IAI
Istituto Affari Internazionali

ISSN 2280-6164

DOCUMENTI IAI 15 | 02E - JANUARY 2015

Technological Innovation and Italian Armed Forces Training: Challenges and Opportunities

by Alessandro R. Ungaro, Alessandro Marrone and Michele Nones

ABSTRACT

Even though the training of the Italian Armed Forces is the "Cinderella" of the Italian defence debate, it represents a fundamental aspect for the future of the Italian military. First, the analysis evaluates the strategic and operational relevance of training, often ignored or underestimated by decision-makers and public opinion. Second, the study examines the trends in defence expenditure for training and the implications deriving from the decrease in the international deployment of the Italian Armed Forces (with particular attention to the EU and NATO). Finally, challenges and opportunities for the training of Italian Armed Forces are discussed in light of technological innovation, especially in the field of Information and Communication Technologies (ICT). The main goal is to provide a better understanding of Italian military training, and its significant implications for the operational capability of the Italian Armed Forces and, ultimately, Italy's foreign and defence policy.

Italy | *Italy's military policy* | *Military budget* | *Military missions* | *NATO* | *European Union*

keywords

ISSN 2280-6164

DOCUMENTI IAI 15 | 02E - JANUARY 2015

Technological Innovation and Italian Armed Forces Training: Challenges and Opportunities

by Alessandro R. Ungaro, Alessandro Marrone
and Michele Nones*

Introduction

The training of the Italian Armed Forces is the "Cinderella" of the Italian defence debate. A debate that has almost entirely neglected it over the past two decades, while preferring to focus primarily on Italy's participation in international missions and, especially most recently, on major procurement programmes of which the case of the F-35s is an example. It is even more alarming that training has been the "Cinderella" of the Italian defence budget for more than a decade now, with its percentage of allotted funding not only drastically below NATO country standards, but also in steep decline over the last three years.

In true Cinderella-style, however, training has also played the hero in the Italian Armed Forces' recent history and will in their future. Indeed, the measure of the military operational capability lies not ultimately in the sum of its components, but in what they produce. In other words, several hundred helicopters and pilots are not enough to exhibit helicopter capability, nor are a certain number of ships, amphibious assault platforms as well as Navy and Army personnel to staff them sufficient to claim effective amphibious capabilities. What is needed is adequate training for pilots, sailors and, in general, all commissioned and non-commissioned officers and regular soldiers in the use of all the equipment at their disposal – from rifles or night-vision devices to armoured vehicles, fighter aircraft and aircraft carriers. If you have thousands of pieces of equipment and

* Alessandro R. Ungaro is a researcher in the IAI Security and Defence Programme directed by Prof. Michele Nones and for which Alessandro Marrone is Head of Research. The authors wish to thank Tommaso De Zan and Giulia Formichetti for their contributions to the study. Special thanks go to the participants of the 11 December 2014 feedback conference and for their contributions to the study draft: Gen. Marco Bertolini (Italian Joint Operations Headquarter Commander), Adm. Enrico Credendino (Chief of Division III, Navy General Staff), Gen. Giuseppe Gimondo (Deputy Chief of Division VI, Defence General Staff), Gen. Maurizio Lodovisi (Chief of Italian Air Force Operations, Air Force Staff), Gen. Roberto Perretti (Chief of Division III, Army General Staff), Dr. Giorgio Zappa (President and CEO of Vitrociset). The authors also wish to thank all the persons interviewed for the study. The authors assume full and exclusive responsibility for the content of the study.

· Study prepared within the framework of the research project "Training of Italian Armed Forces: challenges and opportunities". Presented at the conference on "Addestramento delle Forze armate: è il momento delle decisioni", Rome, 11 December 2014. Translated by Darragh Henegan.

tens of thousands of men and women in uniform, but next to no training, those components' productivity will also be next to nothing, regardless of the 190,000 well-equipped troops on record. Training, therefore, is key to the product that determines a country's military capability. This is even truer in the case of a NATO and EU member such as Italy that uses what are often complex and technologically advanced weapon systems within the context of even more complex "systems of systems" in joint and combined operations.

When we speak of training, we must not imagine merely the image of a soldier firing a rifle at a paper target on a practice range. Rather we must imagine a soldier with a night-vision device that identifies a target a hundred yards away and, in compliance with NATO procedure, sending commands in English to a German helicopter providing close air support with pinpoint precision according to the laser tracking data supplied by that same soldier. We must consider the compulsory exercises for meeting NATO standards, such as Joint Eagle 14 held in Italy in 2014 after two years of preparation, and in which 2000 Italian Army and Air Force units participated with the representatives of 14 other Alliance members under the guidance of the Italian Joint Operations Headquarters (*Comando Operativo di vertice Interforze*, COI).

The present study is intended as a contribution to the debate on the reform and rationalisation of the Italian military instrument, of which the upcoming White Paper for International Security and Defence will mark a crucial juncture, not an end-point. The study analyses the challenges and opportunities for the training of the Italian Armed Forces departing from an assessment of training's importance, which decision-makers and the public often overlook or underestimate. It proceeds to the financial situation in Italy and the multifaceted impact of current reductions in Italian Armed Forces' international deployment and, to that end, places particular attention on the context of NATO and the EU. Analysis then gives way to discussion of various challenges and opportunities for Italian Armed Forces training, not least in light of some major technological innovations, particularly in the field of Information and Communication Technology (ICT). The ultimate objective is to offer a means for understanding the reality of military training in Italy and its essential impact on the operational capability of the county's armed forces and, in the final analysis, on defence policy. Operational capabilities and defence policies that will largely depend on future decisions to confront the difficult challenges of training the men and women that are the lifeblood of the Italian military instrument.

ISSN 2280-6164

1. Training's importance to the military instrument

A further consequence of the lack of an adequate national "defence culture,"[1] which lately seems to be gaining greater, albeit still insufficient, attention in the public debate,[2] can be seen in the underestimation of how crucial armed forces training is at various levels. The issue is one to which even insiders and politicians are all too often indifferent as compared with other concerns such as leading international missions or the economic/financial aspects of certain weapons systems procurement programmes, as in the case of the F-35s.

A pre-existing conceptual problem continues to condition and permeate our socio-cultural framework: public opinion seems to be unaware of the intrinsic need for the continuous training of the Italian Armed Forces, tending to identify the military as a set of professionals who, by definition, should not require such cycles[3] – in effect, confusing basic training with practical exercise. The former consists of activities provided through the Defence at joint and single service levels, in which all military personnel – but especially officers – are given a complete basic preparation in the initial stages of their careers. This basic training is not sufficient, however, without a continuing cycle of practical training activities, properly differentiated by assigned task, updated relative to operational experience and possible international deployment scenarios, and that include the extensive use of military equipment. These training activities serve to refresh, test and assimilate the valuable expertise required at tactical, operational and strategic levels.

In particular, leading complex joint and combined operations requires knowledge of what goes into an individual weapons system, including how a detailed and complex chain of Command and Control (C2) works. Even a single manoeuvre cannot be summarised simply as a "fire fight," but involves planning and managing the movement of multiple units in combat scenario across broad surface areas and for prolonged periods, supplementing with and/or phasing in ground, air and naval support.

Neither can deployment in an operational theatre be considered a valid substitute for training. The reason is that what counts on a mission is the operation's success, no matter whether it is the result of individual intuition, auspicious circumstances

[1] Angelo Panebianco, "L'Italia si scopre troppo filorussa", in *Corriere della Sera*, 21 October 2014, http://www.corriere.it/cultura/14_ottobre_21/italia-si-scopre-troppo-filorussa-dc39531e-58e4-11e4-aac9-759f094570d5.shtml. The writer asks, in particular, "Where does this lack of awareness come from? Why, for example (and this is but one example), do we tend to look primarily at the economic damage the Ukraine crisis is causing us? Perhaps the reason lies in an inadequate 'culture of defence' (awareness and understanding of its inherent problems), and this gap, in turn, tends to reduce the importance of security and of its link with other issues in the eyes of decision-makers and public opinion."

[2] See, among others, Alessandro Marrone and Paola Tessari, "The Italian Debate on Defence Matters", in *Documenti IAI*, No. 13|07 (November 2013), http://www.iai.it/en/node/477.

[3] Interview conducted in Rome on 17 November 2014.

ISSN 2280-6164

or the best use of established tactical procedures and available means. Vice-versa, what counts most in training is not the success of a test or exercise, but the ability to challenge and assess troops' grasp of procedures, tactics, equipment, chain of Command and Control (C2), planning and so forth.[4]

Try to consider a crew's need to study the workings of complex weapons platforms and systems – such as helicopters or submarines for instance – and then to test their understanding through trial and error (within reason). Being able to draw upon a database of previous manoeuvres makes it possible not only to test their knowledge of equipment but also allows them to gain familiarity with it: how it works and what its limitations are.[5] In other words, in training even failure is a useful outcome as it leads to highlighting the gaps and problems that need working on in order to be better prepared once deployed in operational theatres. Metaphorically speaking, the difference is similar to that between a lab experiment and a medical operation. In the former, the goal is to test and refine both the theoretical approach and the tools, even making mistakes and trying again; in the latter, there is no room for error, and the only thing that matters is achieving the desired result on the first attempt. Moreover, it is training that dictates the procedures and organisation that, at the right moment, can translate into a commander's tactical or strategic intuition or best use of fortuitous circumstances. Training ensures armed forces' resilience in cases where military operations become more demanding than predicted by, for example, triggering the proper response when under attack and/or trapped by an adversary. It is precisely expertise in handling means and procedures, and personal experience built up over a continuous training cycle, that permits management of the unexpected on operations.[6] From this standpoint, the Italian Army defines training as "skills in soldiers and units with a view to better fulfilling the assigned tasks. It considers the possible scenarios and the experience gained on operational deployments. Also, training is fundamental in conducting operations while protecting forces and non-combatants, with the latter being increasingly present in the urban environments of current operational scenarios. Training is therefore a continued, methodical, and realistic activity that reduces the risk of accidents and collateral damage."[7]

As mentioned previously, the operational capability of the military instrument is given by the product of its components: human resources and equipment – the training of the former and employment of the latter. Tactically speaking, even the safest and most advanced armoured vehicle cannot alone ensure soldiers' adequate protection in combat if they are not trained to deal with the threat of Improvised Explosive Devices (IED), if they have not been drilled in emergency response and are not able to exploit the network of communications and intelligence supplied by

[4] Idem.

[5] Interview conducted in Rome on 19 November 2014.

[6] Idem.

[7] Italian Army, *Army Report 2013*, July 2014, p. 81, http://www.esercito.difesa.it/comunicazione/editoria/Rapporto-Esercito/Pagine/Rapporto-Esercito-2013.aspx.

ISSN 2280-6164

myriad other sources – helicopters, manned and unmanned vehicles and satellites – along with the other land platforms operating in the theatre. At strategic level, the military as a whole must be prepared and reasonably flexible in order to adapt to the changing international scenario and operational needs, and therefore, in the final analysis, must be effective and efficient despite the budget limitations imposed by the current and ongoing economic crisis.

Training is therefore fundamental to the armed forces' completion of its assigned tasks, especially since what is at stake is Italy's capacity to rapidly deploy and sustain adequate military capability if necessary, both on national soil and on international UN, NATO and EU-led missions. Thus, proper training determines the effectiveness and credibility of the military in terms of the defence of the national interests, even when they may not coincide entirely with those of our main European and/or transatlantic partners.[8] Another key function of training, as it relates to foreign and defence policy, albeit a less obvious one than the effective deployment of the Italian Armed Forces in operational theatres, is to ensure the defence of the Euro-Atlantic area in accordance with the commitments undertaken as a member of NATO. In general, training is necessary to maintain military operational capability and guarantee a rapid and satisfactory response to the need to use force. This renders the threat of the use of force credible in times of peace and, therefore, influences the strategic calculations of real or potential hostile actors by discouraging potential offensive or aggressive actions based on an adversary's assessment of them as susceptible to defeat or obstruction by properly trained forces. This deterrence mechanism is not only theoretical.[9] Widely applied during the Cold War, it remained valid over the successive two decades and its importance has significantly increased today in the context of the crisis in relations between Russia and the West. The Russian Federation's annexation of Crimea by military force sparked a heated debate over the Atlantic Alliance's true readiness and effectiveness, particularly those forces trained for rapid response. It is no accident that the NATO Summit of Heads of State and Government in September 2014 produced a series of important decisions concerning the Readiness Action Plan and intensification of Allied training and exercises in Eastern Europe. Displaying the quality and continuity of Allied country armed forces training is part of NATO's desired message of deterrence to Moscow, and its reassurance of those members that feel most threatened by Russia. In turn, the frequency and gravity of unauthorised incursions into NATO members' maritime and air space[10] is Moscow's way of testing the operational capabilities of the Allied forces and, in particular, the quality of their rapid response training within a joint and combined framework.[11]

[8] Interview conducted in Rome on 17 November 2014.

[9] What's more, it goes back a long way: consider the Latin motto "Si vis pacem para bellum".

[10] "La Nato lancia l'allarme: 26 caccia russi intercettati nei cieli europei", in *Corriere della Sera*, 29 October 2014, http://www.corriere.it/esteri/14_ottobre_29/nato-lancia-l-allarme-26-caccia-russi-intercettati-cieli-ue-e84279d2-5f98-11e4-a7a8-ad6fbfe5e57a.shtml

[11] Interview conducted in Rome on 19 November 2014.

ISSN 2280-6164

The aim of deterrence is made even more important by a deteriorating international situation that has, moreover, seen the return to Europe of an armed conflict directly or indirectly involving the principal regional powers. This makes continued training critical to covering the full spectrum of possible military operations, and it must be concentrated in high intensity operations – otherwise known as "worse-case" scenarios – against an adversary with well-equipped and well-trained conventional forces.[12] An adversary capable of adopting a "hybrid" war strategy mix of conventional armed forces, support for local militias, covert operations and propaganda, as in the case of Crimea – one also capable, however, of steering an escalation toward conventional conflict. Fully prepared armed forces, trained and drilled in worst-case scenarios can, through specific targeted training, easily acquire those capabilities for low-intensity operations such as peace-keeping, stabilisation and reconstruction. The opposite would not be possible, at least over the short-term and with limited resources.[13] The training needed for an amphibious operation cannot be improvised, nor can an airborne operation involving assault helicopters, airborne troops and integrated air and ground manoeuvres.[14] This latter sort, moreover, was conducted on many occasions in Iraq and Afghanistan by the Italian Army on international missions that were not considered high-intensity. Metaphorically speaking, it is like training a medical team for thoracic surgery: once trained for open-heart surgery, it is easy to take out an appendix, but knowing only how to remove an appendix is not enough to perform open-heart surgery without placing the patient's life at very serious risk.

It is within this framework that "lessons learned" in the operational theatre must be considered. It is clear that experience on the ground confronting certain threats and adversaries in semi-permissive environments, interacting in joint and combined framework, handling delicate and complex situations requiring civilian/military cooperation, must provide input for the training of the Italian Armed Forces. Nevertheless, it is necessary to avoid being deceived by the latest operational experiences into believing that future scenarios will consist of similar challenges and adversaries. Even Italy's recent history of participation in international missions – the Italian Army's peacekeeping operations in Bosnia and Kosovo in the 1990s and in Lebanon in the 1980s, which took place during ceasefire and in a permissive environment – can certainly not be compared with subsequent counter-insurgency operations in Afghanistan and their heavy combat component, a fact tragically witnessed by the 54 Italians who lost their lives in the Afghan theatre.

Additionally, training is obliged to evolve in light of not only the international context, operational experience and available financing, but must also keep pace with technological developments, particularly in ICT. There is a continuing trend

[12] Interview conducted in Rome on 17 and 19 November 2014.

[13] Idem.

[14] Alessandro R. Ungaro, "Il caso italiano", in Alessandro Marrone and Michele Nones (eds.), *Gli elicotteri duali nel campo della sicurezza e difesa*, Rome, Nuova Cultura, September 2014, p. 35-72 (Quaderni IAI 13), http://www.iai.it/en/node/2158.

ISSN 2280-6164

toward the development and procurement of technologically more advanced equipment and weapons systems that require periodic updating and highly specialised training of military and technical personnel.

The digitisation of the armed forces of NATO member countries, in other words the transformation of military capabilities into Network Enabled Capabilities (NEC), calls for compliance with increasingly high standards in order to remain inter-operational with more technologically advanced allies – the United States first and foremost, but not only – using "net-centric" equipment. It goes without saying that the most technologically advanced and complex weapons systems are causing a transformation of military training on their own. An example of this is the case of the F-35, and how the Air Force is adapting its training activities in order to gain an adequate sovereignty and control of the aircraft, especially as regards sensors and avionic systems.[15] The study of sensors, electronic warfare and subsystems in general, is and will continue to be one of the areas that most determines the technological advancement of the military instrument and its capabilities. In the Italian context, however, apart from a few successful achievements currently being developed and absorbed, training in that sector seems to suffer from insufficient consideration even though its importance and value have been acknowledged, at least on paper.[16] What's more, this aspect also touches on the relationship between the armed forces, industry and the legislative system. The client-supplier relationship that still appears to typify the armed forces-industry relationship should be reviewed within a more synergetic context in which the "services world" can be properly exploited while fully involving the military and industrial spheres.[17]

Moreover, the fact that such equipment is likely to be used to a lesser extent on future missions than on those of the past 15-20 years will require more frequent, rigorous and prolonged testing in order to ensure their safety, effectiveness and readiness. Indeed, there can be no certainty about which and how many vehicles and/or weapons systems are actually useable on short notice and in various operational theatres without risking the success of the operation and safety of the personnel deployed in the theatre.

At the same time, target engagement precision will remain an indispensable prerequisite for the use of force by NATO member countries. It will therefore require not only the use of advanced weapons systems – Precision Guided Munitions (PMG), for example – but also military personnel's complete understanding of how to employ them while also reducing the risk of collateral damage to the extent possible. This concept can be applied, for example, to Close Air Support (CAS), where each ground platoon commander has to be able to give instructions to the helicopter or other aircraft crew in compliance with specific NATO procedures and with full knowledge of the weapon's specifications. This is in order to engage

[15] Interview conducted in Rome on 20 November 2014.
[16] Interview conducted in Rome on 23 January 2015.
[17] Idem.

ISSN 2280-6164

the target with the highest possible precision and speed within the context of the manoeuvre and of the operation in general.

Furthermore, experimentation with new weapons systems, especially if they are technologically advanced, remains a highly sensitive activity that is closely associated with national security. A recent example is the Afghan theatre testing of an updated and more modern version of the "Mangusta" attack helicopter known as the AW-129D, which will gradually come to replace CBTs version, thus completing a generational leap that will make it possible for Mangusta crews to more effectively carry out their missions.[18]

The same could be said of the Vulcano munitions system developed by OTO-Melara. This technology extends a ship's footprint well beyond its on-board sensor capability, making it possible to fire high precision artillery from a great distance – but only after detailed planning and the close tactical cooperation of supporting ground units in the theatre. Vulcano munitions are an entirely Italian technology that requires the implementation of national joint doctrine and procedures and a fully "live," "virtual" and "constructive" training environment.

This aspect of testing new equipment is equally important from a defence industry policy perspective in the case they are produced by national industries. Such testing involves the use of sensitive data that could be susceptible to industrial espionage ("economic intelligence"), and therefore must be performed in suitable and protected training areas. Moreover, testing constitutes significant support to the Italian aerospace, defence and security industry to the extent that it serves to improve new products, technologies and systems that have the potential to be exported to international markets, to the obvious advantage of the national technological and industrial base.

2. The operational and budget framework: what changes for the Armed Forces

Funding for training has been hit especially hard over the past decade by ever-increasing Defence budget cuts. The resulting imbalance favours expenditures in the budget subcategory of "Personnel" at the expense of "Operation & Maintenance" (operating costs, training and equipment maintenance costs, etc.).

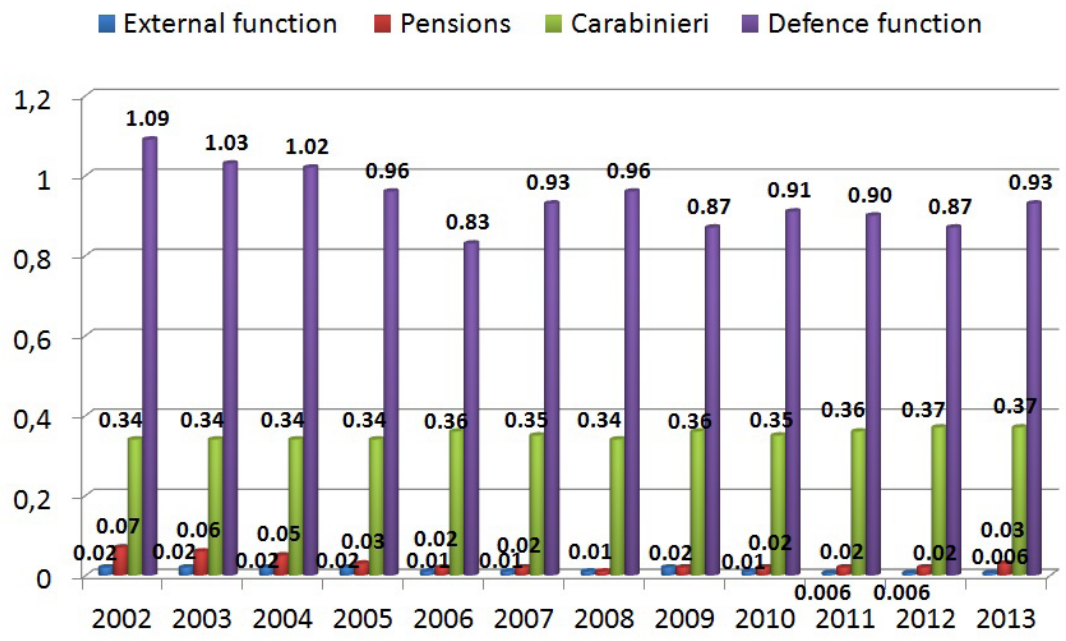
Spending on the "Operation & Maintenance" must be viewed within a broader budgetary and expenditures framework known as the "Defence function" – that part of the Defence Budget specifically earmarked for the Armed Forces. This includes all the financial resources necessary for the Army, Navy and Air Force to complete their assigned military tasks, as well as the joint component and the

[18] "Test in Afghanistan per gli elicotteri AW-129D Mangusta", in *Analisi Difesa*, 14 November 2014, http://www.analisidifesa.it/?p=16976.

ISSN 2280-6164

Ministry of Defence administrative and technical facilities. Briefly put, it represents the benchmark for the cost of defence in Italy, i.e. how much is spent annually to maintain the complex military instrument. Figure 1 shows the historic trend in percentage of the Italian gross domestic product (GDP) accounted for by the "Defence function". While the benchmark at NATO level – as underscored in numerous and recent summit meetings – is 2%, Italy did not reach even 1.1% in 2013, stopping precisely at 0.93%. In truth, allotments between 2002 and 2013 never got as far as the 2% point, oscillating between 0.8 and slightly over 1%. Moreover, considering the amount that Italian GDP has contracted over the last five years, stable military spending translates into real budget cuts.

Figure 1 | Defence Spending as % GDP



Source: IAI.

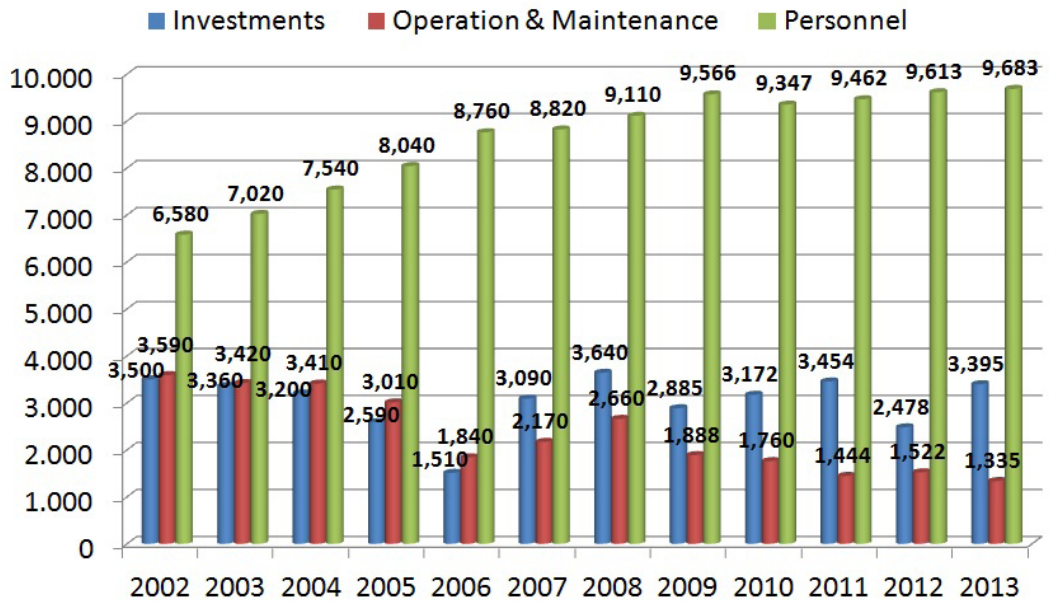
In particular, referring to the *Defence Budgets and Industry: Tables and Graphs*,[19] which cites a series of data published in the 2014-2016 Multi-Year Defence Planning Document, it is possible to see an historic trend in 2002-2013 "Operation & Maintenance" expenditures. Spending for "Personnel" rose steadily over these past 12 years from 6,580 billion euro in 2002 to 9,683 in 2013, while trends in "Investments" spending (upgrades and modernisation) oscillated considerably: after a drastic reduction between 2002 and 2006, and a rapid upswing between 2006 and 2008, these remained disjointed and irregular between 2008 and 2013. A much more drastic reduction can be noted in "Operation & Maintenance" spending

[19] Alessandro Marrone, Paola Sartori, Alessandro R. Ungaro, *Defence Budgets and Industry: Tables and Graphs*, July 2014, http://www.iai.it/en/node/702.

ISSN 2280-6164

– an alarming 63% between 2002 and 2013 from 3,590 billion euro to 1,335 billion – which has had a deeply negative impact on the quantity and quality of Italian Armed Forces training. Indeed, suffice it to consider that training activities bear the burden of inflexible costs associated with items such as fuel and munitions consumption, maintenance costs, the use of training areas, and so forth.

Figure 2 | Defence function spending 2002-2013 (in billions of euro)



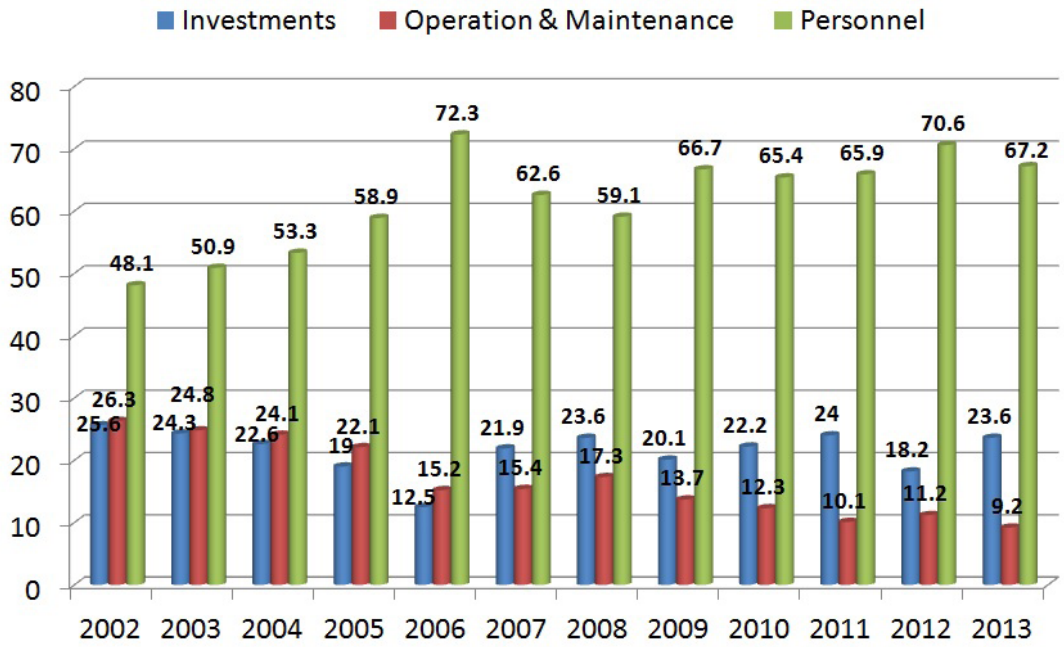
Source: IAI.

If we translate these absolute data into percentages, we get a more direct picture of the "weight" of each of these subcategories in overall "Defence function" spending (Figure 3). Spending for "Personnel" as of 2013, absorbed nearly 70% of resources, while the "Investments" took slightly less than 25% (23.6). The percentage spent on the "O&M" remained for the most part at the level of the absolute data shown earlier. While in 2002 dedicated expenditures absorbed slightly more than 25% (26.3), eleven years later they had fallen to under 10% (9.2, to be exact). Paradoxically, it seems the optimal subdivision of resources among the three classic components of the "Defence function," established internationally at 50% for "Personnel" and 25% for the other two categories ("O&M" and "Investments"), was actually achieved in the early 2000s, particularly in 2002 and 2003. Only afterward did the divide deepen, tipping the scales in favour of "Personnel." An imbalance so serious as to require the launch of a radical reform in 2012 whose objectives included (and still include) resetting the resources allocation balance to the 50-25-25 model though a 43,000-unit reduction in civilian and military personnel, and a one-third cut to defence infrastructure and bases. A reform that, two years on from its approval, seems not to have yielded the desired results, due not least to shortcomings in a

ISSN 2280-6164

January 2014 law meant to implement it.[20]

Figure 3 | 2002-2013 Defence function spending by category (% of Defence function)



Source: IAI.

This trend in "Operation & Maintenance" spending is borne out by the data on the funds made available for training by the Army's ordinary budget[21] (Figure 4).

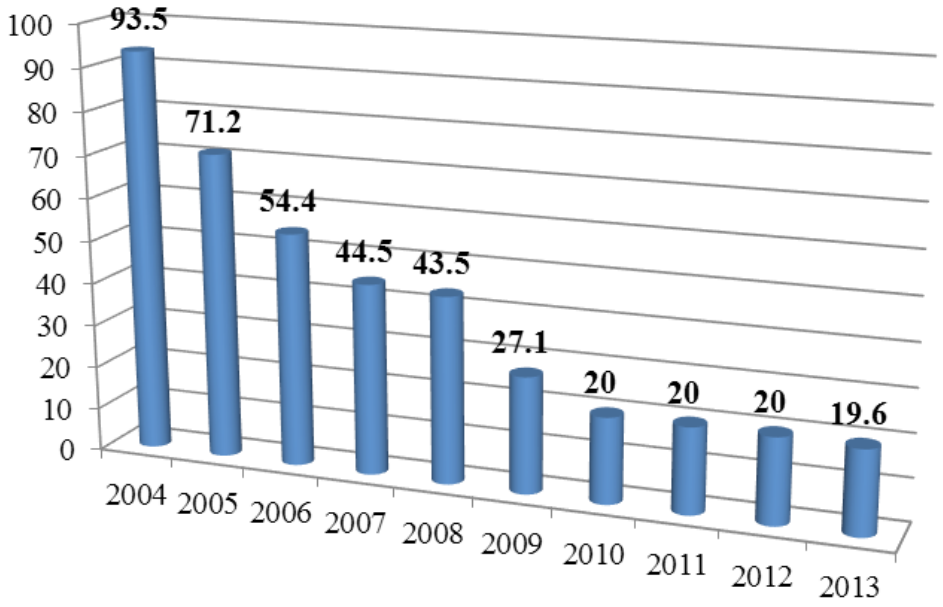
As the data clearly demonstrate, over slightly less than a ten-year span, allotments dropped by 71%, which has forced the Army to adopt a necessarily selective training policy targeted to the operational priorities of the moment: to preserve forces' readiness to safely lead operations already under way. Moreover, considering that deployment timeframes continue to narrow, from a maximum of 4 months to a minimum of one day – even as little as a few hours' notice in cases of serious emergencies such as the 2014 flooding in Genoa – the service has adopted a flexible "mission oriented" policy (Figure 5). Such a policy seeks to exploit every opportunity for readiness training in order to give troops "full spectrum" operational capability, meaning the ability to conduct offensive, defensive, stabilising and "enabler" activities by focusing training on the tactical activity typical of each individual unit. Lack of funds, however, disallows the staging of training activities that are critical to maintaining valuable skills such as those that artillery and tank units could see either lost or outdated with the passage of time.

[20] Alessandro Marrone, "La non riforma della Difesa", in *AffarInternazionali*, 24 February 2014, http://www.affarinternazionali.it/articolo.asp?ID=2544.

[21] Italian Army, *Army Report 2013*, cit.

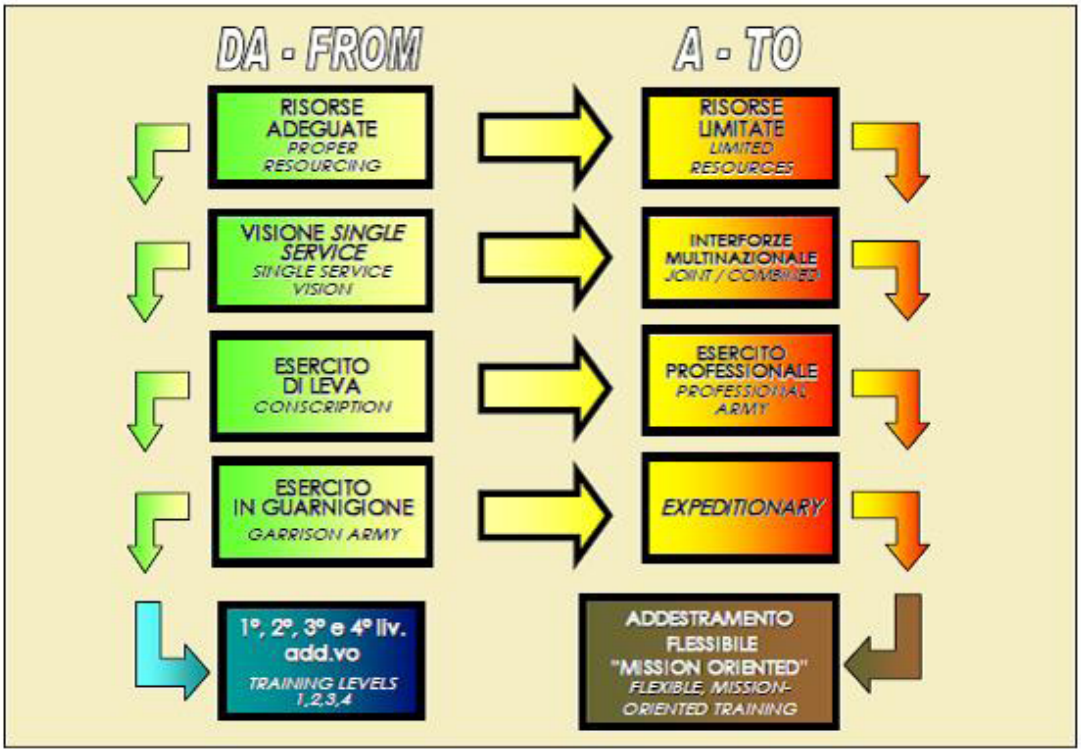
ISSN 2280-6164

Figure 4 | Trend in training's assignments in the ordinary Army budget (millions of euro)



Source: IAI data based on 2013 Army Report.

Figure 5 | Evolution of the Army training cycle



Source: Army Report 2013.

ISSN 2280-6164

The evolution of Army training is an inseparable part of Italy's considerable participation, both qualitatively and quantitatively, in post-Cold War crisis management operations in Europe, Africa, the Middle East and Asia. For instance, hybrid threats and scenarios increasingly embedded in built-up areas call for the distributed deployment of small ground forces. If follows that all their leaders, down to the lowest level, must be capable of rapidly and independently making decisions that could be strategically pivotal. Growing importance has begun to be given to the preparation of each individual soldier as central to the organisation as a whole and part of a continuing readiness cycle. This individual physical and intellectual preparation, which also concerns stress-resistance, is indispensable to achieving a high standard of collective, mission-ready unit preparedness. All this must come through the gradual and continuous training of deployable forces capable of joint, combined and multi-agency integration.

The aforementioned cutbacks have also significantly affected the Italian Navy. The number of active hours/days dedicated to training dropped from 40% of the total activities in early 2004 to approximately 15% in 2014, with points even lower in periods of more serious international crises and, therefore, of increased operational deployment (see the case of Libya in 2011).

Specifically, training activities conducted abroad over the ten-year span from 2004 to 2014 dropped by about 50%, impacting negatively on various training sectors and, in particular, on overall interoperability and the ability to operate in multinational frameworks as well as in the presence of unusual environmental conditions. In partial compensation for this reduction in active training hours, the "training while operating" concept was adopted. This approach has the advantage of being able to train personnel/units for a specific operation, analysing problems and difficulties directly in the field and simultaneously reducing the time and money needed for pre-deployment training.

That notwithstanding, mission readiness cannot dispense with expert training tailored to the specificities of the various missions and environments in which assets and units are going to be operating. Elementary and advanced training for all forms of combat and all specialised Navy components must also be a regular requirement. Indeed, current scenarios and recent experience show that no component can be ignored. Furthermore, the growing need to conduct dual-purpose activities has led to a diversified use of the Navy (in support of the Civil Protection Department, for example) and therefore requires crew training upgrades. Consequently, even though the percentage of time dedicated to training has diminished over the years, this has been offset by an increase in the quality of that training. The awareness is that "ready" units must be able to perform the full spectrum of activities for which they could be deployed in a given theatre; activities aimed at the primary need for readiness are also conducted on national soil, including territorial waters, in support of domestic security and emergency response capability.

ISSN 2280-6164

Starting in the 1990s, the Italian Armed Forces have participated in significant and growing measure in international NATO, UN, EU and multinational coalition missions, thus making a substantial contribution on behalf of Italian foreign and defence policy.[22] Experience on the ground has led to improving Italian military capabilities, including the use of technologies, systems, procedures and tactics, and nearly always in joint and combined operations.

Furthermore, financing for the preparation and leading of international missions has been used to provide necessary training for the units to be deployed to operational theatres through brief but intense cycles that have been able to offset the training gap created by spending cuts described earlier. Indeed, given the persistence of spending imbalances that tend to penalise training, those structural funds have been nothing short of a life-giving transfusion to an otherwise dying training system.

Although Italian participation in a range of foreign military operations will remain considerable in the coming years – in Lebanon, Kosovo, the Gulf of Aden and Afghanistan – commitments will be smaller, precisely as a result of the latter of these theatres' transition from the current ISAF to the Resolute Support mission. The new mission will be a non-combat one dedicated exclusively to the training of Afghan military and security forces, with a much smaller contingent than that of ISAF.[23]

This has two essential, interconnected effects that mirror each other and affect the entire Italian training system. Considering the aforementioned short-to-medium-term prospects for the decreased deployment of the Italian Armed Forces abroad, the first effect consists of the impossibility of relying on "out-of-area" operations as a field for training and innovation in which to test and validate the military instrument.[24] This impossibility has already become a reality for a substantial portion of the Italian Armed Forces, particularly the Army, which has provided the bulk of the Italian ISAF contingent for a decade now – a contingent that numbered over 4,000 units for more than four consecutive years, and was responsible for Regional Command West from 2006 to 2014. The second effect, correlated and a consequence of the first, is a gradual reduction of the *ad hoc* international mission fund that the Parliament decides to add to the Defence Ministry Budget each year. Financing that, as we saw earlier, has been used over the years to cover part of

[22] See, among others, Stefania Forte and Alessandro Marrone (eds.), "L'Italia e le missioni internazionali", in *Documenti IAI*, No. 12|05 (September 2012), http://www.iai.it/en/node/1517; Vincenzo Camporini et al., *The Role of Italian Fighter Aircraft in Crisis Management Operations: Trends and Needs*, Rome, Nuova Cultura, March 2014, p. 146 (IAI Research Papers 16), http://www.iai.it/en/node/2155.

[23] See, among others, Alessandro Marrone, Paola Tessari and Carolina De Simone, "Italian Interests and NATO: From Missions to Trenches?", in *Documenti IAI*, No. 14|12e (December 2014), http://www.iai.it/en/node/2382.

[24] Interview conducted in Rome on 20 November 2014.

ISSN 2280-6164

the "O&M" expenses for the training of military personnel and maintenance of equipment, and that shrunk from 1.55 billion euro in 2011 to 1.4 billion in 2012, to a further reduced 1.25 billion in 2013.[25] Even for the current year, 2014, financing for international missions has been cut by another 250 million euro bringing it down to 1 billion[26] and, according to some sources, the 2015 budget intends to reduce it to its lowest point in 15 years: 850 million.[27] Considering the previously discussed chronic imbalance in Italian defence spending, with excessive expenditures on "Personnel" at the expense of the "O&M" (and in part the "Investments" as well), the Italian Armed Forces are going to have extremely limited funds with which to conduct adequate training activities in the future.[28]

Thus, the critical question arises of how to maintain such hard-won operational capabilities over the coming years and ensure adequate military effectiveness, readiness, inter-operability and efficiency standards. The theme of training is therefore pivotal, if Italy is to maintain what it has so painstakingly built, and its military is to be ready for eventual future missions.

3. The international dimension of training: NATO and the EU

Certainly, training is one of the fields in which international cooperation initiatives, whether conducted within NATO (Smart Defence) or the EU, particularly European Defence Agency (EDA) Pooling and Sharing, are highly necessary, important and useful.

NATO has always been the Italian Armed Forces' point of reference when it comes to training, with its shared member country military doctrines, procedures and standards. NATO's unprecedented, extensive, prolonged and demanding commitments in out-of-area missions during the post-Cold War period further strengthened the Alliance's role as a framework within which to ensure the interoperability of member armed forces and to set guidelines – if not actual compulsory prerequisites – for the operational capabilities to be developed and/or maintained. Over recent years, especially with the conclusion of the ISAF mission in Afghanistan, NATO seems once again to be shifting its basic orientation from the imperative to deploy forces in out-of-area theatres to one of readiness and rapid response to current threats. As previously mentioned, the crisis in Ukraine has given new importance to the two-fold purpose to deter eventual hostile acts

[25] Gianandrea Gaiani, "Sui fondi per le missioni pesa l'incognita afghana", in *Analisi Difesa*, 13 January 2014, http://www.analisidifesa.it/?p=7929.

[26] "Il governo stanzia 446 milioni per le missioni oltremare", in *Analisi Difesa*, 24 July 2014, http://www.analisidifesa.it/?p=13020.

[27] Giovanni Martinelli, "Legge di Stabilità: il colpo di grazia alle Forze armate", in *Analisi Difesa*, 1 November 2014, http://www.analisidifesa.it/?p=16470.

[28] Alessandro Marrone and Alessandro R. Ungaro, "Difesa, come spendere poco e male", in *AffarInternazionali*, 30 July 2014, http://www.affarinternazionali.it/articolo.asp?ID=2757.

ISSN 2280-6164

and reassure members regarding perceived threats. This evolution of NATO is witnessed by the results of the 2012 Chicago summit and the actions the Allies collectively decided to undertake.

Indeed, at the 2012 summit, the member states set a goal they called "NATO Forces 2020,"[29] a system of interoperable, long-term, modern, trained and equipped forces capable of collaborating with various partners in any type of operational environment. The Connected Force Initiative (CFI) emerged at that time as a key element by which to achieve the NATO Forces 2020 objective. The CFI allows for in-depth military personnel training in conjunction with other training activities provided at national level[30] through what is known as "joint and combined training."[31] This ensures the acquisition and maintenance of key military capabilities that all personnel must acquire and be ready to employ, as well as the sharing of best practices, thus strengthening the interoperability not only among Alliance members but also with country partners.

At the recent Wales summit, in light of various existing challenges from the crisis in Ukraine to those of North Africa and the Middle East, in addition to the Readiness Action Plan, the Allies agreed in their closing declaration on a six-measure CFI package[32] that includes:

- an updated Education, Training, Exercise and Evaluation (ETEE) policy;
- an expanded 2015-2020 NATO Training Concept;
- a 2015 "high-visibility" exercise;[33]
- a major NATO exercise programme from 2016 onward;
- a series of instruments for continued implementation of CFI technological aspects;
- the creation of the Special Operation Forces (SOF), under the operational command of Supreme Allied Commander Europe (SACEUR).

These measures are important also because interconnected and interoperable NATO forces ensure a higher level of security than is possible at individual national level. The integrated structure not only of the forces to be deployed but also at Command level is synonymous with solidarity and shared responsibility and risk in the pursuance of its mission to ensure international security.

[29] NATO, *Chicago Summit Declaration*, May 2012, par. 55, http://www.nato.int/cps/en/natohq/official_texts_87593.htm; NATO, *Summit Declaration on Defence Capabilities: Towards NATO Forces 2020*, May 2012, par. 5, http://www.nato.int/cps/en/natohq/official_texts_87594.htm.

[30] NATO, *Summit Declaration on Defence Capabilities*, cit., par. 11.

[31] For the difference between "joint" and "combined" see: NATO, *Connected Forces Initiative*, 16 September 2014, http://www.nato.int/cps/en/natolive/topics_98527.htm.

[32] NATO, *Wales Summit Declaration*, 5 September 2014, par. 69, http://www.nato.int/cps/en/natohq/official_texts_112964.htm.

[33] See NATO Allied Land Command, *Road to Trident Juncture 2015*, https://www.lc.nato.int/articles.php?page_id=114.

ISSN 2280-6164

From this standpoint, Italy's engagement in both NATO and EU international training activities has two extremely important purposes. On the one hand, it is fundamental to maintaining Italian capabilities at an adequate standard, both through exposure to teamwork with some of the most advanced armed forces in the world in terms of technology and doctrine, and familiarity with NATO doctrines and procedures. Furthermore, in this case also the use of the military instrument represents an investment in a system of alliances that provides Italian foreign and defence policy with a political-diplomatic capital to spend towards the allies. Being an active, reliable member today, with substantial training capability, particularly in international exercises, is an important element in each member country's contribution to the Alliance and, consequently, its position at the NATO table. The CFI is certainly a cutting-edge initiative, aimed at maintaining the capabilities gained in the course of ISAF and other international missions, as well as credible capacity for deterrence, by creating a system of training resources and initiatives. Nevertheless, it can only be applied to certain commands and/or units, and only at certain levels; the goal of an adequate national training system would instead be to ensure a high standard for the entire Italian military instrument[34] – which is not possible solely by participating in the CFI.

The importance and quality of Italy's contribution to training in NATO and the EU comes clearly to the fore when analysing various international exercises in which the Italian Armed Forces have taken part, often playing a leading role.

An extremely important example of a joint and multinational NATO exercise was Joint Eagle 14,[35] during which the Army and Air Force deployed commands respectively in Lecce and Ferrara, for a total of 2000 men who performed the tasks, respectively, of the NATO Rapid Deployable Corps Italy (NRDC ITA) and the Joint Force Air Component (JFAC). This exercise, carried out under the aegis of the Defence General Staff and organised by the Italian Joint Operations Headquarters (*Comando Operativo di vertice Interforze*, COI), was the result of the combination of two separate exercises: Eagle Joker 14 for the NRDC ITA and Virtual Flag 14 for the JFAC. The exercise, in which representatives of 14 Alliance members also took part, constituted Italy's compliance with the NATO requirement to have a C2 structure capable of operating with the armed forces of allied countries in international contexts, not least in order to contribute to the CFI. In particular, Eagle Joker 14 tested various commands and units on their real capability to satisfy the requirements of the NRDC ITA, with special attention to their ability to handle cyber threats.[36]

[34] Interview conducted in Rome on 17 November 2014.

[35] "Conclusa l'Esercitazione Joint Eagle", in *Analisi Difesa*, 19 October 2014, http://www.analisidifesa.it/?p=15956.

[36] Italian Army, *Esercitazione "Eagle Joker 2014"*, 21 August 2014, http://www.esercito.difesa.it/comunicazione/Pagine/eagle_joker_140821.aspx.

ISSN 2280-6164

In the case of Virtual Flag, in contrast with its previous five editions (as proof of how training is no longer single service but increasingly joint in nature),[37] the 2014 simulation was inserted for the first time into a broader and more complex joint framework: Joint Eagle 14, where the JFAC Air Component Coordination Element (ACCE) was also operating. Within this new operational framework, the Italian JFAC was involved in all mission types, from air defence to reconnaissance, electronic warfare to ground attack, and air-to-air refuelling to search and rescue, including in hostile territory.

NATO Steadfast Javelin II (SFJVII), conducted in North Western Europe in September 2014 with the involvement of 2000 troops from more than 10 Atlantic Alliance member states,[38] further demonstrated this type of exercise's importance to augmenting the interoperability of the armed forces, especially in the successful accomplishment of programmes and initiatives requiring systemic connection and cooperation. Again with regard to Italy's international role, in July 2014 Italian troops engaged on the NATO mission in Kosovo participated in an intense training phase together with soldiers of other nationalities from Multinational Battle Group West, with the goal of achieving Full Operational Capability (FOC) in different scenarios.[39]

The NATO Saber Junction 2014 exercise carried out in Germany in September 2014, tested the strategic projection capability of the armed forces from various European countries, among them the paratroopers of the 186th Paratrooper Regiment of Siena known as "Folgore." The propensity for airborne troops to cooperate, regardless of their home country, emerged on that occasion. Subsequent to that exercise, the same paratrooper regiment was able to identify capability gaps that they worked on and corrected in a subsequent internal training cycle in preparation for the national Joint Rapid Response Force.[40]

The EU-level European Guardian exercise, held in Vienna in September,[41] brought various counter-IED experts together within the broader EDA Manual Neutralization Techniques Course and Exercises programme. Given the current international context, in which States find themselves confronting a highly asymmetrical

[37] Interview conducted in Rome on 20 November 2014.

[38] NATO Allied Joint Force Command Brunssum, *Exercise Steadfast Javelin II (SFJVII) Includes Airborne Assault*, 7 September 2014, http://jfcbs.nato.int/jfcbrunssum/news_archive/2014/exercise-steadfast-javelin-ii-sfjvii-includes-airborne-assault-.aspx.

[39] Italian Ministry of Defence, *Esercitazioni multinazionali per i militari italiani in Kosovo*, 9 July 2014, http://www.difesa.it/OperazioniMilitari/op_intern_corso/KFOR/notizie_teatro/Pagine/EsercitazioniMultinazionaliInKosovo.aspx.

[40] Italian Army, *La Folgore si esercita per la JRRF*, 4 November 2014, http://www.esercito.difesa.it/comunicazione/Pagine/jrrf-141104.aspx.

[41] EDA News, *Counter-IED experts complete "European Guardian" exercise in Vienna*, 16 September 2014, http://www.eda.europa.eu/info-hub/news/2014/09/16/counter-ied-experts-complete-european-guardian-exercise-in-vienna.

ISSN 2280-6164

terrorist threat, it is essential that the armed forces also have expertise in dealing with this type of threat.

Since greater collaboration at European level is part of a long-term armed forces improvement strategy, those same forces are required to engage in exercises and training programmes specially designed within the context of Research and Development (R&D) programmes that encourage security and defence research. To this end, in the context of the EDA technological research programme known as Robust Acoustic Communication Underwater Network (RACUN),[42] the Italian Navy joined those of Germany, the Netherlands, Norway and Sweden in studying, testing and developing innovative underwater communications networks for military and civilian use.[43]

Training has proven to be essential to fostering the standardisation of methods and technologies. The 2014 EDA initiative EART[44] is an excellent example. Through the adoption of measures for improving air-to-air refuelling (AAR) for strategic transport, the Agency's intent is to foster uniformity in the approaches applied to this activity through the pooling and sharing of resources.[45]

Many other exercises and training initiatives have been proposed under the aegis of the EDA, first of all to boost European Armed Forces capabilities in multinational operations and, secondly, in order to share best practices. These examples of pooling & sharing clearly demonstrate how effective and efficient it is to conduct this type of activity at both EU and international level. This primarily in consideration of the costs, since meeting the same expressed needs of all countries and international actors would allow for the achievement of better results than would have been possible at individual European level, while also using fewer resources.[46] Moreover, sharing operational techniques at European level would ensure exchanges and the mutual enhancement of EU and/or NATO countries.

Finally, a good example of multinational exercises with European countries outside the Alliance/EU framework is the Grifone 2014 exercise organised by the Italian Air Force within the context of a Western Mediterranean (Italy, France, Spain)

[42] See Jörge Kalwa, "The RACUN-project: Robust acoustic communications in underwater networks - An overview", in *OCEANS, 2011 IEEE - Spain*, 6-9 June 2011; Roald Otnes et al., "Underwater Acoustic Networking Techniques", in *Springer Briefs in Electrical and Computer Engineering*, 2012.

[43] "News - Forze Navali: Prosegue il progetto RACUN", in *Rivista Italiana Difesa*, n. 8/2014, August 2014.

[44] EDA Fact sheet, *European Air-to-Air Refuelling Training 2014 (EART14)*, 31 March 2014, http://www.eda.europa.eu/docs/default-source/eda-factsheets/2014-03-31-factsheet_eart2014-.

[45] Antonio Calabrese and Serafino Durante, "EART14", in *Rivista Aeronautica*, No. 2/2014.

[46] In particular, the Austrian commander of the exercise stated: "Obviously one important element is cost. By pooling demand from different countries with similar needs, we can afford to do more than we would be able to do individually. However, another important part is bringing together operatives from across Europe, learning from each other, and developing a European network of manual neutralisation experts", EDA News, *Counter-IED experts complete*, cit.

ISSN 2280-6164

Search and Rescue Agreement (SAR MED/OCC).[47] In this case, the intention was to focus on a joint synergy thanks to a seamless use of helicopters provided by the Air Force, Army, Financial Guard, Carabinieri, State Forestry Corps and State Police. As previously noted, multinational exercises and training programmes are conducted also in an effort to harmonise operational procedures and increase mutual understanding and familiarity among the various divisions. It was for the same purpose that the "Alpina Julia" Brigade participated in the June multinational exercise Clever Ferret 2014 in Slovenia.[48]

In general, NATO, EU or multilateral "variable geometry" training activities are also an instrument in terms of military diplomacy. Leading or participating in a significant way in international training initiatives, with qualified experts and even centres of excellence, on the one hand creates an attraction for what may be smaller and/or less advanced allied armed forces, and makes it possible to strengthen bilateral relations and Italy's position multilaterally. Furthermore, using and validating Italian industry military equipment in international exercises and activities is a way of displaying their high quality and therefore, more or less indirectly, of sustaining efforts to promote their export, beginning with to NATO and EU countries.

4. Challenges and opportunities

The theme of training is associated with both challenges and opportunities. To date, advances in the ICT sector are driving a process of change that goes beyond economic growth to embrace multiple aspects concerning the global economy, governments and the civil society. These have great potential and are in constant evolution, particularly because of the development of new platforms and generations of instruments through which to implement a multitude of devices and applications.[49] The Italian Armed Forces need to be equipped in order to reap the benefits of such advances. Forza NEC, a clear example of this spillover of technological progress, is a programme for the modernisation of the armed forces aimed at the acquisition of entirely digitised operational and technological capabilities.[50] In order to equip operational units deployed in the field with integrated digital communications and processing systems, the project uses ICT advancements for the purpose of boosting those forces' communications and C2 capabilities. The contribution of ICT is also

[47] "Conclusa l'Esercitazione di Soccorso Aereo 'Grifone 2014'", in *Analisi Difesa*, 12 September 2014, http://www.analisidifesa.it/?p=14562.

[48] "Esercitazione Clever Ferret per la Julia", in *Analisi Difesa*, 30 June 2014, http://www.analisidifesa.it/?p=12296.

[49] European Commission, *Horizon 2020, Information and Communication Technologies*, http://europa.eu/!qQ66TX.

[50] Chamber of Deputies Defence Commission, *Indagine conoscitiva sui sistemi d'arma destinati alla difesa in vista del Consiglio europeo di dicembre 2013*, 10 December 2013, http://documenti.camera.it/leg17/resoconti/commissioni/bollettini/pdf/2013/12/10/leg.17.bol0137.data20131210.com04.pdf.

ISSN 2280-6164

fundamental to providing support and coordination during military exercises, which gain added value when, by using these applications, it becomes possible to generate a system, a network of interconnected sensors, decision-makers and operators.[51] This infrastructure makes a precious contribution to the integrated and coordinated collection, analysis, treatment and distribution of data.

In addition to digitisation, given the current levels of technological progress in general, exercises with "live," "virtual" and/or "constructive" simulations could be organized using Modeling & Simulation platforms. Indeed, these latter make it possible to simulate complex environments within which instruments, systems, individuals and objects can interact in a manner similar to the real world. "Live" simulation exercise involves "exercises in which soldiers and vehicles, equipped with individual weapons as well as weapons systems, use simulators that allow for combat activities in scenarios faithfully close to reality."[52]

"Live" simulation offers systems that allow for combat between opposing forces such as Multiple Integrated Laser Engagement System (MILES),[53] both in what are known as "fire on force" activities as well as in mobile "fire on target" exercises. "Virtual" activities permit visual and realistic reconstructions in which classic flight, vehicle or mission simulators – designed for training on a single system – are used with systems that together make combat simulation possible for a number of actors using specially-designed consoles (that can be mission simulators), such as Virtual Battlespace 3 (VBS3).

Finally, "constructive" simulations offer the "possibility to construct and exercise the functions of Command and Control (C2) in a truly complete and complex operational scenario,"[54] where not only the object but also its behaviour is simulated, with the possibility of creating environments with a variety of agents in action, minimising the use of human resources and equipment. Nevertheless, in this context an adequate level of interoperability between simulation systems and C2 operational systems is advisable by presenting, for example, data and maps in the same way.[55]

[51] Michele Nones and Alessandro Marrone (eds.), *The Transformation of the Armed Forces: The Forza NEC Program*, Rome, Nuova Cultura, October 2012 (IAI Research Paper 5), http://www.iai.it/en/node/1387.

[52] Katia Fabbri et al., *Pianificazione di un ciclo di addestramento operativo tramite l'utilizzo integrato di Tools di Simulazione Live & Constructive*, April 2010, http://www.vitrociset.it/images/Innovazione/fabbri.pdf.

[53] US-conceived, MILES is a Multiple Integrated Laser Engagement System that simulates actual combat conditions.

[54] Katia Fabbri, *Pianificazione di un ciclo di addestramento*, cit. See also, Finmeccanica Innovazione, "Simulazione e realtà virtuale", in *MIT Technology Review, Edizione italiana*, No. 2/2013, p. 34-35, http://www.technologyreview.it/article/180313054405_c34-35.pdf.

[55] An example of the application of these concepts comes from the FAC/JTAC (Forward Air Controller - Joint Terminal Attack Controller) training systems. In these, the trainee is immersed in a simulated operational area. He has the same instruments at his disposal that he would have in a real situation, such as a radio, C2, binoculars etc. The targets used in the simulation are

ISSN 2280-6164

This innovative framework also includes the Italian Army's Integrated Ground Training Systems (*Sistemi Integrati per l'Addestramento Terrestre*, SIAT), which pursues the creation of a "constructive" simulation centre at the Army's Centre for Simulation and Validation (*Centro di Simulazione e Validazione*) located in Civitavecchia, and five "live" simulation centres, also known as Tactical Training Centres (*Centri di Addestramento Tattico*, CAT). Their aim is to raise the operational capability of commands/units, from fire-team level up (fire-team/squadron/platoon) prior to being deployed in the theatre, and modernise armed forces training activities consistent with the benchmark training cycle.[56] One of the five CATs was set up in November 2014 at Capo Teulada,[57] which the Army General Staff put under the command of SIAT. Through SIAT it would be possible to eliminate the security limitations created by the use of real munitions, allowing for realistic, continuous, all-weather training exercises using all operational combat, combat support and combat service support components. One of the SIAT project's primary goals is to link the various national and international sites so that the "live" centres could simultaneously share the same exercise scenario under the control of the Army Centre for Simulation and Validation. In addition, the project could generate significant returns in terms of territorial qualification and development from the standpoint of technology and infrastructure, as well as through possible forms of cooperation with the research bodies and universities that could avail themselves of those facilities.

In a similar vein, the Air Force staged a digital C2 simulation called Virtual Flag 14 in October 2014 to train professionals on air operations management. The exercise employed computer technology systems and Modeling & Simulation (M&S) platforms, virtually recreating crisis scenarios very close to reality. In this case too, the Italian Armed Forces performed the exercise maintaining a close link with the international security scenario and, in particular, in preparation for NATO's late-2015 certification of the Italian Joint Force Air Component (ITA-JFAC),[58] which makes possible the planning, coordination and control of all aspects of an air campaign. For that reason, the exercise was carried out in two phases: during the first, the trainees became familiar with the facility and JFAC operational procedures, while the operational planning and execution of the air campaign took place in the second phase.[59] As pointed out in the previous chapter, the sixth edition of Virtual Flag (2014) simulated a joint training scenario – the Joint Eagle 2014 managed by the COI of Rome – which also included the Italian Army's Eagle Joker 2014 exercise. Within this complex architecture, the Italian JFAC carried out a

"constructed" while the combat vehicles are simulated and controlled by operators on simple-to-use dedicated consoles.

[56] Italian Army, *Army Report 2013*, cit.

[57] The other four CATs are to be set up in the training areas of Monte Romano, Cesano di Roma, Lecce and San Giorgio di Brunico.

[58] Italian Air Force, *Al via a Poggio Renatico la Virtual Flag 14*, October 2014, http://www.aeronautica.difesa.it/News/Pagine/alviaapoggiorenaticolavirtualflag14_02102014.aspx.

[59] "Virtual Flag 2014", in *Rivista Aeronautica*, n. 6/2014, p. 22-26.

ISSN 2280-6164

series of missions ranging from air defence to electronic warfare, passing through air-to-air refuelling and search and rescue.[60]

The Navy has also developed forms of simulated training that make more extensive activities possible without any significant impact on cost. This form of training allows for the greater involvement of trainees using connected C2 systems to conduct operations while remaining portside. The Navy is building distributed training capabilities in this sector that will permit them to train staff and operators within the framework of complex operations, even from the point of view of the integration of multinational forces and certification of joint and multinational staff.

A further example of the possibilities offered by technological innovation is the use of software for the ex-post assessment of Live Exercises (LIVEX) that makes it possible to examine and comment on the operational and tactical decisions made by staff and field forces. The "hot wash-up" is a sort of post-exercise de-briefing that provides precious training feedback, classifying participants' errors first as Lessons Identified and subsequently as Lessons Learned.

The advantages of simulation include being able to put military personnel face to face with circumstances it would not be possible to train for in the real world. This is the case, for example, of flight simulators that can, to a certain extent, test a pilot's reaction to mechanical failure, attack or various other unexpected incidents that could lead to the destruction or malfunction of the aircraft. In the case of ground manoeuvres, simulations of actual combat activities with realistic sound effects, for instance, help to mitigate the effect of surprise in analogous but real circumstances in operational theatres, thereby increasing troops' ability to react and their resilience and, in the final analysis, improve their chances of surviving combat.

Although the advantages of "live," "virtual" or "constructive" instruments are clear, it is equally evident that it is neither possible nor effective to rely exclusively on simulated and/or virtual training. Given the potential for greater or lesser divergence between real and virtual contexts,[61] the trade-off when choosing between simulated and "real" field exercises must always be assessed rationally and in such a way as to ensure the exercise's maximum effectiveness in preparing for operational deployment. For example, the specific nature of Navy air and maritime vehicles and their specialised crews, necessarily requires training in the tactical and safe use of those platforms. Although simulations are extremely effective for command staff level, real activities are irreplaceable and invaluable for what is understood as the training of the unit – understood as the ship/crew pair, specialised components and special forces – which cannot be replaced even by state-of-the-art simulation software, computer systems and virtual technologies.

[60] Ibid., p. 26.

[61] Michele Nones and Alessandro Marrone (eds.), *The Transformation of the Armed Forces: The Forza NEC Program*, cit.

ISSN 2280-6164

Virtual and/or simulated training is more a supplement to than a replacement for reality.[62] Moreover, it must not be forgotten that operational requirements on the ground differ at command and unit levels. Indeed, simulation's potential contribution to training descends from the strategic and tactical level: while for command level virtual activity can account for more of training as the reality of the operational theatre nears, simulation can augment but cannot and must not replace in the field training.[63]

A further challenge for armed forces training comes when exercises must be carried out across relatively extensive areas where large numbers of troops can physically perform complex activities in a realistic environment in a joint and multinational framework. Today's training has gradually grown more complex than that of the past, requiring planning and specific manoeuvres involving vast areas and lengthy timeframes to be effectively accomplished.[64] It is enough to consider the complexity of a ground (as opposed to naval or air) simulation that, especially in a "virtual" setting, has to factor in a multitude of actors (men/women, combat and transport vehicles, etc.) that are usually outfitted, configured and armed differently. Furthermore, the number of actors on the ground is one or two times higher than that of the actors in other fields (sea and air).

Additionally, considering the continuing trend toward joint and multinational training, this activity implies the integration of naval, ground and air assets.[65] Satisfying this need, however, is problematic for Italy, whose national territory is densely populated and/or urbanised, and it is therefore difficult to find areas suitable for the training needs of the armed forces. Various initiatives launched in the first half of 2014[66] were aimed at confronting this difficult problem, for which solutions are still lacking at legislative, environmental, social, political and economic levels. The goal is to seek compatibility, to strike a greater balance between the vital need for military training and respect and defence of the environment and the local communities where such activities take place.

Training and testing grounds are an indispensable asset for armed forces training, particularly in the Italian and international context that emerges from the preceding analysis. Giving up sites such as Capo Teulada, Capo Frasca or Salto di Quirra – that

[62] Chamber of Deputies Defence Commission, *Indagine conoscitiva in materia di servitù militari*, 31 July 2014, http://documenti.camera.it/leg17/resoconti/commissioni/stenografici/pdf/04/indag/c04_militari/2014/07/31/leg.17.stencomm.data20140731.U1.com04.indag.c04_militari.0013.pdf.

[63] Interview conducted in Rome on 17 and 20 November 2014.

[64] Idem.

[65] Interview conducted in Rome on 17 November 2014.

[66] In late 2013 the Chamber of Deputies Defence Commission voted unanimously in favour of a new fact-finding study on military training areas promoting, among other things, a second national conference on military training areas (the first was held in 1981). That conference concluded on 19 June 2014 and less than one month later the Defence Commission approved the fact-finding study's final report.

ISSN 2280-6164

offer the possibility of running complex drills involving the integration of ground, naval and air components – would be a mortal blow to Italian Armed Forces operational capabilities. The issue is also triggers sentiments such as "Not In My Back Yard" (NIMBY), which in Italy blend with an indignant local protectionism: it is clear that waste-to-energy plants or radioactive and nuclear material storage sites are necessary, but no local community wants them located nearby.

Conducting training activities outside national borders carries onerous location, preparation and transport costs. Furthermore, a systematic transfer of activities abroad would also involve dependence on the collaboration of other governments and on related foreign policy decisions, with the potential for losses at the level of sovereignty, secrecy and reliability. Finally, training areas located abroad are not necessarily suitably prepared for the Italian Armed Forces, with the consequent risk of rendering activities and exercises under-effective and, above all, inefficient.[67] From that standpoint, we cannot underestimate the importance of testing new equipment or equipment being considered for purchase, both by the armed forces as well as by Italian industry, for the development and design of new products – not only for military, but also civilian use, especially in consideration of security and safety. In these cases, the need for confidentiality is especially high and cannot but be satisfied by using national testing grounds.

Equally important are exercises and testing involving civil defence personnel and equipment in the field, particularly in light of the risk of industrial accidents or emergencies of an industrial nature or with nuclear, biological, chemical and radiological (NBCR) implications.

Finally, the presence of technologically advanced training and testing grounds should be considered at the level of local economic development. The preparation of larger areas for "live," "virtual" or "constructive" military exercises and their maintenance, the regular removal of spent munitions and risk prevention and/or damage intervention activities, the management of the presence of Italian, allied and friendly troops in training, and the development of related industrial activities could all be factors for local economic growth, development and employment. All this presupposes, however, the close collaboration of national and local institutions in confronting a variety of operational, military, economic, social, industrial and legal issues. The goal should be to transform what is today too often considered a constraint or a limitation into an opportunity for development, in the interests of the nation and the local communities involved.

[67] Interview conducted in Rome on 17 November 2014.

ISSN 2280-6164

5. Conclusions

Armed forces training is key to the product that determines a country's military capability. It is even more important for a NATO and EU member country such as Italy that often uses complex and technologically advanced armaments and other equipment within the framework of even more complex and advanced "systems of systems" in joint and multinational operations. In other words, training is the cornerstone on which the effectiveness and credibility of the Italian Armed Forces rests, and has an impact that runs the gamut from the strictly operational all the way to the political level.

It is equally true, however, that the training discussion is a multifaceted one, since it belongs to an intangible, almost virtual, dimension – that of "know-how" – in which the simple acquisition of information is not sufficient. Rather, training must be considered an endeavour aimed at cultivating reflexes that ensure the necessary technical/professional and ethical preparation for managing highly complex situations under extreme conditions and in which the socio-cultural sphere proves to be decisive to the operation's success.[68]

From the results of the study, it is clear that the theme of training incorporates numerous and diverse aspects, generating a broad range of industrial, technological and commercial implications. A key aspect is certainly the technological innovation that is destined to have a growing impact on all the modalities by which the Italian Armed Forces train their men and women in uniform. The instruments and applications that technology is capable of offering will serve to increase the performance and quality of training at, it is hoped, a considerably reduced cost. The fact remains, however, that an excessively technical approach would run the risk of undermining the true essence and central element of training: the human resource. Virtual and/or simulated activities therefore assume the nature of supplement rather than replacement for the real, since each service has specific and unique features that make it essentially different from another.

Of the challenges and opportunities that the Italian Armed Forces are being called upon to confront, that of resources is undoubtedly the deepest concern. Nevertheless, that problem conceals a much more serious paradox: behind the relentless spending cuts lies a political incapacity to acknowledge in the armed forces the role – and consequently the resources – associated with the functions that have been assigned them over time. In other words, all that experience painstakingly accumulated on international missions risks gradual erosion, not only because of a lack of financial resources but also of a "shift toward a non-military use of the armed forces."[69] Training activities, moreover already hampered

[68] Briefly, and only by way of example, the issue is not one of "simply" sustaining a fire fight as much as it is of managing combat, a much more complex and multifaceted activity.

[69] Leonardo Tricarico, "Missioni all'estero, perché non tagliare", in *Airpress*, No. 52 (gennaio 2015), p. 44-45.

ISSN 2280-6164

by spending cuts and an often exaggeratedly negative bias, cannot and must not become a surrogate for Italian engagement on foreign missions, nor can they continue somehow to be underpinned by them. Maintaining both the readiness of the military instrument, as well as the political will to use it when necessary, is the indisputable pre-requisite for a defence policy capable of meeting numerous international challenges and threats and ensuring the defence of Italy's national interests.

Updated 16 March 2015

ISSN 2280-6164

Bibliography

Vincenzo Camporini et al., *The Role of Italian Fighter Aircraft in Crisis Management Operations: Trends and Needs*, Rome, Nuova Cultura, March 2014, p. 146 (IAI Research Papers 16), http://www.iai.it/en/node/2155

Katia Fabbri et al., *Pianificazione di un ciclo di addestramento operativo tramite l'utilizzo integrato di Tools di Simulazione Live & Constructive*, April 2010, http://www.vitrociset.it/images/Innovazione/fabbri.pdf

Finmeccanica Innovazione, "Simulazione e realtà virtuale", in *MIT Technology Review, Edizione Italiana*, n. 2/2013, (March-April 2013), p. 34-35, http://www.technologyreview.it/article/180313054405_c34-35.pdf

Stefania Forte and Alessandro Marrone (eds.), "L'Italia e le missioni internazionali", in *Documenti IAI*, No. 12|05 (September 2012), http://www.iai.it/en/node/1517

Italian Army, *Army Report 2013*, July 2014, http://www.esercito.difesa.it/comunicazione/editoria/Rapporto-Esercito/Pagine/Rapporto-Esercito-2013.aspx

Italian Chamber of Deputies-Defence Commission, *Indagine conoscitiva in materia di servitù militari*, 31 July 2014, http://documenti.camera.it/leg17/resoconti/commissioni/stenografici/pdf/04/indag/c04_militari/2014/07/31/leg.17.stencomm.data20140731.U1.com04.indag.c04_militari.0013.pdf

Italian Chamber of Deputies-Defence Commission, *Indagine conoscitiva sui sistemi d'arma destinati alla difesa in vista del Consiglio europeo di dicembre 2013*, 10 December 2013, http://documenti.camera.it/leg17/resoconti/commissioni/bollettini/pdf/2013/12/10/leg.17.bol0137.data20131210.com04.pdf

Jörge Kalwa, "The RACUN-project: Robust acoustic communications in underwater networks - An overview", in *OCEANS, 2011 IEEE - Spain*, 6-9 June 2011

Alessandro Marrone, "La non riforma della Difesa", in *AffarInternazionali*, 24 February 2014, http://www.affarinternazionali.it/articolo.asp?ID=2544

Alessandro Marrone, Paola Sartori, Alessandro R. Ungaro, *Defence Budgets and Industry: Tables and Graphs*, July 2014, http://www.iai.it/en/node/702

Alessandro Marrone and Paola Tessari, "The Italian Debate on Defence Matters", in *Documenti IAI*, No. 13|07 (November 2013), http://www.iai.it/en/node/477

Alessandro Marrone, Paola Tessari and Carolina De Simone, "Italian Interests and NATO: From Missions to Trenches?, in *Documenti IAI*, No. 14|12e (December 2014), http://www.iai.it/en/node/2382

ISSN 2280-6164

Alessandro Marrone and Alessandro R. Ungaro, "Difesa, come spendere poco e male", in *AffarInternazionali*, 30 July 2014, http://www.affarinternazionali.it/articolo.asp?ID=2757

NATO, *Chicago Summit Declaration*, May 2012, http://www.nato.int/cps/en/natohq/official_texts_87593.htm

NATO, *Summit Declaration on Defence Capabilities: Towards NATO Forces 2020*, May 2012, http://www.nato.int/cps/en/natohq/official_texts_87594.htm

NATO, *Wales Summit Declaration*, September 2014, http://www.nato.int/cps/en/natohq/official_texts_112964.htm

Michele Nones and Alessandro Marrone (eds.), *The Transformation of the Armed Forces: The Forza NEC Program*, Rome, Nuova Cultura, October 2012 (IAI Research Paper 5), http://www.iai.it/en/node/1387

Roald Otnes et al., "Underwater Acoustic Networking Techniques", in *SpringerBriefs in Electrical and Computer Engineering*, 2012

Leonardo Tricarico, "Missioni all'estero, perché non tagliare", in *Airpress*, No. 52 (January 2015), p. 44-45

Alessandro R. Ungaro, "Il caso italiano" in *Alessandro Marrone and Michele Nones (eds.), Gli elicotteri duali nel campo della sicurezza e difesa*, Rome, Nuova Cultura, September 2014, p. 35-72 (Quaderni IAI 13), http://www.iai.it/en/node/2158

ISSN 2280-6164

ISSN 2280-6164

DOCUMENTI IAI 15 | 02E - JANUARY 2015

Istituto Affari Internazionali (IAI)
Founded by Altiero Spinelli in 1965, does research in the fields of foreign policy, political economy and international security. A non-profit organisation, the IAI aims to further and disseminate knowledge through research studies, conferences and publications. To that end, it cooperates with other research institutes, universities and foundations in Italy and abroad and is a member of various international networks. More specifically, the main research sectors are: European institutions and policies; Italian foreign policy; trends in the global economy and internationalisation processes in Italy; the Mediterranean and the Middle East; defence economy and policy; and transatlantic relations. The IAI publishes an English-language quarterly (The International Spectator), an online webzine (AffarInternazionali), two series of research papers (Quaderni IAI and IAI Research Papers) and other papers' series related to IAI research projects.

Via Angelo Brunetti, 9 - I-00186 Rome, Italy
T +39 06 3224360
F + 39 06 3224363
iai@iai.it
www.iai.it

Latest DOCUMENTI IAI