



Green Defense: ideological injunction or tactical imperative?

Earth Thought Notebooks

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Environmental issues are not just an environmental whim. They are a geopolitical reality, a source of conflict and a source of threats to our security. Taking an interest in them means staying one step ahead by ensuring the availability of defence tools that are less dependent on resources, a guarantee of operational effectiveness. Thus, a growing number of modern armies, first and foremost the US Army, are carrying out a global reflection on these issues which, in the light of their recent operational experience, aims to increase their effectiveness.

The author gives us an overview of the actions underway on this subject.

Battalion Commander LUISETTI received the Leclerc Foundation Award for this article.

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The French Army, and the French Army in particular, cannot free itself from an in-depth reflection on this subject as the environmental constraints weighing on operations, from their design to their execution, are increasing. However, we must beware of the ideological discourse of the apostles of a "pacifying" ecology.

What is it all about?

Is Green Defense a smoky concept? Certainly, if we stick to a general and abstract representation, declarations of intent and an angelic vision of environmental issues.

On the other hand, it is clear that environmental issues permeate a very broad spectrum of the political field. Their implications go beyond the strict framework of ecology. They therefore deserve military attention, not least because some aspects are directly relevant to operations. It is not a question of evacuating war, but on the contrary of preparing for a return to increasingly harsh conflicts while taking into account the scarcity of available resources and the profound changes that mark the beginning of the 21st century.

Far from calling into question the principles that guide land forces' commitments and based on doctrine, this approach makes it possible to structure a cross-cutting tactical reflection, adapted to the changing context of engagement in air-land space. Neither dogma nor a new face of warfare, Green Defence is a global approach to 21st^{century} conflict management. It is a real line of force that can be translated into lines of operations.

However, in the face of this military perception of Green Defense, other concepts are emerging, with the ambition of setting a precedent. This is notably the case of Europe Écologie Les Verts (EELV), which produced a Green Paper on Defence in February 2014. CEMAT's participation in the public presentation of this green live shows the Army's interest in these issues. Starting from a realistic geopolitical observation, this report makes recommendations that are sometimes absurd, marked by the ideological prism through which the EELV approaches defence issues. They reflect a biased vision of the use of forces (and of force), reducing the army in some respects to a national guard.

Defence cannot therefore leave the field of reflection to ideologues.

Green Defence could be a factor in the effectiveness of current and future commitments; the key to understanding the catalysts of crisis, but also a performance lever in a period of severe budgetary constraints and questioning of the Western development model.

Objective reasons for considering environmental issues as a parameter also belonging to the field of defence

The Western linear economic model is draining resources and contributing to global warming. Possible negative effects on the availability, storage and use of energy, food and drinking water [1] are possible. Combined with population pressure, these predictions make the Meadows report[2] particularly topical. The analysis of these factors is now leading to a widely shared consensus: environmental imbalances (climate change and tensions over resources) are likely to undermine international security. De facto, they fall within the field of interest of armies.

Climate change is a diffuse phenomenon and cannot be the sole cause of conflict. On the other hand, it can exacerbate pre-existing tensions. The risk of destabilisation of the most fragile states and regions is then likely.

The conflict in Darfur is an illustration of this possibility. Famine caused by accelerating desertification is one of the aggravating factors of the conflict to which the authorities have been unable to respond. The chronic political instability affecting the countries of the Sahelo-Saharan strip could, by 2040 [3], be accentuated by desertification resulting from rising temperatures.

But developing countries are not the only ones affected by security issues arising from environmental challenges. The succession of natural disasters in the United States in recent years, which have been destructive, costly and have generated internal disorders, is a reminder of this. President Obama has made environmental security inseparable from national security. With the White Paper on Defence and National Security 2013, France also identifies among the priority threats "major crises occurring on the territory as a result of natural risks". Moreover, anticipating and curbing environmental imbalances contributes directly to "guaranteeing the continuity of the nation's essential functions and preserving our sovereignty, both in France and overseas".

Armies must therefore prepare themselves to face the emergence of new, versatile threats and unprecedented effects, in particular the army, because of the nature of its modes of action and its ability to control the environment.

A realistic approach to ensuring the resilience of an army under budget constraints

In the general context of economy, energy appears to be a major constraint, so much so that it could indirectly impose itself in the future as a decisive factor in triggering operations. For the command, the aim is to reduce energy consumption while preserving operational efficiency[4].

4] In external operations, the sustainability of forces is particularly linked to their energy supply. The latter is indispensable for life in the stationing as well as in the combat phases. Indeed, modern weapons are particularly energy-intensive.

It is obvious that the freedom of action of an expeditionary force is directly linked to its logistical capabilities. Supplying them requires large, expensive and vulnerable flows. Logistical convoys are in fact privileged objectives, both because they are poorly protected and because the disruption of supplies can directly paralyse the action of the forces in contact. This awareness has been around for a long time and it is not a question of repeating the extent to which logistics determine operations. But in modern conflicts of an asymmetrical or subversive nature, it takes on a new dimension. Thus, Robert Bateman, in his book *Green Machine* published in 2008, states that between 2003 and 2007 more than 3,000 US soldiers were killed or wounded in convoy attacks. According to him, the US army's dependence on oil is the cause, with obvious tactical repercussions. In particular because the number of personnel assigned to escort missions limits the joint commander's ability to manoeuvre and, ultimately, his margin of initiative.

Moreover, a reduced environmental footprint has positive spillover effects on the population, helping to increase acceptance of the force's action and facilitate the stabilisation phase. Without being overly optimistic, however, it can be considered that, within the framework of the global approach, a more environmentally friendly positioning of the host country is likely to have a positive influence on the perceptions of both the population and the international community.

What are the credible capacity choices for greater sobriety?

Optimizing the resources that condition the energy autonomy of the force is a factor of success. In concrete terms, tactical gains are possible by acting on several levers: better

management of flows and technological innovation.

In particular, the manoeuvring of fuel flows must be designed upstream of the projection. Operation Serval illustrates this need. Indeed, the long stretches and the lack of local resources made it necessary to refuel the 1,300 vehicles deployed by tanker trucks. The pace of the manoeuvre, a guarantee of success, is therefore due to the successful gamble of just-in-time fuel delivery.

However, there are credible leads for safer and less energy-consuming convoys. Using airships? Why not, in the context of asymmetrical conflicts. Technical solutions exist, based on the revival of this means of transport by civil societies. Thus, in Germany, commercial flights have been taking place since 2010 (Zeppelin company), and in the USA DARPA [5] is pursuing studies with various aircraft manufacturers [6]. In any case, it is clear that the capacity of the French forces in terms of intra-theatre mobility is insufficient with regard to the ambitions of engagement. What is lacking? Undoubtedly a heavy transport helicopter.

Operation Serval also raises the question of fuel homogenization. Thus, the specific refuelling of the drones required dedicated logistics. This is both costly and a source of capability vulnerability.

On the other hand, it seems absolutely necessary that new-generation weapon systems be energy-efficient from the design stage. Indeed, they are highly sophisticated and require a substantial power supply. For example, a Tiger helicopter must be supplied with electricity even when stationary (ventilation), and a combatant needs many batteries. The USArmy [7] has tested integrated or universal chargers in Afghanistan with convincing results. However, it is important not to lose sight of the first objective, which is to protect the combatant from excessive carrying, and the second, which consists in not sacrificing the operational performance of the equipment on the altar of energy savings.

The case of vehicles is quite enlightening in this respect. While the craze for electric vehicles continues to grow, it seems obvious that this mode of propulsion will not, in the medium term, be a satisfactory response for tactical vehicles, except as an auxiliary engine. Indeed, the reliability of these engines is today too uncertain in view of the technical specifications required by combat vehicles. However, some technologies are in the process of maturing, such as the fuel cell or certain hybrid engines. It would therefore be advisable for defence manufacturers to maintain a technological watch at a time when the future fleet of army combat vehicles is being studied (VBMR/ EBRC [8]). In this respect, the future VBAE[9] could be a precursor, since studies are being conducted by the Directorate General of Armaments to equip it with a hybrid engine. Imagine the tactical gains in the "discovery" echelons of a discrete vehicle with enhanced range.

Finally, effects can be produced by better management of energy consumption in the parking lot. This is high for the production of electricity and heat (hot and cold) and the production of drinking water or sanitary water. However, it is essential for everyday life and activities related to commitments (hospital operations for example). Several possibilities are possible to meet the needs.

Either achieve self-sufficiency, in particular by rationalising electricity production. In Afghanistan, on an FOB, the USArmy has coupled traditional generators with renewable energy production units (mainly solar and wind power). This was a spectacular success since fuel consumption was divided by nine.

Either use the local grid. Difficult to conduct in the coercion phase, this option can be an

asset in the stabilization phase, facilitating the strengthening of links with national structures and creating local economic outlets conducive to reconstruction.

Technical solutions exist. Let us be conceptually bold!

"Ideas rule the world" Charles de Gaulle.

In the end, Green Defense is a systemic approach. Armies are already practising it, but in too diffuse a manner to measure its real gains and determine whether it should be defined more precisely.

However, the context would justify formalizing the concept. Indeed, the findings speak for themselves. The Army has probably never been so involved in operations since the end of the Algerian war. It is making considerable efforts to fulfil its missions while contributing to the reduction of public deficits. In the current state of its stock of equipment, which is extremely varied in nature, the Army is the least disposed to sobriety. And yet its ability to reduce its dependence on energy resources is undoubtedly a challenge that must be met in order to maintain its ascendancy over its enemy. The Scorpion programme, the forerunner of the future Joint Battle Group (JBG), is likely to meet all these challenges. Thanks to more efficient vehicles, a tactical power generation capability and enhanced information processing, it will provide a new and more effective way to fight against the enemy. Thanks to more efficient vehicles, a capacity to produce tactical energy and enhanced information processing capabilities, it gives the Joint Chiefs of Staff the ability to control the energy they need and to integrate the growing constraints linked to their management into tactical thinking. Once again, these are the concerns of a leader in combat: to be able to use his equipment to bring fire to his enemy and exploit success by freeing himself from logistical constraints that have become unsustainable, both tactically and financially. In this respect, some will object that the cost of such a project would be prohibitive. It will undoubtedly require an initial effort, but for substantial savings in the long run. All the more so as the research and development work is well advanced.

It may therefore be stimulating to extend the foresight exercise on a strategic level: what solutions can be found to anticipate the scarcity of fossil fuels and reduce dependence on imported energy?

The concept of Seabasing^[10] (US NAVY 2003) is one possible answer. "In the event of denial of access to air-land space and thus to the infrastructure of these bands, the prospect of a BIAT (Joint Theater Base) at sea becomes a sensible working hypothesis. It could provide energy storage and production capacity, provide full logistical support and drastically reduce the footprint of the troops on the ground".

All these avenues seem relevant. But scattered initiatives do not form a policy. This raises the question of how an "energy security" function could be enhanced in the organisation of the planning group for an OPEX, in order to ensure coherent thinking on these issues in operations. General (2S) Chauvancy promoted this function in March 2009 ^[11]. ^{11]} This initiative is similar to the Energy-Informed Operations concept developed by the US Army since 2012. This global approach aims both to provide the military leader with objective elements to make a decision and to raise the awareness of the soldier as a consumer. This concept therefore does not reduce the problem of resource management to a technological response aimed at reducing fossil fuel energy consumption. In fact, while significantly reducing the energy footprint is a first challenge, it is accompanied by two

others, namely increasing flexibility and energy resilience (through renewable energy) and the soldier's and leader's own ability to manage energy. The aim is to give the latter the means to know the energy situation of the force, but also the ability to measure the impact of operational choices on that situation. It is therefore important to consider this information as an integral part of an operational decision. The choice could be to cover requirements in one form or another and/or possibly to prioritise in time and space. Energy informed also covers water and waste.

The debate is therefore open. In any case, we must be wary of dogmatism and technicism, which would be a panacea and would not reflect the complexity of environmental issues in the military field. The United States has returned from the RMA[12]. The soldier interacts with his environment, he is part of an ecosystem in which he intervenes to restore its balance. Fads and short-term visions have no place there, and it is in a long-term perspective that one must take a stand. In any case, this is the spirit of recent doctrine documents and in particular FT03, which stipulates that the success of ground engagement in most crises is a succession of unavoidable steps: "The aim is to achieve or contribute to a decisive result, to be in a position to consolidate it, and then to offer potential options for the stabilisation and disengagement phases". All things that resonate with Green Defense and invite its integration into French strategic thinking.

1] 5th report of the Intergovernmental Panel on Climate Change (IPCC) of 31 March 2014.

2] 1972 The limits to growth

3] Strategic Horizons (Delegations for Strategic Affairs), Chapter 5, March 2012.

4] Report on Optimizing Energy Resources for Forces on Operations (FRS 9 April 2014).

[5] Defense Advanced Research Projects Agency

6] A project led by Lockheed Martin, the P791, with the objective of carrying 50 to 70 tonnes of freight.

7] United States Army.

8] VBMR: multi-role armoured vehicle and EBRC: armoured reconnaissance and combat vehicle.

9] VBAE: armoured engagement support vehicle.

10] Report on the Optimization of Energy Resources for Forces on Operations (FRS 9 April 2014).

11] Military energy security, study carried out in the framework of the seminar "Participation of the armed forces in energy security", CICDE March 2009.

12] Revolution in Military Affairs

A semi-direct recruitment officer, Battalion Commander Laurent LUISETTI has served mainly in infantry units with which he has been projected on several occasions in Africa and the Balkans. He was selected in 2013 by the Fondation nationale entreprise et performance to conduct an interdisciplinary study on green growth. He is now a CESAT's dealing officer.

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