 2021 Public Data Package: https://www.footprintnetwork.org/licenses/public-data-package-free/
7. Mengpin Ge and Johannes Friedrich (2020), "4 Charts Explain Greenhouse Gas Emissions by Countries and Sectors", Report from the World Resources Institute: https://www.wri.org/insights/4-charts-explain-greenhouse-gas-emissions-countries-and-sectors

Table 2. Sectoral per capita CO_2 Emissions for Several Countries

	Transport	Energy porduction	Agriculture	Industry
China	0.6	3.28	0.52	0.79
United States	5.3	6.64	1.18	0.69
Spain	1.9	1.85	0.86	0.42
Germany	1.96	4.21	0.76	0.32
France	1.89	0.79	1.15	0.32
Italy	1.68	1.95	0.53	0.26
Niger	0.27	0.14	0.44	0.11
D.R. Congo	0.02	0.00	0.34	0.02

Source: Prepared on the basis of Our World in Data: "Per capita greenhouse gas emissions: where do our emissions come from?" Available at: https://ourworldindata.org/emissions-by-sector#per-capita-greenhouse-gas-emissions-where-do-our-emissions-come-from (Consultation: 27 June,2021). Annual tons per capita and by sector. Data for 2016

Within the scope of Spain, the majority of GHG emissions are concentrated in the sectors of road transport and energy production and use. This data hides rather than differentiates between either those emissions from the defence sector, or those of arms industry (these are analysed in detail in this same report in the chapter by Pere Ortega. In global terms, 91.6% of emissions (73.2 + 18.4 = 91.6%) are from energy production and use, in addition to land use. Once again, this data hides, rather than details emissions from the military-industrial complex, although, as shown in Table 1, in the US these emissions account for 4.15% of the total (212 compared to 5,106).

In all events, and as shown by Tables 1 and 2, the causes of the current climate and environmental crisis originate in just a few countries (China, USA, Europe, India, Russia and Japan, which emit 66.9% of the world's total) and in highly specific economic sectors: energy production and use, transport and land use. This has resulted from maintaining and improving the "way of life" of those countries in the global north (and above all, that of their power-holding elites) at the cost of the totally-disregarded populations of the global south, the depletion of the Earth's resources and a continued worsening of the ecological and environmental crisis.

NATIONAL AND MILITARY SECURITY: AN ESSENTIAL SYSTEM

In November 2010, Jan Kopernicki, a vice president of Shell, stated that there was "a gaping hole in the UK's defence strategy", and called for increased naval spending, while promoting the acquisition of a new generation of warships scheduled for 2020. According to Buxton in his publication of 2015, Kopernicki's statement was made in a context of austerity and cuts that affected millions of people caught in the midst of a crisis, yet it was well-received in both houses of the British Parliament. The issue centred on providing more military vessels to ensure the safety of crude oil transportation, so preventing the alleged "hole" in the country's defence strategy." In the parliamentary debate, the Liberal-Democrat member John Burnett argued that trade routes to the Gulf of Aden should be considered "part of our national concern, being a legitimate security interest for us" (Buxton, 2015). Three years earlier, Margaret Beckett, the UK Secretary of State for Foreign Affairs had stated that "a central responsibility of the government is to make sure that the rest of the world is safe, being well disposed for our businesses."

In the Netherlands, since 2012 (Buxton, 2015), the Dutch government has been providing military escorts to ships transporting crude oil and other mineral resources. The cost of these military escorts has been estimated at 29 million dollars, however shipping companies only pay half of this, with the Dutch government providing the remaining 14.5 million dollars.

These are cases that show, as a study by Plattform London[8] reveals, that "oil and gas companies are demanding military subsidies to protect their profits at a time of cuts in public spending."

According to a 2018 report,[9] US spends $81 billion per year on the military protection of transportation and fuel supply, which totals 16% of its Defence Department budget. Several retired military personnel related to the SEFA association have stated that protecting these crude oil supplies is preventing budgeted assets from being used for other priorities.[10]

With examples such as those indicated, and with many other similar cases, the fundamental role that militarized security plays in the constant worsening of the environmental crisis in planetary terms is clear. This is a basic role that consists of protecting all non-democratic power agents (extractive transnational corporations, large financial entities, the arms industry) with often unconfessable objectives of continuous growth for the personal benefit and profit of their ruling minorities that destroys the social and eco-planetary balance. This 'protection of the few' leaves the vast majority of the population on the side-lines through the application of alleged national security doctrines. It is a protective strategy that is absolutely essential, as without it, the unrestrained system that is threatening the planet and its biological system could not exist. It is no coincidence that, as we have already mentioned (Meulewaeter & Brunet, 2021), the 23 countries responsible for manufacturing and exporting 97.8% of weapons worldwide, with 35.48% of the world's population, host the 50 global economic agents that control over 63,000

8. Plattform London, «A Secret Subsidy – Oil companies, the Navy and the Response to Piracy». Available at: https://platformlondon.org/p-publications/a-secret-subsidy-oil-companies-the-navy-and-the-response-to-piracy/ (Consultation 30 June 2021)
9. Report on "*Securing America's Future Energy*" (SAFE) on the military cost of protecting fuel supplies, 2018: http://safe2020.wpengine.com/wp-content/uploads/2020/03/Military-Cost-of-Defending-the-Global-Oil-Supply.-Sep.-18.-2018.pdf (Consultation 25 July 2021)
10. Tom DiChristopher (2018), "US spends $81 billion a year to protect global oil supplies, report estimates": https://www.cnbc.com/2018/09/21/us-spends-81-billion-a-year-to-protect-oil-supplies-report-estimates.html (Consultation 25 July 2021)

transnational companies worldwide (39.78% of the total) and generate 67.1% of all global greenhouse gas emissions.

Global warming and the environmental crisis we are experiencing is the consequence of a worldwide system of injustice that aims to maintain and improve the lifestyles of certain social classes in the countries of the global north, using militarized national security schemes. Under the pretext of preserving "national interests", what is in fact protected are the economic interests of certain elites in large corporations, along with the lucrative interests of those pulling the strings of the military-industrial complex. These are corporations that escape state control, while demanding their help and protection with the complicity of the military network. These are globalized corporations that in many cases are allowed to move their products and capital across borders, while these same frontiers are closed to people (Oliveres, 2021). They protect themselves against immigration, once again with systems of "military security", which in fact threaten the dignity and safety of those making migratory journeys.

IN SUMMARY: THE MILITARIZED SECURITY SYSTEM MUST BE CONSIDERED AS THE INSTRUMENTAL RESPONSIBLE FOR THE VAST MAJORITY OF CURRENT EMISSIONS

The military-industrial complex, which comprises both the armed forces and the defence industry, promotes a militarized national security strategy that maintains those power structures that continue to exacerbate the planetary environmental crisis. It is a system that neither considers ecological or planetary limits, nor does it respect the dignity of all peoples, it uses patriarchal schemes of violence, and rejects proposals of coordinated action at a planetary level in the face of global crises, nor does it accept the feminist vision of the essential equality of all people, while it snubs an action as fundamental as caring for people. The military security system, therefore, as an indispensable mechanism of the power structures that ignore the people, is at the root of today's planetary problems, it is an essential and instrumental actor that is responsible for the current process of climatic and environmental destruction.

2. THE ENVIRONMENTAL FOOTPRINT OF THE MILITARY ECONOMY

THE THREE CATEGORIES MILITARY-ORIGIN ENVIRONMENTAL DAMAGE

This section is a description – as complete as we can make it – of the scope of the ecological footprint made by the military business cycle. To this end we have presented distinct approaches that have been made with respect to the environmental impacts of military activity. We first detail the classification of military GHG, which is based on the criteria established by the IPCC. Using this classification, studies and reports have been published on the extent of Norwegian, British and European military carbon footprints (Parkinson, 2020; Parkinson & Cottrell, 2021; Sparrevik & Utstøl, 2020). We then present a classification made by "*The Remnants of War Project*", which categorizes toxic waste resulting from military activity according to three stages of the war cycle, which span peace, war, and post-war periods (Kellay, 2014). And thirdly, we explain how military environmental damage is inflicted on fauna and flora, and ecosystems in general, using a review by Lawrence, Cooke, Zolderdo, Struthers, and Stemberger (2015). This allows us to provide a broad picture in terms of the scope of military environmental damage, which we finally relate to the different stages of the military economic cycle.

MILITARY GREENHOUSE GASES

The term 'carbon footprint' refers to those greenhouse gases emitted into the atmosphere. To calculate the carbon footprint, the CO_2e (carbon dioxide equivalent) is estimated; this includes greenhouse gases of all types, such as the carbon dioxide (CO_2) produced from the burning of fossil fuels, methane (CH^4), which is generated mainly on agricultural sites; nitrogen oxide (N^2O), which is emitted during industrial processes and in agriculture, and refrigerant gases (Berners-Lee, 2010). Several models are used to calculate the carbon footprint of any object of research, one is the life cycle analysis. This methodology permits the evaluation of those environmental impacts associated with all stages of the life cycle of a product or process. Another is the input-output model, which analyses the interdependence of those industries within an economy. Using these methodologies, Berners-Lee (2010) calculated that during the Iraq war (2003-2009) a carbon footprint equivalent to that of the entire UK economy was accumulated in an estimated period of between 3 and 8 months.

A recent study was based on the same methodology in order to assess the life cycle of GHG emissions in the Norwegian defence sector (Sparrevik & Utstøl, 2020). The authors estimated GHG emissions from all Norwegian defence sector activities in 2017, referenc-

ing the methodology used by the IPCC[11] to formulate national GHG emission inventories. The classification of these activities is found in table 3.

The results attained by Sparrevik and Utstøl (2020) show that the main source of military GHG emissions stems from fossil fuel combustion in military vehicles, ships and aeroplanes, and represents approximately 50% of all emissions from the Norwegian defence sector. In other words, fossil fuel use in training and military operations is the main activity responsible for planetary pollution by military GHGs. According to data from the United States (Belcher, Bigger, Neimark, & Kennelly, 2019), the main GHG emitter within the branches of the armed forces is the Air Force (over 50% of all emissions), followed by the Navy, the Army and the Marines.

11. Scope 1: GHG emissions related to fossil fuels. Scope 2: GHG emissions related to energy production. Scope 3: Indirect GHG emissions, which may occur in all supply chain phases. Their contribution to global life cycle emissions are considerable, especially in the military sector, according to the study authors (Sparrevik & Utstøl, 2020). Scopes 1 and 2 are subject to mandatory publishing requirements.

Following this methodology, the organisation *Scientists for Global Responsibility* has published two reports on the military sector's carbon footprint in both the United Kingdom and in the European Union (Parkinson, 2020; Parkinson & Cottrell, 2021). The *"Under the Radar"* report estimates the carbon footprint of the EU military sectors, examining all available data in terms of military spending, from both government sources and from the military industries of the six largest EU countries (France, Germany, Italy, the Netherlands, Poland and Spain), and from the EU as a whole. The carbon footprint from EU military spending in 2019 was estimated to total some 24.8 million tCO_2e, which according to the authors is equivalent to the annual emissions from approximately 14 million cars (Parkinson & Cottrell, 2021). However, following on from the authors of the report, current trends in military GHG emissions levels in the EU are difficult to determine due to a lack of data, and as such the report's conclusions provide only highly conservative estimates of CO_2e emission levels. Furthermore, the combined GHG emissions of the military, the military technology industry and their supply chains do not

Table 3. Inventory of the Lifecycle of Operational Activities in the Defence Sector

	Tipo y metodología.	Activity	Description
Scope 1	GHGs generated within territorial or organizational limits (also at an international level, provided that they are "owned" by the national government). Official public sources and annual reports of the companies.	Fuel consumption	Use of fossil fuels from military vehicles, ships and airplanes
		Heating of buildings	Emissions from heating and cooling buildings
		Use of munitions	Gunpowder combustion
		Use of chemical products	Decomposition of refrigerant substances in air, water and soil
		Fugitive emissions	Emissions of ozone-depleting substances from heat pumps and air conditioning machines
Scope 2		Purchased energy	Purchased and self-produced electricity, and emissions from heating production
Scope 3	GHGs from military activities, but the sources are not owned or controlled by the state/organization. To estimate the carbon footprint, economic input-output models have been developed using military spending data.	Vehicles, ships and aircraft	Production of vehicles, ships and aircraft
		Munitions	Production of munitions
		Fuel	Production of fuel for vehicles and heating
		Production of chemical products	Emissions from anti-freeze production
		Goods transport	Contractors' services for transportation of military goods, including maintenance
		Suppliers of water	Drinking water used and treated waste water
		Purchase of goods and services	ICT equipment, educational, administrative and economic services. Operating cost of own machines and equipment. Purchase of uniforms, food and various materials
		Buildings and construction	Construction of buildings and infrastructures, including maintenance
		Business trips	Emissions from personal transport with civilian vehicles (air and car transport)
		Water treatment	Consumption of drinking water and treatment of waste water
		Waste processing	The waste products produced in the organisation are divided into the recovery of goods, energy generation and elimination

Source: Sparrevik and Utstøl, 2020.

appear to have been included in the UNFCCC reports, which served as the basis for the data collection of the "*Under the Radar*" report, and which would again lead to a significant underestimation of EU military GHG estimates. The authors also warn that the combination of the upward trend in military spending to reach the NATO objective of 2% of GDP, technological modernization programmes and the military deployments of NATO and the EU outside Europe, could increase military GHGs (Parkinson & Cottrell, 2021). However, while it is possible to estimate the GHG emissions from the armed forces or the military industry with the available data, there is no clear mechanism to assess or report on GHG emissions that result from the use of weapons on a battlefield, e.g. from the destruction of a fuel tank, or those emissions created during reconstruction after a conflict (Parkinson & Cottrell, 2021), which are facts that also underline the conservative nature of the data published using this methodology.

THE TOXIC WASTE OF WAR

Toxic military waste is another source of environmental pollution. According to Kellay (2014), the North American and European armies openly acknowledge that the use of ammunition leads to the release of toxic substances into the water, soil and air. These effects are, however, poorly documented. The "*Toxic Remnants of War Project*" project describes these toxic and radiological substances that arise from military activity and which pose a danger to humans and ecosystems, which they have named 'toxic remnants of war' (TRW). These fall into two categories: Direct TRWs and Indirect TRWs, and they arise throughout the conflict cycle (spanning military activity during three periods: peacetime, armed conflict, and the post-conflict phase). While Direct TRWs are the direct result of military activity, Indirect TRWs are usually created by the collapse of institutions and infrastructures as a result of instability and conflict (Kellay, 2014). As a consequence, the loss of territorial or border control may lead to an increase in the trade and illegal dumping of toxic waste, while the lack of services for the disposal of household and hazardous waste may lead to the burning and dumping of waste that harms the health of the public and ecosystems alike, the lack of security services in places where toxic substances are stored may lead to looting and the exposure of the civilian population to these substances, and in general, the absence of environmental regulations, or the fact that their implementation is hindered may lead to industrial practices that are harmful to the environment.

During peacetime, or rather throughout the militarization process, military activity causes a great deal of toxic environmental damage. The pollution of land and water occurs in military bases and firing ranges due to the use of heavy metals, fuels, lubricants, solvents, and explosive materials. The handling, production, storage and decomposition of polynitroaromatic explosive - trinitrotoluene (TNT) – (for example) has resulted in extensive contamination in soil and groundwater. This explosive is toxic to humans, animals, plants and microorganisms and it decays slowly. Many land areas in Europe and North America are contaminated by TNT, which has been used in the manufacture of explosives since World War II (Dillewijn et al., 2008). Table 4 details some of the most polluting chemicals used by the military.

The environment suffers both directly and indirectly during armed conflicts. Direct impacts include, among others, the use of toxic substances in ammunition, such as heavy metals, explosives, and defoliants, attacks and fires on industrial and oil sites, or oil spills at sea. In the post-conflict period, TRWs from battlefield remnants, damaged or abandoned industrial sites, and demolition debris after bombardments all

Table 4. Military Toxic Contaminants

Military Toxic Pollutants	Use	Environmental Contamination
RDX (cyclotrimethylenetrinitramine)	Nitro amine explosive	Water and land pollution. It dissolves easily and contamination spreads underground.
TNT (trinitrotoluene)	Explosive.	Water and land pollution
Ammonium perchlorate	Missile propellant, explosive.	Water and land pollution. It dissolves easily and contamination spreads underground.
Dioxin TCDD (Tetrachlorodibenzodioxin) toxic to mammals, and vegetation.	Component of the defoliant (herbicide) 'Agent Orange'.	Endocrine disruptor and carcinogenic compound.
Lead	Bullets and projectiles	Toxic to vertebrates, especially the nervous system.
Uranium	Bullets and projectiles	Soil contamination, toxic to mammals, and vegetation.

Source: Toxic Remnants of War, (Lawrence et al., 2015)

remain a risk to public health and the environment for lengthy periods (Kellay, 2014). Table 5 shows the types of contamination detailed in the *Toxic Remnants of War* report.

MILITARY IMPACTS ON ECOSYSTEMS

War and military activity can also alter ecosystems, and have long-lasting and irreversible effects on the natural world. A description of these effects may be found in a recent review of military damage inflicted on ecosystems (Lawrence et al., 2015). In this investigation, military damage to the environment is divided into categories of armed conflicts, nuclear war, military infrastructure and bases, and military-origin chemical and metallic contamination. This information is presented in Table 6.

Military damage to ecosystems is widespread (Lawrence et al., 2015). In armed conflicts, air, naval and land operations seriously affect fauna and flora and effects range from the alteration of ecosystems to the potential extinction of species. In the case of nuclear weapons, all life is placed directly in danger, as the combined effect of nuclear warhead detonation releases energy in three different ways: thermal energy (35%), kinetic energy (50%), and radioactive energy (15%) and has devastating consequences for humans, animals and nature. Damage to ecosystems also relates to military bases and infrastructures, and includes all those actions involved with their construction and maintenance, as well as those associated with training. The damage done in this case resembles that which occurs during armed conflicts, however with the added aggravating factor that it is inflicted in a prolonged and sustained manner in a single place. Finally, chemical contamination of land and water occurs throughout the conflict cycle - peacetime, armed conflict and the post-conflict period - and affects people, animals and vegetation. This category summarizes the chemical damage collected by the analysis made in the *Toxic Remnants of War*.

IN BRIEF: THE ENVIRONMENTAL FOOTPRINT OF THE MILITARY ECONOMY

Militarization and armed conflict are, as we have seen in the previous sections, closely linked to wide-ranging and diverse types of damage to the environment, including GHG emissions, toxic waste and impacts on ecosystems. In Centre Delàs Report 47 "*Militarism and Environmental Crisis, a Necessary Reflection*" (Meulewaeter & Brunet, 2021), we showed how the stages of the military economic cycle (the process that describes the entire economic conglomerate surrounding the defence economy, from the annual approval of public defence budgets to the final use of weapons in armed conflicts) are related to military damage to the environment. Here we have broadened and deepened our analysis of the scope of the distinct environmental impacts that are associated with military economic cycle. Actions with severe impacts on the environmental crisis take place throughout peacetime, conflict and post-conflict periods.

The most striking of these is the military carbon footprint, which comprises the emission of GHGs as the result of military activities, and which directly influ-

Table 5. The Classification of the Toxic Remnants of War

	Peacetime	Armed Conflict	Post-conflict Period
Direct TRW	▪ Manufacture of weapons; ▪ Military R + D + i; ▪ Use of weapons during training; ▪ Waste left on training grounds ▪ Stock management and demilitarization; ▪ Military bases.	▪ Attacks and sabotage on industrial sites, weapons depots, power plants, oil infrastructures; ▪ Use of conventional weapons, choice of target locations and intensity of use; ▪ Waste management and disposal practices; ▪ Pollution control at military bases and facilities.	▪ Military waste (remains of the battlefield and military scrap); ▪ Demolition waste after urban bombing; ▪ Disposal of ammunition.
Indirect TRW			▪ Increase in the illegal trade, movement and dumping of toxic waste; ▪ Illegal burning and dumping of household waste and large amounts of hazardous demolition waste; ▪ Looting of industrial sites leads to dispersal and exposure of civilians to harmful substances.

Source: (Kellay, 2014).

Table 6. Military-inflicted Damage on the Ecosystem

		Type	Description
Armed Conflict	Airborne Operations	Acoustic contamination by aircraft	May affect animal hearing, provoke physiological effects and cause the decline and/or extinction and destruction of habitats.
		Air/land assaults	Death of fauna Destruction of habitats Species population decline.
		Introduction of new species in virgin territories	Alteration of ecosystems and biodiversity.
	Naval Operations	Acoustic contamination from naval detonations and ultrasonic waves.	Alteration of acoustic frequencies of some species that may cause ear haemorrhages and stranding.
		Introduction of new species in virgin territories	Alteration of ecosystems and biodiversity.
	Land Operations	Use of explosives and anti-personnel mines	Contamination and destruction of ecosystems. Remains a threat for people and wildlife, may lead to species extinction.
		Fires and bombing	Destruction of ecosystems and loss of biodiversity.
		Destruction of dams and hydroelectric constructions	Death of wild fish and bird populations.
Nuclear War	Thermal Impacts	Temperatures of over 3000º in the epicentre	Destruction of all life and vegetation at the epicentre due to incineration.
		Thermal wave (100-1000º)	Severe risk for life and vegetation.
	Kinetic Impacts (from the explosion)	Destruction of vegetation	Removal of foliage, damage to the structure of trees, trees uprooted from the ground.
		Impacts on land animals	Physiological damage from excess pressure
		Shrapnel, flying debris	Airborne debris from the explosion can cause injury and death to surrounding animals and people.
		Impacts on aquatic animals	High mortality rates in fish and marine mammals.
	Impacts from Radiation	Exposure to radiation – people and animals	Bleeding, destruction of blood cells and tissues, deaths.
		Exposure to radiation – plants	Tissue degradation and death.
		Chronic effects in animals	Development of chronic diseases, reduced life expectancy, genetic and chromosomal aberrations, reduced fertility.
Infrastructures and Military Bases	Military bases	Construction of infrastructures	Loss of habitat, soil erosion, chemical contamination.
		Maintenance	Water pollution and loss of habitat due to defective storage and disposal of toxic wastes (heavy metals, solvents, corrosive liquids, paints, petroleum, oils).
		Military training exercises	Alteration of ecosystems, destruction of vegetation, loss of habitat, degradation of the structure and quality of the soil, chemical and heavy metal pollution, noise pollution, death and mutilation of fauna.
Chemical Contamination	Pre-conflict	Military production	Accidents, spills and dumping of dangerous wastes.
		Military trials	Accidents, spills and dumping of dangerous wastes.
		Military training exercises	Accidents, spills and dumping of dangerous wastes.
	Contamination in combat	Chemical substances in arms and ammunition	Toxic for humans, animals and plants.
	Post conflict	Dumping of chemical products in the ocean	Exposure of aquatic animals to chemical substances and more generalised impacts due to trophic movements.

Source: (Lawrence et al., 2015)

ence global warming. The footprint mainly originates from the emission of CO_2 from military vehicles during training and military operations, and this is especially true with respect to the air force. However it should be noted that the impact of military activity on the environmental crisis is not limited to the carbon footprint alone. The toxic and radiological substances discharged into water, land and air, as well as air, naval and land military operations, have disastrous consequences for environmental sustainability. Their effects result in the alteration of ecosystems, the destruction of habitats, the exacerbated spread of diseases, increased mortality or even species extinction, together with other effects that may last for extensive periods. Beyond the initial carbon footprint measurements made, military activity also generates a broad and diverse footprint, which has severe impacts on the environmental crisis as a whole.

THE MILITARY CARBON FOOTPRINT IN SPAIN

We are well aware of the limitations of this research, given that states do not provide information on the ecological footprint of their armed forces, and nor do the vast majority of military industries report on their CO_2 emissions. We must therefore apologize for the general nature of the information that has been provided in some of the issues addressed herein, and whose character we are aware of. Nonetheless numerous data sources responsible for the information detailed below are reliable. This information has been extrapolated to reach conclusions that, although approximate in nature, do bring us closer to the actual carbon footprint produced by the Spanish armed forces, and by military-related industries in Spain.

We have however justified our actions with the argument that scientific method always requires than when a problem is addressed, it must be clearly identified, and when information is available, then the matter must be tackled as accurately as possible. It goes without saying that at the end of the investigation, all work must be reviewed, while providing the methodology applied together with the results of the latter, and where errors have been detected, these must be amended and replaced with any new data obtained in subsequent publications. These are factors that we will be taking into account in our future research work on the ecological footprint of the industrial military sector and the Spanish armed forces.

The standard methodology for measuring Greenhouse Gas (GHG) emissions from the carbon footprint is categorised using three areas or scopes,[12] as they are known in environmental jargon:

- Scope 1: direct GHG emissions from sources owned or controlled by an organisation that undertakes the activity responsible. This includes emissions from the combustion of boilers, furnaces, machinery, facilities and vehicles that are owned or controlled by the company or organisation. It also includes fugitive emissions from air conditioning or CH^4.

- Scope 2: indirect GHG emissions that are associated with the generation of electricity acquired and consumed at the organisation's facilities.

- Scope 3: are other indirect GHG emissions. These include emissions from sources that are not owned or controlled by the entity, such as the extraction and production of acquired materials, business trips through external means, the transport of raw materials, fuels, products and logistics activities carried out by third parties, the use of products or services offered by others, as well as the emissions and impact of waste products.

This is a methodology that, in many cases, CO_2-emitting bodies do not apply, nor do they provide information on it, although information on direct Scope 1 emissions is relatively easy to attain. Information on Scope 2 emissions in the production process of the organization itself, is however more difficult to obtain. Nonetheless, Scope 3 emissions require more in-depth investigation in order to obtain all the information that relates to indirect emissions, which ranges from the extraction of materials and energy required for production or use, such as from transport in addition to the waste produced by the activity. Scope 1 and 2 therefore only facilitate information on CO_2 emissions into the atmosphere and the carbon or ecological footprint of all CO_2 emissions is obtained by adding Scope 3.

As such, in order to measure the true ecological footprint of atmosphere-polluting emissions, due to the enormous complexity involved, it is not easy for this criteria to be applied with the necessary rigour, and the information provided by the subjects, whether these be states or companies, must be studied with caution, as many companies only facilitate information on Scope 1 emissions and not always on those of Scope 2, but rarely do they provide data concerning indirect Scope 3 emissions. A similar process occurs with some states that are able to provide their car-

12. Ministry for the Ecological Transition. General Technical Secretariat. Guide for the calculation of the carbon footprint and for the drafting of improvement plans for organizations: https://www.miteco.gob.es/es/cambio-climatico/temas/mitigacion-politicas-y-medidas/guia_huella_carbono_tcm30-479093.pdf

bon footprints using the three scopes, yet not each of their ministries or agencies does so. This case is applicable to Spain, and as a result, the precise size of the Ministry of Defence carbon footprint is unknown, and GHG emissions produced by the Spanish armed forces (hereafter the SAF) are impossible to ascertain.

Nonetheless, a recent study, *Under the Radar. The Carbon Footprint of Europe's Military Sectors*, by the Left of the European Parliament,[13] written by two renowned experts, Stuart Parkinson and Linney Cottrell,[14] analyses the carbon emissions produced by the armed forces and military industries of European Union member countries, and between them, they shed light, albeit scarce, on military GHG produced by Spain in this area. In other words, the Spanish government does not provide any information on the GHG emissions of the SAF, however we do have the information provided by the *Under the Radar* report, and several assessments may be made based on it.

This report follows the indications of the *United Nations Framework Convention on Climate Change* (UNFCOCC), in order to measure the carbon footprint on which the entire study is based, in which it is considered that the SAF follow parameters similar to those of countries such as France and Germany, while the same criteria are applied to determine Spanish GHG emissions in this report. The report differentiates between the stationary armed forces in bases and barracks that undergo training exercises in the interior of the country, and those involved in operations outside of Spain. Each of these two groups was registered with emissions of 447,000 tCO_2 with a total of 894,000 tCO_2 GHG. This is obviously a relative conceptualisation, given that France's military potential is not comparable to that of Spain, as France's military capability is far higher, as among other issues, France has nuclear weapons. Taking this amount of emissions into account, Spain emits an average of 7.46 tCO_2 for each of its 120,000 military personnel. The *Under the Radar* report also adds Scope 3 to measure the final carbon footprint, giving a total indirect emissions figure of 1,900,000 tCO_2, while emissions rise to 23.3 tCO_2 for each member of the Spanish armed forces. This is a considerable amount, and in terms of GHG emissions it places the Spanish armed forces at the same level as the rest of the European military. However this measurement only accounts for 120,000 military personnel, and does not include the 34,500 civilian employees who work in the Ministry of Defence, and whose functions should also count as emitters of polluting gases. With the latter criteria in mind, the carbon footprint drops to 18.08 tCO_2 per employee, be they civilian or military (see Table 7). These figures are therefore estimates and should be revised when more information becomes available.

THE MILITARY INDUSTRY

With respect to the Spanish military industry, the emissions figures of all those companies that supply defence materials and other products to the armed forces are not available, and there are a large number of such firms: 373[15] in total. At the Delás Centre for Peace Studies we have registered 226 companies on whom we have data regarding their activities, but not on their CO_2 emissions or the impact of their ecological footprint, as most companies do not provide information on this. Three important companies are however the exception to this trend: the **Navantia** naval military shipyards, **Indra**, the electronic engineering industry, and **Industria de Turbo Propulsores** (ITP Aero), which manufactures engines for military aircraft. However we know nothing of the rest, nor about the most important company of all, the aeronautical Airbus Group Spain, which is an umbrella group for four companies, Airbus Defense and Space, Airbus Military, Airbus Helicopters and Airbus Secure Communications (formerly Cassidian Solutions), not

13. Parkinson, Stuart, y Cottrell, Linsey, (2021), *Under the Radar. The Carbon Footprint of Europe's Military Sectors.*
14. Stuart Parkinson, del Scientists for Global Responsibility (SGR), Linsey Cottrell of the Conflict and Environment Observatory (CEOBS), both from the United Kingdom.
15. *La hora de la industria*, (2020), SPAIN DEFENCE & SECURITY 2020, published by IDS editores

Tabla 7. GHG Emissions Spanish Defence Ministry 2019

GHG Emissions according to the Under the Radar report	tCO_2 /GHG	tCO_2 Emissions per military employee*	tCO_2 Emissions per military and civilian employee**
Stationary SAF tCO_2 Emissions (Scope 1 and 2)	447,000	3.73	2.89
Mobile SAF tCO_2 Emissions (Scope 1 and 2)	447,000	3.73	2.89
Total	**894,000**	**7.46**	**5.78**
SAF tCO_2 Emissions (Scope 3)	1,900,000	15.83	12.3
Total carbon footprint	**2,794,000**	**23.29**	**18.08**

* Number of SAF military personnel: 120,000
**) Number of civilians: 34,500 employed by the Ministry of Defence
Elaborated by authors. Fuente: The *Under the Radar* report and State Budgetary Information for Spain

counting the exclusively civilian-focused Airbus aeronautical industries in Spain. Nor do we have information on other relevant military industries such as Expal, Santa Bárbara Sistemas, Aernnova Aerospace, Sener, etc. The information on CO_2 emissions from these three companies is detailed below.

In one report, **Navantia** admits to having emitted 14,148 tCO_2 into the atmosphere in 2019 (Table 2), although, in 2018 its emissions totalled 51,269 tCO_2.[16] This is a highly significant drop - one of 75% - that the company has justified as being due to measures adopted in renewable energy use and its concern for the environment. Navantia is a public, state-run company and belongs to the *Sociedad Española de Participaciones Industriales*. In 2019 Spanish legislature initiated a Ministry for Ecological Transition, a body committed to reducing global temperature by 1.5% (2015 Paris Agreements), and which encourages companies to study their emissions with the aim of reducing them, and this explains the significant reduction in GHG emissions. What is however surprising about the Navantia Report is that direct emissions (Scopes 1 and 2) stood at 13,968 tCO_2 and indirect emissions (Scope 3) totalled only 180 tCO_2. This is surprising because (as explained earlier), these scopes include the acquirement and extraction of raw materials, their processing, transport and waste. In the case of Navantia these figures must by definition be sizeable, to say the least, in its three large shipyards in estuary of El Ferrol, Cartagena and the Bay of Cadiz. These figures contrast with other industries that show Scope 3 indirect emissions tripling those of Scope 1 and 2.

Taking into account that in 2019 the total amount of civil and military emissions at Navantia came to 14,148 tCO_2, when military production stood at 97% and civilian-based manufacturing at 3%, this figure reduces the amount per military employee to 13,723 tCO_2, which yields an average of 3.40 tCO_2 for each one of 4,077 military employee.

Indra also provides complete information on its carbon footprint, with direct and indirect emissions. In 2019 it reported that it had emitted 515,994 tCO_2 into the atmosphere (Table 2). Such a notable difference in emissions in its carbon footprint when compared to Navantia is explained by the fact that Indra is a transnational company that is active in a large number of countries, with some 47,409 employees around the world. It also reports on the global nature of its emissions and not separately, in terms of national figures.

Using this figure, and without knowing to what extent Indra participates in defence and security systems operations outside of Spain, and considering that Indra dedicates 18% of its entire production to the defence and security sector, the figure of 92,878 tCO_2, corresponds to the firm. This is an amount that when also applied to the number of employees in the company's military sector (in Spain alone), reveals that each worker has an ecological footprint of 10.9 tCO_2. These emissions are much higher than those of Navantia, which considering that the companies are markedly different (Indra is devoted to electronics and new technology and Navantia to the construction of warships), it should in fact be the latter company that emits more CO_2 into the atmosphere in its production processes, yet Indra is the company that pollutes the most in those studied here.

ITP Aero, a company controlled by the British manufacturer of engines and turbines for aeronautics, Rolls Royce in the military field for the Airbus-built Eurofighter EF-2000 and the A400M military transport aircraft. This company provides information on its GHG emissions for 2018, which totalled 4,270 tCO_2,[17] in its two plants in Zamudio and Ajalvir (Madrid). Considering that its military production that year was 31% of the total, military emissions were 1,316 tCO_2, which corresponds to 2.0 tCO_2 per employee (Table 8).

There is another issue that affects these three companies, Indra, Navantia and ITP Aero, none of them account for the emissions of their workers in their journeys to work. This is a factor that should also be considered when measuring ecological footprints, and it is one that is detailed in the protocols for this task.

In the previously-mentioned *Under the Radar* report, published by the European Left, information is provided on the three companies already mentioned as well as on the emissions in Spain from the European transnational company Airbus and the French firm Thales. This is data that the Spanish central offices of these two companies do not provide, so one has to assume that they have been reached by calculating a proportion with respect to production in Spain. The report states that **Airbus Spain** in all its Spanish factories emits Scope 1 and 2 GHG gases that amount to 59,000 tCO_2, although with no differentiation between civil and military production, which is a handicap. Considering that Airbus' military activity in its four Spanish factories comes to an average of 83%, GHG emissions would amount to 48,970 tCO_2, which for the 7,794 employees in the military sector corresponds to 6.3 tCO_2 per worker.

The same situation occurs with **Thales Spain**, the report indicates that its Scope 1 and 2 emissions come to 1,600 tCO_2. Given that this company dedicates 35% of

16. https://www.navantia.es/wp-content/uploads/2020/12/Informe-Huella-de-Carbono-2019-Navantia_signed.pdf Consulted on 20/05/2021

17. https://www.itpaero.com/recursos/doc/portal/2019/01/21/declaracion-ambiental-castings-2018.pdf Consulted on 24/05/2021

Table 8. GHG Emissions from some Military Industries in Spain, 2019

Spain	Total Emissions	Military production	Military tCO_2 Emissions	Military employment	tCO_2 Emissions per Employee
tCO_2 Emissions: Navantia (1)	14,148	97%	13,723	4,077	3.40
tCO_2 Emissions: Indra (1)	515,994	18%	92,878	8,533	10.90
tCO_2 Emissions: ITP Aero - 2018*	4,246	31%	1,316	656	2.00
tCO_2 Emissions: Airbus Group**	59,000	83%	48,970	7,794	6.30
tCO_2 Emissions: Thales España**	1,600	35%	560	97	5.80

* Scope 1, 2 and 3. Authors' own.
** Scope 1 and 2. Authors' own data using the *Under the Radar* report.

its manufacturing to military products, GHG emissions total 560 tCO_2 and represent 5.8 tCO_2 per employee.

In both cases, Airbus and Thales; the report only accounts for Scope 1 and 2 emissions, and not for indirect Scope 3 emissions, which means that the precise amount of the ecological footprint for these two companies is unknown, as is the case with the three Spanish companies mentioned above. This fact explains the difference in emissions between Thales and Indra, which are similar companies in terms of production, since both are dedicated to the manufacture of military electronics for missile guidance, projectiles, simulators and flight systems for all kinds of armoured weapons, cannons, etc. warships, airplanes, helicopter gunships and satellites, yet there is an enormous disparity in their emissions figures. Indra has twice the amount of emissions per employee when compared to those of Thales, and this fact can only be explained by the lack of data on Scope 3 emissions, which as indicated, are the most voluminous, as they comprise emissions produced by obtaining and transporting raw materials raw and waste in production.

Continuing with the information provided by *Under the Radar*, its work indicates that the total Scopes 1 and 2 carbon footprint emissions of the entire Spanish military industry in 2019 amounted to 83,000 tCO_2, when Scope 3 is added, the carbon footprint totals 694,000 tCO_2, which represents 31.6 tCO_2 for each of the 22,000 employees in Spanish military companies (Table 9). This is an inaccurate figure, as it comprises both the civil and military production emissions of these companies, and which cannot be considered to be correct, although they are in fact indicative of the high carbon footprint levels attributable to military industries in Spain. These are military companies that, considering the 226 that were registered with data by the Delás Centre (see the interactive map of the military industry in Spain),[18] may still be considered as approximate figures with respect to the real ecological footprint of the Spanish military industry.

This is the ecological footprint of the military industry compared to the total for all of Spain, which, in 2019, was 314,529 $ktCO_2$, resulting in an average of 6.7 tCO_2 per inhabitant. While that of the entire metallurgic industry (which accounts for most the manufacturing activities of the arms industry), was 9.99 tCO_2 per employee. As such, the calculated GHG emissions of the military industry can be considered to be fairly close to their real amounts. The same occurs with the figures for the ecological footprint of the Spanish Armed Forces, which, although also approximate, are plausible, since as is expected, they double in percentage, and come to 18.8 tCO_2, when compared to the average figure for the Spanish population.

These considerations show the need to demand urgent action by the Spanish Government with respect to reducing the carbon footprint of both the military industry and the Spanish armed forces, and that government policies should inevitably include a reduction in the number of military personnel, as well as lowering arms acquisitions.

18. http://www.centredelas.org/mapes-interactiu-industria-militar-espanyola/

Tabla 9. GHG Emissions from the Entire Military Industry in Spain 2019

Spain	Total emissions tCO_2	Military employment	tCO_2 emissions per employee
Total industry emissions of tCO_2 (Scope 1 and 2)	83,000	22,000	3.8
Total tCO_2 industry carbon footprint (Scopes 1 and 2 and 3)	694,000	22,000	31.6

Authors' own sources using the *Under the Radar* report.

3. ENVIRONMENTAL PEACE

ENVIRONMENTAL PEACE FROM AN ANTHROPOCENIC STANDPOINT

Environmental Peace is a new concept being applied in peace research with a view to combatting the ecological and climate change crises. If we accept that the ecological crisis and climate change are the currently the main threat to humanity, they are, by default, also the main threats to peace, and should therefore become research topics for those devoted to researching peace, as well as those social movements that oppose the political/ economic system responsible for these threats.

We have categorised this concept as an environmental peace with an anthropocenic vision, as it places humanity in a situation of maximum vulnerability with respect to those threats posed by climate change. Humanity will be immersed in numerous conflicts that will endanger its habitats, and in many cases the survival of those who inhabit them. As such, peace research must aspire to a holistic, broad-spectrum peace that addresses all areas of science. This integral peace should be applied as a general rule for human coexistence and give prominence to environmental solidarity, alongside other concepts that are already research topics of peace research, such as social justice, development aid, cooperation international law, disarmament and the respect for human rights. Any type of action aimed at building peace must therefore be implemented from a global perspective and therefore, take into account the threats arising from the ecological crisis and its most threatening aspect, climate change.

The term anthropocenic is used because the concept of environmental peace indivisibly interrelates humanity with nature. As it is human activity that is generating the ecological crisis and environmental changes. Environmental peace is opposed to the aggressions that humans inflict on nature and tackles the challenge presented by environmental conflicts with the aim of protecting nature and its habitats, and this includes those human communities that inhabit this new anthropocenic geological stage.

The solutions to some of these environmental conflicts must be found by providing greater protection to nature and seeking to harmonize those tensions that originate among the peoples who inhabit the regions affected by climate change, like those other territories and their communities, who are threatened by the speculation of large corporations that seek to extract and seize the resources of its subsoil in order to sustain a development model that is the origin of the planet's current ecological crisis.

This is an environmental peace that has been defined as anthropocenic, as it is the greatest threat to humanity. This references Johan Galtung's (Galtung, 1969) definition of peace in a positive sense, placing it at the centre and as the measure of human coexistence: a peace that must be consolidated through nonviolent proposals in accordance with the survival,

well-being, freedom and identity needs of mankind. In accordance with these measures, the most urgent challenges that environmental peace has to face are listed below:

- Survival, understood as the elimination of the direct violence that causes physical damage or the death of people who work, care for and fight to preserve their habitats.
- Well-being achieved through the preservation of habitats that provide food and health to the human communities that inhabit them.
- Freedom for communities that live in peace with nature, where their repression or their expulsion from their habitats is prevented.
- Respect for the ethnic, religious and gender identities of all communities.

Environmental peace must satisfy the basic survival needs of the human species, and arise from a foundation based on an ecological balance, in an equilibrium that demands the non-destruction of the environment. This is a reflection that comes from Gandhi's thoughts on nonviolence, which stated that a sacred respect for nature, its ecosystems and the living beings that inhabit them should be upheld. It is a precept that he summarized in his best-known saying: *the end is in the means*, to which he added, *if you take care of the means, the ends take care of themselves*. This is a proposal that was aimed at respecting and caring for the habitats that shelter humans.

Environmental peace is threatened by the political systems of the enriched countries of the Global North due to its model of development, one that is unsustainable with life on the planet. Political/economic systems are the main bodies responsible with respect to emitting polluting gases into the atmosphere and are therefore responsible for the violent conflicts that generate the destruction of ecosystems due to climate change and that impact the populations of the Global South with devastating force.

ENVIRONMENTAL PEACE, ECOFEMINISM AND HUMAN SECURITY

The capitalist system that is causing global warming and the environmental crisis needs a military organization to maintain itself and grow at the cost of the planet's resources and the insecurity of the people who inhabit the global south. A military organization that, as we have seen, contributes to the environmental crisis. Surprisingly, it is considered that military power is a necessary tool to face conflicts derived from the crisis, such as access to resources or the control of population movements due to climatic causes, although the fact that the same agent may be at the same time an essential part of the causes and the mechanism for solving the problem is clearly incoherent.

The so-called **national security** is based on the defence of the interests of "the nation", which are generally translated into the defence of the privileges, too often unspeakable, of the elites who hold power. **It is security for a few that needs to break the limits of the ecological ceiling and of the dignity and rights of people, with false discourses of unlimited growth**. Discourses that are anti-scientific and anti-ecological, because unlimited growth on a finite planet is simply impossible. It is the fallacy of growth that entails the continuous progress of a supposed "standard of living" in the countries of the global north at the cost of the depredation of the planet, of a warming process close to suicide, of the marginalization of millions of people in the world's Global South, and of the most absolute disinterest for future generations.

Its essential tool is military power, because security based on continued accumulation requires imposition. Its consequence, violence against people and armed conflicts,[19] with an impact of both the war and the preparation for it that entails evident environmental effects, although they are poorly documented. It is a system that understands neither limits nor dignity of all people nor ecological and planetary restrictions. **The military system, the fundamental basis of national security, is necessary to maintain the model of exploitation and use of non-renewable resources that are the main cause of global warming and the climate crisis.**

It is the system run by **the military-industrial complex, which maintains the depredation of resources**, which increases military spending, which maintains military activity and which generates a significant part of greenhouse gas emissions. It is the system based on patriarchal and supremacist schemes that violate the rights of the vast majority of people on the planet and is ultimately responsible for the climate and environmental crisis and many armed conflicts in countries of the Global South.

But, just as long-term security cannot exist without social justice, a context of climate transformation security will be impossible without global climate justice. The problem is global and the solution must be planetary. We must put the human security of all people in the planet at the centre, as an alternative to

19. Already in 1516, Erasmus of Rotterdam wrote that "it blushes to remember what shameful or frivolous motives Christian princes invoke to convince the world to take up arms ... the height of infamy is represented by these princes who feel that the harmony of their subjects diminishes their power while dissension increases it". Erasmo de Róterdam (1516), "Lamento de Paz" (in Spanish), Translation by Eduardo Gil, Acantilado, Cuadernos num. 102, 2020, pp. 42-43.

the traditional notion centred on states, with the aim of going beyond threats and military-type strategies.

And that is why the struggle to reduce the impacts of the environmental crisis and the **proposals for the ecological transition must inevitably entail disarmament and the reduction of world military spending**, moving from the current militarized security based on violence to human security in the framework of an environmental peace.

Environmental peace is a positive peace centred on people, their rights and social justice. Environmental Peace wants to protect nature by considering planet Earth as a single system that unites humanity and nature. Environmental peace aims to respond to the challenge of the climate and environmental crisis by solving this global and planetary conflict by peaceful means. It is a peace that leads to acting with global and ecological awareness, because the great problems of the 21st century are planetary, do not understand borders, and affect all people and living beings. The great current challenge is to find global solutions that respect the planet and human dignity and that get implemented with actions at all levels, global, regional and local. The new environmental Peace requires, among other aspects,

- That politics, both at the state and global level, become governed by criteria of **human security**. The concept of human security (proposed in the 1994 UNDP Human Development report) is universally people-centred, addressing people around the world, in rich and poor countries alike. It is the safety of people in their daily lives, which guarantees "the ability of each person to earn a living, satisfy their basic needs, fend for themselves and participate in the community in a free and secure way".[20] It includes economic and food security, health security, environmental and personal security, as well as community security and political security.

- **Creating a new geopolitics, based on post-violence criteria**,[21] since violence is a recessive, patriarchal, macho and archaic characteristic of our evolution that must be relegated to the past. The necessary re-evolution "must be necessarily non-violent to overcome and not aggravate the unacceptable violence that we already suffer, such as those infringed by the established powers to perpetuate the imbalances on which they base their destructive domination"[3].

- That human development programs incorporate **the ecological concept of planetary equilibrium, with explicit degrowth programs**[22] to reverse the current situation and eliminate the nonsense of the systematic annual overshooting.[23] In this sense, the most polluting countries should play a relevant role in establishing solutions to the environmental crisis as well as **policies for the recognition and reception of people displaced by climate crises, eliminating the violence generated by border walls.**

- That an **ecofeminist approach should be adopted, guaranteeing the human security of all people from the recognition of their indisputable equality and dignity without distinction of gender or race**, from a professional **ethics of care**[24] that places this care for people and the planet as an essential objective of politics, and from the perspective that humanity is an integral part of nature.

- That governments implement the necessary measures to be able to achieve, without delay, the **sustainable development goals** agreed in 2015 by the United Nations.

- In short, that we move towards **more democratic and eco-socialist societies**, based on the concepts of freedom, equality, fraternity, responsible consumption and respect for nature, in order to safeguard the biosphere and the human species.

That is why we understand that **the reduction in world military spending would contribute to a contention of the environmental crisis** (and could also help in its solution and therefore being a factor of environmental peace). Specifically:

- The **reduction in military spending** supposes, as it has been argued in this report, a direct reduction in GHG emissions produced by the world's armies.

- **The funds released by this reduction could be used to fight the climate and universal crisis**. For example, the task of preparing the countries most vulnerable to climate change to reduce the impacts

20. Perez de Armiño, Karlos & Marta Areizaga (2000): "Dictionary of Humanitarian Action and Development Cooperation" (online), available at http://www.dicc.hegoa.ehu.es/listar/mostrar/204 - Cited in the chapter "Human security, of the people" (in Spanish) by Josep M. Julià, in "Security Policies for Peace: Another security is possible", UNIPAU (2018) - See also the chapter "Policies to promote peace "By Arcadi Oliveres (also in Spanish), in the same publication.
21. Manifesto in favor of a non-violent re-evolution: https://static1.ara.cat/ara/public/content/file/original/2021/0304/19/manifest-re-evolucio-global-o-extermini-total-ebbcca4.pdf así como https://lluitanoviolenta.cat/
22. Jason Hickel (2016) "The Contradictions of Economic Growth in an Era of Ecological Limits", in "Engineering a Better World", Royal Academy of Engineering. Chapter 8, pp. 22-23: https://www.raeng.org.uk/publications/other/engineering-a-better-world-brochure
23. Earth Overshoot Day is the date on which, each year, humanity has already consumed all the resources that the planet can regenerate during the year.
24. Wendy Faulkner (2001), "The tecnology question in feminism: a view from feminist technological studies", Women's Studies International Forum, Vol. 24 (1), pp. 79-95. The quote is from page 91.

of an uncontrolled climate (rise in sea level, extreme weather conditions, floods, pandemics, etc.), would entail an annual cost of 0.18 trillions of dollars, equivalent to 10% of world military spending. Therefore, even a moderate reduction in this spending would allow the launching of very powerful programs to mitigate the climate crisis at the global level.

- This reduction would be consistent with the new geopolitics that the planet is imposing on us in the current 21st century. Because, as has been seen with the Covid'19 pandemic, **humanity's great challenges will be global and will require global solutions that invalidate block-based geopolitical and national security strategies**. We must protect ourselves and take care of ourselves as humanity, not confront ourselves in armed conflicts, because the current anthropogenic dangers affect all of us. Pandemics require global solutions, pandemics are part of the planetary environmental crisis, and these great challenges will only be solved with approaches aimed at the survival of humanity as a species.

- **The gradual and continuous reduction of military spending would be an effective mechanism to reverse the worrying growth of the global triangle of power**. This triangle includes the large extractive transnational corporations, the military-industrial complex (CMI) and the financial entities that ensure the viability of both the CMI and the transnational corporations,[25] acting with mechanisms that escape democratic controls, obtaining natural resources at a totally unacceptable rate from the point of view of the global ecological balance, guaranteeing the security of these extractions with military security mechanisms, obtaining substantial economic benefits and contributing unequivocally to the planetary warming. In this context, the reduction in military spending should lead to a new paradigm by shifting and reducing the economic volume of this global triangle of power, as well as its GHG emissions and the risk of armed conflict, while enhancing world democracy.

- **It is impossible to raise human security objectives at a global level with an ecofeminist approach based on equality, respect, dignity and care for all people** (in a framework of ecological balance that includes us), without dismantling the current national security systems, without a true will to disarmament and without reducing world military spending. A disarmament that would help reduce military spending, the acquisition of armaments and the arms trade, and which in turn would reduce the possibility of new armed conflicts.

Time is running out, and the evidence indicates that the continuity scenario based on national security as a method to face challenges and threats leads us to a planetary disaster that future generations will have to face. But **from an ecofeminist and post-violent perspective**, we know that **we have to re-enter the limits imposed by the planet**, accepting them as a basic parameter of the new world politics, with systems that use feminist technology resources to ensure care and the safety of all people without distinction. **And the security of all the people of the planet cannot be based on the current militarized technologies of national security** that exert violence against "the others", in this global village that we all share and in which we are all "us".

For all these reasons, we understand that **actions for the climate and the environment should include in their discourse the need to reduce world military spending that will make it possible to reduce arms production and arms exports.**

25. The global triangle of power, formed by the large extractive transnational corporations, the military-industrial complex and the global financial entities, is a triangle that takes advantage of its global character in a world of supposedly sovereign states that are incapable of imposing regulations at the national level. world. This triangle reaps substantial economic benefits while contributing unequivocally to global warming: Chloé Meulewaeter & Pere Brunet (2020), "Military spending and climate change", Chapter 7 of "Military Spending and Global Security", Jordi Calvo Ed., Routledge 2020.

4. CONCLUSIONS

This work, the second that has been carried out by the Delàs Centre for Peace Studies on the relations between the armed forces and the environmental crisis, continues and complements our previous Report[26] to analyse in greater detail the environmental footprint of the military sector in general and that of Spain in particular, as well as the power structures of the countries of the global world that are interested in continuing with a political / economic model that is the cause of the greatest threat to the planet, the ecological crisis and its climatic drift.

The ecological crisis is undoubtedly a global threat and, thanks to pressure from social movements and the scientific community, governments and international institutions have finally recognized it as a threat to human survival.

But global capitalism, despite disguising itself in green and applying some protection measures, continues with its model of exploitation of non-renewable resources, using armed forces to subdue and if necessary repress the resistance to the plundering of the subsoil resources by the communities that inhabit these territories.

The military security system, as the indispensable gear of the power structures that ignore the people and that are at the root of the current planetary problems, is an essential actor in the current process of climate and environmental degeneration. It is because, in addition to its own GHG emissions, it protects and guarantees the survival of a suicidal economic system that each year widely exceeds the capacity of our planet, also disregarding the rights of millions of people who are already being labelled as "dispensable". It is a system that welcomes large extractive corporations that escape the control of the states but that demand their help and protection with the complicity of the military network, a system that accepts the pressures of the military-industrial complex and the defence industry, a system which promotes the current militarized national security.

The national security system, being based on the military protection of the activities of non-democratic power structures and organizations that are continuously increasing the planetary environmental crisis, **must be considered instrumentally responsible for all emissions**, as well as for the environmental crisis in all its areas.

The present work has tried to also approach direct military environmental impacts. These include GHG emissions, toxic remnants of war, and ecosystem impacts from military activity. It should be noted that, among these impacts, **GHG emissions from the military economy represent a relevant part of total greenhouse gas emissions, both in the Spanish state and in most states**. As such, their reduction is fundamental for achieving the European Green Deal target of zero net emissions by 2050 (Parkinson

26. ***Ibídem***. Available at: http://centredelas.org/publicacions/militarismoycrisismedioambiental/?lang=es

& Cottrell, 2021). It is for this reason that without a complete and transparent information on greenhouse gas emissions from the armies and from the military production of all industries of all countries including Spain, it will not be possible to fulfil this commitment.

The Spanish Government must therefore enforce the GHG emissions protocol both from all business sectors in general, and from military industries in particular, as well as all the agencies dependent on the Ministry of Defence and, especially, the armed forces, which are, with their activities, those emitting most greenhouse gas emissions into the atmosphere, as shown in this study and in some of the studies carried out in different places (Parkinson, 2020; Parkinson & Cottrell, 2021; Sparrevik & Utstøl, 2020). Without complete and transparent information, without rigorous monitoring and without efforts to reduce GHG emissions from the Spanish State, these reports may not have the necessary reliable information, they will lack authority, and, therefore, it will be impossible to comply with the reduction of the ecological footprint committed in the policy objectives of the 2015 Paris agreements.

In this work we have insisted that both the ecological crisis that has its most visible part in climate change due to greenhouse gas emissions and its causes, should become the object of research work for peace, because the ecological crisis is currently a multiplier of threats for humanity and, in that sense, it is also a threat for peace. Thus, catastrophic storms, uncontrolled fires, rising temperatures, pandemics, droughts, deforestation, soil and water contamination due to the use of pesticides and phytosanitary products, reduce biodiversity, and translate into numerous new conflicts, such as major famines, massive migrations and warlike conflicts. That is why it is necessary to speak of **environmental peace**, especially since the appearance of the new geological stage that the planet is experiencing, the Anthropocene, a stage caused by the aggressions developed since the Industrial Revolution by human action that has altered life in the biosphere.

The current political and economic development system does not take into account the ecological and planet limits, nor does it respect the dignity of all people. It uses patriarchal schemes of violence, it does not propose a coordinated action at the planetary level in the face of global crises, and it does not accept the feminist vision of the essential equality of all people, discarding something as fundamental as caring for them.

From an ecofeminist and post-violent perspective, we know that we have to re-enter the limits that the planet imposes on us, accepting them as a basic parameter of the new world politics, with systems that use feminist technology resources to ensure the care and safety of all people without distinction. **And the security of all the people of the planet cannot be based on the current militarized technologies of national security** that exert violence against "the others", in this global village that we all share and in which we are all "us".

For all these reasons, we understand that **actions for the climate and the environment should include in their discourse the need to reduce world military spending** - and consequently the contraction of military personnel, infrastructures, industries and the global military arsenal- to directly influence one of the determinants of the climate crisis.

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