



European Security and Defence Assembly  
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16 June 2010

FIFTY-EIGHTH SESSION

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European cooperation on military helicopters

**REPORT**

submitted on behalf of the Defence Committee by  
Claire Curtis-Thomas, Rapporteur(United Kingdom, Socialist Group)



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Report transmitted to: the President of the Council of WEU; the Secretary-General of the WEU; the President of the Council of the European Union; the High Representative of the Union for Foreign Affairs and Security Policy; the President of the European Commission; the EU Commissioner for institutional relations and communication strategy; the Presidents/Speakers and the Chairmen of the Foreign Affairs, Defence and European Affairs Committees of the 39 national parliaments represented in the Assembly; the Presidents of the Parliamentary Assembly of the Council of Europe, the NATO Parliamentary Assembly, the OSCE Parliamentary Assembly, the Baltic Assembly, the Nordic Council, the Parliamentary Assembly of the Black Sea Economic Cooperation, the CIS Parliamentary Assembly; the President of the European Parliament; the Secretaries General of the Parliamentary Assemblies of the Council of Europe, NATO and the OSCE.

*European cooperation on military helicopters*

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*submitted on behalf of the Defence Committee by Claire Curtis-Thomas,  
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<sup>1</sup> Adopted by the Committee on 20 May 2010.

**RECOMMENDATION 857<sup>2</sup>**  
*on European cooperation on military helicopters*

The Assembly,

- (i) Considering the importance of helicopters for military and civilian crisis-management operations and combat missions;
- (ii) Noting that in spite of the large numbers of military helicopters present in the European armed forces, only a small percentage of them are available for external operations, particularly those taking place in highly demanding (hot and high) environments;
- (iii) Considering that NATO's Afghanistan operations and the EUFOR Tchad/RCA mission in Chad have brought home the shortfall of helicopter capabilities and the need for a European cooperative approach in order to improve helicopter availability, in particular in the field of medium and heavy lift;
- (iv) Noting that the European states are in the process of modernising their helicopter fleets through the acquisition of new platforms such as the NH-90, the new American CH-47 Chinook and recent versions of the Russian Mil Mi-17;
- (v) Considering that it is the responsibility above all of states to maintain their helicopter fleets in operating condition and to modernise them;
- (vi) Noting that for certain countries that responsibility entails a heavy financial burden that is difficult to assume in an economic context characterised by shrinking defence budgets;
- (vii) Considering in that regard that bi- and multilateral initiatives for technical and financial assistance, such as the 2008 Franco-British initiative and the European fund for the refitting and modernisation of European Mil Mi-17 helicopters, make a major contribution to offsetting current and future shortfalls;
- (viii) Considering that the European Union and NATO share the same capabilities and have the same shortfalls in this area and that the search for solutions calls for cooperation and coordination between the two organisations and in particular between the European Defence Agency and the relevant NATO agencies and committees;
- (ix) Stressing that European helicopter construction companies such as Eurocopter and Agusta Westland, and companies specialised in instruction and training systems for helicopter crews, like CAE, are making an essential contribution to the national and European-level efforts to improve the availability of helicopters for external operations;
- (x) Emphasising the importance of designing and developing a European heavy transport helicopter in order to give Europe the autonomy it currently lacks, and considering that such a project offers possibilities for transatlantic cooperation in the field of defence equipment,

RECOMMENDS THAT THE COUNCIL INVITE THE WEU MEMBER STATES AS MEMBERS OF THE EUROPEAN UNION TO:

1. Pursue the efforts within the European Defence Agency to improve the availability of transport helicopters for external operations;
2. Reach agreement on the launch of a European heavy transport helicopter programme and study the possibility of giving a transatlantic dimension to that programme;
3. Continue the commitment to and funding of bi- and multilateral initiatives for the refitting and modernisation of European Mil Mi-17 helicopters and other types of helicopters needed for external operations.

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<sup>2</sup> Adopted by the Assembly on 16 June 2010 at the 2<sup>nd</sup> sitting.

## EXPLANATORY MEMORANDUM

*submitted by Claire Curtis-Thomas, Rapporteur (United Kingdom, Socialist Group)*

### *I. Summary*

1. The military operational capabilities of helicopters were first demonstrated during the Korean War (1950-1953) where they were used for observation, troop and equipment transport, search and rescue, medical evacuation and assault missions. Helicopters constitute a versatile all-round system that is indispensable for any operation.
2. The role of helicopters in force projection operations continued to develop during the colonial wars (France, Portugal) and the wars in Vietnam (United States) and Afghanistan (USSR), with helicopters evolving to meet new requirements, becoming more powerful in terms of engine capacity, speed, altitude and range and offering greater airlift capacity and fire power. With the latest technological developments they have acquired sophisticated intelligence, surveillance, target acquisition and reconnaissance (ISTAR) and, importantly, improved night-time and adverse weather capabilities.
3. The helicopter, then, has become a key tactical system in theatres of operation. More flexible than fixed-wing aircraft, helicopters can be used on land or at sea, take up a relatively small space and do not require the construction of landing zones with prescribed dimensions and surfacing. They are able to hover and can drop or pick up troops and equipment free of the constraints (minimum altitude and proper take-off and landing strips) that apply to fixed-wing aircraft.
4. In inaccessible areas that lack air transport infrastructure (e.g. mountainous zones) helicopters are vital operational assets, which is why they are so much in demand for operations in Africa and, currently, Afghanistan. Yet, as this report will show, what has clearly emerged since the beginning of the century is that Europe suffers from major qualitative and quantitative shortfalls of these essential assets and that the European states are reluctant to pool their national helicopter capabilities for use in coalition operations.
5. Moreover, Europe's helicopter fleet is highly heterogeneous, with a range of models from three different sources: Europe, the United States and Russia. In the field of heavy-lift transport helicopters (10 tonnes payload) the United States' CH-47 Chinook, CH-53 and Russia's Mil Mi-26 are the market leaders. Europe is well represented in the middle of the range (5-10 tonnes) with Eurocopter's NH-90 and EC-725 Caracal and Agusta Westland's EH-101 Merlin.
6. But the problem for Europe is that the new helicopters are currently in the process of being built and fielded and are arriving only in dribs and drabs in the current major theatre of operations, Afghanistan. This means having to rely on American equipment for those countries which possess CH-47s and CH-53s or on Russian helicopters of the Mil Mi-17/18 type. Europe's Tiger attack helicopter is also in short supply, while American AH-64 Apaches and Russian Mil Mi-24s are available by the dozens.
7. In addition to the small size of the production runs of the new helicopters, there is a major economic aspect that comes into play. The new equipment was designed back in the 1990s (or even at the end of the 1980s) with European conflicts in mind. It was tailored therefore to specifically European logistical requirements and to Europe's weather conditions, environment and geography.
8. These days assets need to be deployable at distances of more than 5 000 km from their home base to places with poor infrastructure, with the relatively high costs that this entails for shipping, logistics (including fuel supplies) and operating and maintaining the equipment on the spot. Equipment must also be adapted prior to its deployment, again at an extra cost, and personnel must be retrained to cope with wear and tear and risk levels associated with operating the equipment in the new environment rather than maintaining it in peacetime conditions in Europe. Moreover, since these are coalition operations, the countries concerned must be able to meet the requests of allies who, for whatever reason, are less well-endowed with helicopter capabilities.

9. As a result, it would appear that helicopter capabilities fall short of requirements for the European forces in Afghanistan, as was also the case for the EU mission in Chad (EUFOR Tchad-RCA) from January 2008 to March 2009. In fact, the resources in terms of equipment and personnel exist but are spread among the member states which are wary of pooling them. Different countries also have different standards and procedures, and different rules governing the use of helicopters.

10. In response to those challenges, the European states – with the support of industry and the NATO and EU bodies – are attempting to develop a coordinated European approach to military helicopters, in particular as regards transport helicopters. In parallel to ongoing programmes and helicopters that have already been ordered and are being put into service solutions are being sought to standardise and upgrade the Russian helicopters available within NATO and the European Union. A project for a European heavy-lift helicopter is under consideration (NATO and the EU) and attempts are being made to pool resources, with particular emphasis on joint or combined training.

11. In this report drafted by Claire Curtis-Thomas (United Kingdom, Socialist Group), the Defence Committee will explore all these issues regarding the deployment and use of military helicopters by European states and European cooperation initiatives and will put forward recommendations that aim to improve European cooperation in this field with a view to achieving more effective use of helicopters in military crisis-management and combat missions involving European forces.

## ***II. Introduction***

12. A report on British helicopter capabilities published on 14 June 2009 by the House of Commons Defence Committee quoted various sources aptly describing the military helicopter as “one of the most versatile and ubiquitous of military platforms”, “a formidable offensive aircraft, (...) a powerful element in the provision of tactical heavy lift”, “key assets”, “key enablers” and “a force-multiplier”.

13. Since its first use by the US and European forces at the end of the second world war the helicopter has indeed become crucial to the execution and success of military operations. Its ability to perform a range of different functions, from observation and transport through to assault operations, has enhanced forces’ flexibility and mobility. Nowadays helicopters are also commonly used for military or civilian rescue and medical evacuation missions.

14. The helicopter is a complex and costly system and requires ongoing maintenance. The central component is the flight system composed of one or two rotors for lift and a tail rotor to counter torque. The latter may be replaced by a turbine in a configuration known as NOTAR (No Tail Rotor). Another variant with spinning blades is known as Fenestron or FANTAIL.

15. Twin-rotor helicopters do not need a tail rotor, since the anti-torque effect is produced by one of the two rotors, operating either in tandem, in a coaxial system (on the same axis) or in an intermeshing system in which the two rotors are placed side-by-side and the rotation of their blades is synchronised to allow them to interleave without colliding. Another variant is the transverse rotor configuration of the Russian Mil Mi-12 helicopter (two prototypes of which were built at the end of the 1960s).

16. A more recent addition to the US armed forces’ equipment is the Boeing V-22 Osprey, a hybrid helicopter-aeroplane based on the so-called tiltrotor or convertible system and deployed in 2007 in Iraq and in 2009 in Afghanistan. In January 2010 it was also used to deliver humanitarian aid to Haiti.

17. A helicopter requires a powerful engine system to lift it into the air. The protective armour required in high-risk theatres like Afghanistan, Iraq and Chad adds extra weight which must be offset by more powerful engines in order to avoid a reduction of performance (payload, speed, altitude and range).

18. The modern helicopter is above all a tactical aircraft (with a range of less than 1 000 km, except for the Chinook CH-47 and Mil Mi-26 which can reach 2 000 km) equipped to fly by night and day in diverse weather conditions. Large helicopters, transport helicopters in particular, have a modular design enabling them to be easily adapted to the different types of mission: transport of cargo and soldiers, command post and medical evacuation and treatment. They may also be armed or protected by combat helicopters.

19. The aircraft in this category – the Mil Mi-24, Mil Mi-28, Kamov K-50 (the only helicopter in the world with an ejectable seat), Apache AH-64 (Boeing), Tiger (Eurocopter), A-129 and T-129 (AgustaWestland) – are manoeuvrable, fast and heavily armed and protected. They are designed for ground attacks or even in certain circumstances for air-to-air attacks against other helicopters or light aircraft. Manned by a crew of up to two (the pilot and gunner) they are also used to protect transport helicopters in crisis zones.

20. Helicopters of all kinds have obvious advantages as compared with other aircraft, in particular their vertical take-off and landing and stationary flight and their ability to fly at low altitudes, follow the contours of the ground and make the most of natural shelter (trees, ridges). They can rotate full circle on their own axis (in stationary flight) and move sideways and backwards. With their panoramic vision they offer a much broader view of what is going on above and below than is the case for a fixed-wing aircraft.

21. A key feature of helicopters is their ability in the case of engine failure to continue flying (for a short period) and to land by means of autorotation, which means using the rotation of the blades alone to reduce vertical speed and cushion the descent. When the engines stop the rotors do not automatically stop, but continue freewheeling in accordance with Froude's law. The pilot will maintain a stable horizontal speed and opt for a running or stationary landing depending on the surface and environment.

22. With this technique which can also be used for non-emergency landings, the complete destruction of the aircraft or, even worse, the loss of its crew and passengers, can be avoided. Quick reactions and rapid decision-making on the part of the crew are crucial, which explains the enormous importance attached to pilot instruction and training.

23. The helicopter, then, is a vital asset for the conduct of military missions. While cheaper to buy than a military aeroplane, its maintenance costs are relatively high. The engines, rotors and blades suffer the constant effects of the environmental conditions, sand in particular. Naval helicopters need special protection against salt water corrosion. The outside temperature – whether too high or too low – as well as the amplitude of temperature variations also have an impact on flight performance.

24. A helicopter is also vulnerable to attacks by different types of weaponry such as automatic rifles and rocket-launchers, particularly when flying at low altitudes or hovering, although this is less true of attack helicopters.

25. Since the average range of helicopters is 800 to 1 000 km, they have to be shipped in using wide-body aircraft, boats or heavy trucks. The shortage of naval helicopter carriers and advanced bases at which to preposition equipment makes it necessary to organise logistics chains over long distances, making them costly to maintain for lengthy deployments abroad.

26. Moreover, while helicopters can carry large cargoes in theatre, their capacity to transport troops plus their equipment is limited: from 20 (in the case of the NH-90) to 50 soldiers (for large helicopters such as the CH-47 and CH-53). In the case of large expeditionary forces (upwards of 1 000 soldiers, plus their equipment and logistics) the number of helicopters must be calculated in accordance with mission requirements in order to guarantee good tactical mobility and protection on the ground.

27. By way of comparison, the arrival of 22 000 US soldiers in Afghanistan in 2009 was accompanied by the deployment of more than 100 helicopters (a ratio of five helicopters to 1 000 soldiers, in accordance with US doctrine). The United Kingdom, which has the second largest number of troops in Afghanistan (9 500) has already deployed some 35 helicopters (CH-47, Merlin, Sea King and Apache) which it plans to reinforce this year by a further 12 helicopters (troop levels are to be increased to 10 000 soldiers).<sup>3</sup>

28. The number of helicopters is not the only factor that comes into play, since shortfalls can also be offset by using the helicopter assets of allies like the United States, or by having recourse to the

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<sup>3</sup> This entails a major effort, since the United Kingdom possesses only 48 CH-47 helicopters, for example. It is planned to double the number of CH-47s which will represent up to one third of the total helicopters deployed. At the end of 2009 the UK Government announced the purchase of 22 new helicopters of this type.

private operators hired by NATO for the transport of equipment or personnel. What is important is the number of hours that a helicopter can fly before needing a technical overhaul, which can immobilise it for weeks or months. Wear and tear, breakdowns, accidents and losses are other factors that limit helicopter availability.

29. All these elements, in the context of operations conducted far from the home base in theatres where there is no local infrastructure or technological industrial base, weigh heavily on the costs of deploying and using helicopters. This explains in part why countries are reluctant to deploy extensive helicopter capabilities and to share them with their allies.

30. Indeed, NATO reported in 2008 that between them the European members of the Alliance have a pool of helicopters big enough to cover the current requirements, but that it is unevenly distributed. The central European countries, for example, have fleets of Mil Mi-17 (or Mi-8 for the Russian version) and Mil Mi-24 not being used because of non-compliance with NATO standards. The flight procedures also need to be brought into line with the common requirements.

31. Measures are being taken to refurbish this potential pool of resources whose lack was also felt during the deployment of EUFOR Tchad-RCA in 2008. In that case the gap was filled by Russian helicopters operated by Russian crews and support staff. Due to this imbalance between potential and actually deployable resources, the best-endowed states are overburdened with requests from all their allies to deploy large numbers of assets (in order to ensure coherence and cohesion within the coalition).

32. At the same time the operational requirements of the military campaign in Afghanistan and the ambitions of the EU's Common Security and Defence Policy have prompted a growing awareness of these problems, with positive repercussions. First and foremost, the different countries are speeding up their plans for the procurement and modernisation of equipment, with emphasis on medium-term requirements (around 2015). Secondly, increasingly they are working in cooperation in order to share maintenance, repair and overhaul (MRO) capabilities.

33. There are also a number of public initiatives, as well as private ones by industry, aimed at bringing up to standard the Russian helicopters available in certain NATO member states. Joint or combined crew training is also developing, with the possibility of purchasing hours of flight training instruction in the national training centres of other countries. This is what is being done with the Tiger and NH-90 helicopters, for example.

34. Within NATO the group of countries that own American equipment – CH-47, CH-53 and Apache – is getting better organised in order to optimise the use in the Afghan theatre of the platforms and related services. Countries equipped with the Tiger and NH-90 or those with Mil Mi-17 and Mil Mi-24 helicopters could adopt the same approach.

35. The procurement and modernisation efforts that currently are geared to meeting the requirements of one theatre of operation will have the effect of increasing the capabilities available for other operations. These efforts, if successful, could lead to the emergence of a major European helicopter fleet for NATO and the EU that would be far superior to anything that potential adversaries could build up in the medium-term future.

36. However, due to budgetary constraints the European states will have to make choices in terms of equipment and personnel and helicopters are among the assets that must compete with other projects and programmes. The increase of European purchases of American CH-47 or CH-53 helicopters will also have consequences for future investments in the construction of a European heavy-lift helicopter.

37. From the industrial standpoint, companies like Eurocopter and Agusta Westland can cover a wide range of European requirements and it is important, above and beyond the existing programmes, to keep up the research and technological development efforts in this area. One future avenue for research concerns unmanned helicopters for observation, the transport of equipment, and possibly also one day, when the technology has been proven, for the transport of personnel over short distances, in order, for example, to evacuate wounded soldiers from the danger zone.

38. Helicopters are used as tactical tools but will also become strategic assets for European defence. Above and beyond the shortfalls in this area, the Assembly's Defence Committee also wishes to take stock of the different resources and initiatives described above.

39. Through this report and its recommendations being submitted on behalf of the Defence Committee by Claire Curtis-Thomas (United Kingdom, Socialist Group) the ESDA/Assembly of WEU wishes to support the efforts being made in Europe, both at national level and within NATO and the EU, in order to strengthen European helicopter capabilities.

### *III. Use of helicopters in the European forces*

40. The focus on transport and attack helicopters is bound up with the increase in the number of NATO and EU military missions being conducted outside Europe. Heliborne capabilities are ideal for the war in Afghanistan or crisis-management operations in Africa. With their flexibility and versatility helicopters offer a swift response to operational requirements that is all the more effective for being combined with the use of fixed-wing aircraft and UAVs.

41. Military operations are not the only types of mission to benefit from the use of helicopters. Helicopters offer a means of rapid intervention at the scenes of accidents, natural disasters and fires, as well as for homeland security missions (police and surveillance operations, for example). Military missions are more demanding in terms of the technical-operational requirements, however.

42. Availability rates, protection against the different threats, airlift capacity (troops and cargo) and the avionics are some of the aspects to be considered. In Afghanistan and Africa the helicopter is an indispensable tactical transport system in mountainous, forest or desert terrain with few roads or trails that may be mined or vulnerable to attack. In such circumstances helicopters offer speed and protection and, where necessary, support fire on the ground.

43. Their ability to land on different types of surface, their capacity for stationary flight and to move forwards or backwards and turn on their own axis, together with their speed – lower than that of a combat or transport plane – offer obvious operational advantages. Their multi-role or even modular function is also decisive in making them indispensable for military operations, in particular in a context of anti-guerrilla warfare or combat against an enemy without air-defence capabilities. During the war in Kosovo in 1999, for example, combat aircraft were used to destroy Serbian tanks, while Apache AH-64-type helicopters (designed precisely for that purpose) were only deployed in the disputed area after the ceasefire had been signed.

44. It is in the field of airlift that the helicopter issue is the most problematic in Europe. Even for fixed-wing aircraft, the existing capabilities are stretched to the limit, for both tactical and strategic airlift. The European C-130s and C-17s or the Russian and Ukrainian Antonov-124s currently being hired for transport purposes require more extensive infrastructure and support structures (e.g. landing strips, air lanes and air control capabilities) than do helicopters.

45. As explained above, helicopters can go almost anywhere and given their versatility are more frequently called upon. However, they are also more vulnerable with respect to weather conditions and to the geographic environment, for example in mountainous regions. They are sensitive to sand and dust and fly at a lower altitude than planes, putting them at greater risk in combat zones. And since they are more in demand, there are more take-offs, landings and flight hours, exacerbating equipment wear and tear and the risk of failure, breakdowns or accidents.

46. On the other hand, given a helicopter's capacity for descent in autorotation and low-altitude flight, if it drops this does not necessarily mean the loss of all on board. And the added protection, while detrimental to certain performance features such as payload, range and altitude, shields the crew and passengers from a number of threats, in particular those posed by light weapons and even rocket launchers.

47. By way of illustration, in the eight years from 2001 (date of the first helicopter deployment) to 2009, the British forces in Afghanistan lost only two Chinook CH-47 helicopters out of a total of 10, with no loss of human life. Both incidents occurred in summer 2009, the first due to enemy fire, the second to an accident. In the first instance the helicopter was hit by rocket fire after dropping off

troops. The crew, one of whose members was wounded, was able to take off and land the damaged aircraft out of range of enemy fire. The crew was picked up by a second helicopter and the damaged aircraft was destroyed from the air to avoid it falling into the hands of the insurgents.

48. According to various official and specialised sources, in the period 2001-2009 in Afghanistan only some 12 out of a total of 60 helicopters were lost as the result of hostile action. The two real enemies in Afghanistan, of helicopters at least, are the hot air and altitude (“hot and high”) and the loss of visibility known as “brownout”, caused by the dust and sand swirls generated during take-off and landing by the rotation of the blades.

49. The first problem has an impact on performance in terms of payload and flight time, while the second leaves the crew blind at what are the two most tricky moments in the flight of any aircraft. Solutions are being studied and tested in order to attenuate their effects. Also important is the experience learned in the field: there is at least one documented case of a British Apache AH-64 helicopter using the information provided by its Longbow radar (the American and Dutch Apache helicopters in Afghanistan do not have on-board Longbow radar) to guide a Chinook CH-47 during night-time manoeuvres in a situation of severe brownout.

50. The advantages of helicopters outweigh their drawbacks and the technical solutions based on practical feedback and general technological development have made this type of aircraft very stable and reliable and even more essential. According to official and specialised sources, the European countries (NATO + EU) have more than 2 000 military transport helicopters with various types of equipment.

51. Nonetheless the media have in a somewhat simplistic fashion blown up the issue of the shortfalls experienced during deployments in Afghanistan and EUFOR Tchad/RCA in Chad and the Central African Republic. This, together with complaints from the forces deployed on operations, has led in some countries to the launch of parliamentary enquiries.

52. Governments for their part have endeavoured to respond as swiftly as possible to the requests from troops on operations by speeding up the procurement process and stepping up cooperation in this area. New impetus has been given to the project for a NATO or European heavy-lift helicopter, although no timetable has been announced.

53. Upgrading existing equipment and the procurement and entry into service of new models like the NH-90, which has already entered the production phase, are the answers currently being given to capability shortfalls for the next 10 years at least. The European forces will therefore continue to have fleets composed of helicopters from three main sources: the United States, Europe and Russia:

- American helicopters: Chinook, CH-53 and Apache;
- European producers: Eurocopter and Agusta Westland;
- the Soviet legacy: Mil Mi-17/8 and Mil Mi-24.

#### ***IV. Capability shortfalls and solutions***

54. The European countries in NATO and the EU have at their disposal an estimated 2 000 helicopters, counting all the different models. The European Defence Agency (EDA) has counted 1 735 helicopters of 22 different types in its participant states (of which there are 26, since Denmark does not participate in its activities). According to EDA Chief Executive Alexander Weis, only 6-7% of these are being deployed for external operations.

55. EU Military Committee Director General Henri Bentégeat also declared during a conference on helicopters organised on 10 March 2009 by the EDA that of those helicopters, 70% were concentrated in a quarter of EU member states and that only 50% were actually available and operational. That number includes the helicopters needed for training and those undergoing repairs and maintenance following their operational deployment.

56. The EU’s desire to be an effective player in crisis-management operations outside Europe and the increased intensity of the NATO-led military operations in Afghanistan have drawn attention to the

figures produced by the EDA in 2009. The solutions depend first and foremost on the resolve of states and their armed forces, which as the owners of the helicopters are primarily responsible for their condition and availability. However, a national effort on its own is not enough, which explains the multiplication of bi- and multilateral initiatives in the NATO and EU frameworks.

57. In Europe there is coordination of the initiatives in the field of helicopters in areas ranging from crew training to the standardisation of equipment and procedures, with a view to increasing functional interoperability. There are limits to those efforts due among other things to the fact that equipment remains heterogeneous in terms of its origin, characteristics and performance. This means, for example, that without specific instruction and training the crews, maintenance staff and logistics personnel cannot switch from one kind of helicopter to another.

58. Solutions at national level also depend on which helicopters a country has or which are most in demand for ongoing operations. For the six European countries that are the biggest contributors of troops in Afghanistan – the United Kingdom, Germany, France, Italy, Poland and the Netherlands – these are the CH-47 Chinook (United Kingdom, Netherlands and Italy), the Sea King, the CH-53, the AS-532 Cougar, the EC-725 Caracal and the Mil Mi-17. The CH-47 Chinook is the only platform that is common to three countries and even then the helicopters in question are variants of the CH-47C and CH-47D series (Mk2/2a for the United Kingdom).

59. This being the case, it is difficult to see, except for the Chinook, how the European forces can pool resources in terms of helicopter crews and support and logistics. The first aim of cooperation is therefore to identify areas of synergy and to develop complementarity among the different resources in order to be able to respond effectively to operational requirements in Afghanistan or elsewhere, and in particular for EU-led crisis-management missions.

60. During their March 2008 bilateral summit, France and the United Kingdom launched an initiative on helicopters with a view to addressing “critical shortfalls in capability which constrain the deployment of helicopters in operations”. Three avenues were identified: “pilot operational and advanced training courses, upgrading aircraft and establishment of a trust fund that could improve the availability of helicopters to our European partners and NATO allies”.

61. That action does not concern the helicopters in the French and British inventories and does not involve cooperative management of the two countries’ helicopter fleets during military operations. Rather, the initiative is aimed at the Russian Mil Mi-17 helicopters available in many central European countries and which are lacking in NATO and EU operations.

62. This issue was highlighted during the preparations for EUFOR Tchad/RCA (January 2008 to March 2009). This mission was organised around a central base and a number of advance operational bases in order to cover two border areas: the longest one being between Chad and Sudan, and the other between Chad and the Central African Republic. Helicopters with their multiple functions were essential for the success of the operation.

63. However, the contributing countries, for reasons relating to technical and operational adaptations and costs (transport, maintenance, logistics) were unable to cover all the helicopter capability requirements. They provided a total of 13 helicopters: four (attack) Gazelles and four Pumas (France), three Mil Mi-17s (Poland) and two Ukrainian Mil Mi-8s hired by Ireland from a private operator (but which did not meet the standards for passenger transport). In order to fill the gaps, to attain the ratio of five helicopters for 1 000 troops, Russia contributed four Mil Mi-8MTs which arrived in November 2008.

64. In all, the 3 700-strong European force had at its disposal at least 15 helicopters capable of meeting its mobility, transport and protection requirements. However, those requirements were only fully met with the arrival of the Russian helicopters at the end of November 2008. This EUFOR operation, as well as the increase of European troop levels in Afghanistan, drew attention to the existence of a large pool of helicopters in the central European countries which is not being used to the full.

65. That pool is composed of Mil Mi-17, Mil Mi-8 (older models) and Mil Mi-24 (attack) helicopters. According to the various sources the number of available operational helicopters exceeds

100 (the EDA reported a total of 300 platforms), although this includes a number of older models which are not adapted to the biggest ongoing operation, in Afghanistan. The efforts of the central European states, in particular Poland and the Czech Republic, are focused on the more modern Mil Mi-17s and in particular the 5V variant which is already adapted to a hot, high environment and is equipped with a rear loading ramp.

66. The Franco-British initiative is a pragmatic response to the situation as identified both by NATO and the EU. The crew training aims at preparing them for Afghan conditions, in other words, high altitudes, hot air and brownouts. The upgrading concerns compliance with NATO standards: helicopter communications and identification, optronic systems and night vision and links with communication networks (data, sound, video), as well as various other aspects such as conditions for the transport of troops and equipment (safety rules and equipment, for example).

67. Clearly the cost of that transformation, even for a small number of platforms including the most modern ones purchased from Russia, is not affordable for individual states. The overall costs of external operations – the deployment and the logistics – and the general state of the economy in the wake of the financial crisis are obstacles to investments in this area. It is one of the priorities, given the shortfall of helicopter capabilities, but it is not the only one in relation to the overall transformation of the armed forces of the central European countries following their accession to NATO and the EU.

68. At NATO's Bucharest summit in April 2008, a European fund was set up in order to finance all the measures proposed in the Franco-British declaration of 27 March 2008. NATO and EDA took up this question with a view to better coordinating national initiatives. However, the investment fund, to which the United Kingdom and France have contributed between them 15 million euros (half each), has not reached the desired threshold.

69. In 2009 the fund, which is managed by NATO, was estimated at some 30 million euros contributed by more than 10 member states and partners, including Australia, for example. But the cost of modernising a single helicopter is five million euros on average, depending on requirements. To date some half a dozen helicopters upgraded under the Franco-British initiative (including three Czech aircraft) have been deployed in Afghanistan.

70. In practice the Mil Mi-17 deployments are conducted on a national basis and according to the priorities and possibilities of the countries concerned. In 2008, for example, Poland deployed four upgraded Mil Mi-17 helicopters (versions 1V and 5V) originally intended for the Iraqi air force. Two of those helicopters were made available to the Canadian forces around Kandahar.

71. In 2010 Poland confirmed the purchase and the bringing up to NATO standards of five Mil Mi-17s in order to strengthen its capabilities in Afghanistan. The 75 million euro contract was awarded to the Polish company Metalexport. The helicopters will be deployed in the second half of 2010.

72. The Franco-British initiative could in principle be extended to other types of helicopter such as the CH-47, in order to form a pool of helicopters available to the countries involved in Afghanistan, including the United States. The Mil Mi-17 (four-tonne payload, 30 soldiers, range 950 km) deployed in Afghanistan are a midway solution that helps offset the wear and tear induced by the intensive use of Chinook helicopters (12 tonnes, 50 soldiers, 1 600 km).

73. However, the initiative apparently does not embrace the fleet of CH-47s belonging to the European states, including the United Kingdom (48 aircraft, plus 24 on order), Italy (30, plus 20 CH-47Fs on order), Spain (17), Greece (15) and the Netherlands (11, plus six on order). Turkey is also in the process of signing a contract with Boeing for the purchase of 14 CH-47s, including four for search and rescue missions. A total of more than 100 helicopters are concerned, only some 15 of which are deployed in Afghanistan.

74. This means that the new acquisitions, even taking into account the workshare transferred to European companies like Agusta Westland working on behalf of or in partnership with Boeing, increase Europe's dependence on this US firm. The British, Dutch and Italian procurements were decided without an invitation to tender being launched in Europe for a helicopter of equivalent capability or for a medium-lift helicopter (payload of about five tonnes).

75. While one can understand that Boeing is better placed to respond to such an urgent requirement, a European ITT would have given major impetus to Europe's ambition to build a heavy-lift helicopter in the same category. Such a project would not rule out cooperation with the United States, but it would help reduce Europe's dependence on American equipment and technologies.

76. Indeed the latter point is one of the reasons why the eight CH-47s purchased by the UK from Boeing and delivered in 2001 remained immobilised for eight years. The software access codes needed to use and certify the helicopters were not included in the order and the British technicians were unable to find substitutes for the original software, which was protected under the export controls on technology transfers.

77. In the absence of European-level coordination on CH-47s the immediate attention of NATO and the EDA has focused on Mil Mi-17s. Administration of the European fund has been entrusted to the NATO Supreme Command (SHAPE). The states concerned submit their financing requests directly to the fund, for approval by the fund managers – in other words the contributing states, with the assistance of the NATO Maintenance and Supply Agency (NAMSA) and the European Defence Agency.

78. Although SHAPE manages the fund it is not a NATO fund. The advantage of the Franco-British initiative is to have come up with a rapid solution for plugging an urgent capability gap, for the benefit of the operations in Afghanistan in particular. The process launched by those two states will also help to cover NATO and the EU's future capability requirements.

79. Within NATO the helicopter debate takes account of the reality of a European fleet that is diversified and restrained in its use by budgetary shortfalls, technical-operational problems and political constraints (in the form of different rules of engagement for each force deployed on operations). It is not easy to adopt a global approach if only from the technical standpoint, since the aircraft deployed are not all equivalent even within one and the same family.

80. There are different European versions of the CH-47, the German and American CH-53s have different payload capacities, flight characteristics and on-board equipment (avionics, protection system, communications, optronics), the Caracals and the future NH-90 are in a completely different category, the Polish, Hungarian, Czech and Bulgarian Mil Mi-17s also come in different versions. Nonetheless, their similarities outweigh their differences and it is possible, under certain conditions, to take measures to improve the logistics chain for the different types of helicopter that are common to certain countries.

81. From the operational standpoint what is most important is complementarity. This calls for a certain degree of common standards, in particular as regards troop transport, above all evacuation of the wounded, protection, the capacity to fly in hot and high conditions, in mountainous and desert areas and at night, and communications systems.

82. NATO has the job of ensuring implementation of those standards, for example through the NATO Standardisation Agreements (STANAGs) and for that purpose the existence of a European fund is a major asset because many states cannot on their own afford the cost of adapting the number of helicopters deemed necessary for operations.

83. From the logistics point of view each family of American and European (western and central European) helicopters has to be treated separately. The United States has made proposals to make it possible to "field a collaborative helicopter logistics capability for ISAF CH-47s, CH-53s and AH-64s ... that improves effectiveness and efficiency of ISAF sortie generation. This will set the stage for potential future collaborative efforts for other helicopter types as well as making a large step forward in multinational logistics capabilities".<sup>4</sup>

84. The American approach aims to improve on-the-spot maintenance, repair and overhaul (MRO) capabilities in the theatre of operation. This is important, for as a rule the helicopter must be sent back

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<sup>4</sup> Senior NATO Logisticians Conference (SNLC), Capellen Seminar, Luxembourg, January 2009; Second Line of Defence website. [www.sldinfo.com](http://www.sldinfo.com)

to the country of origin for this type of procedure or, at best, to a logistics base in a nearby region. The United States has an advantage over Europe here.

85. The US proposal covers several aspects such as exchanges of experience, sharing of information on stocks (database of spare parts and equipment), improving logistic support (which remains the responsibility of each state), identifying all aspects of the support services (quantitative capacity, requirements in terms of workshops, machine tools, for example) with a view to enhancing their efficiency including, in the future, by joint training of personnel and, in the longer term, by providing advanced bases and sites close to actual or potential theatres of operation in order to house the aircraft and the necessary support services.

86. If these proposals were implemented they would eventually give NATO a more integrated multinational helicopter capability, but also one which would be highly dependent on the United States given the latter's superior assets and capabilities. Moreover any industrial and technological spin-offs would for the most part benefit American firms, including if European states were to opt for an outsourcing of certain support services, such as MRO, to private companies.

87. As far as Mil Mi-17 helicopters are concerned, the Czech Republic plays the role of framework nation. In February 2009, during the Czech Presidency of the EU, the Czech authorities organised an important seminar in Prague on helicopters for NATO and EU missions, asserting their country's key role within the pool of countries possessing this type of helicopter. Another major country in this field is Poland, which in 2008 and 2009 acquired new upgraded versions of the helicopter adapted to the Afghan environment, including one dedicated to medical evacuation.

88. The Czech initiative led to the creation within NATO of an HIP Helicopter Task Force (HHTF) (HIP being the NATO designation for the Mil Mi-17), with the aim of creating the conditions for the formation of a multinational force of medium-lift Mil Mi-17 helicopters as well as other models such as the Mil Mi-24 attack helicopter.

89. The HHTF is also open to NATO partner states such as Ukraine (which expressed an interest in participating in the Franco-British initiative as of 2008) that like certain member states have these helicopters but not the resources to modernise and adapt them or to train the crews for the NATO operations in Afghanistan.

90. The Afghan operation is only a catalyst, because if the project were to succeed it would lead to the creation within NATO, along the lines of the US CH-47 proposal, of a quasi-standing multinational helicopter force rapidly available for future operations. Thus the CH-47 and Mil Mi-16 are complementary capabilities covering the different requirements of all possible operations.

91. On 22 October 2009, in the margins of the meeting of the NATO defence ministers in Bratislava, nine member states – Albania, the Czech Republic, Hungary, Norway, Poland, Slovakia, Spain, Turkey and the United Kingdom – signed an agreement institutionalising the HHTF, giving it a political basis as well as access to the Franco-British fund and NATO financing.

92. The HHTF deals with training, command and control (C2, communications, avionics, procedures), deployment and in-theatre support and financial assistance to cover some of the costs involved in this process. The aims of the HHTF, which is open to other countries and is not confined to transport helicopters, are also shared by EDA.

93. EDA was mobilised by the participant states in order to make a practical contribution to the March 2008 Franco-British initiative. It plays a role that is similar and complementary to that of NATO in this respect. Where the two approaches differ is in the short term, in that NATO's immediate objective is to increase helicopter capabilities in the Afghan theatre.

94. EDA is working in three main directions: in the short term, tactical instruction and training; in the medium term, the creation of a multinational pool of each family of helicopters, with a view to their modernisation; in the long term, future helicopter programmes and in particular a European heavy-lift helicopter.

95. The Agency's Steering Board at its capabilities meeting in February 2008 underlined the importance of helicopter capabilities for operations, particularly in light of the difficulties encountered

for the deployment of the EUFOR Tchad/RCA operation. On 26 May 2008 the Steering Board at its defence ministers meeting adopted a Declaration of Intent on Helicopter Availability and welcomed the March 2008 Franco-British initiative.

96. The ministerial declaration forms the basis for a European programme of work on helicopters launched within the Agency which is cooperating with NATO in an EU-NATO working group on capabilities. The aspects to be tackled in a first phase are training, upgrading and modernisation and support services. The Agency is conducting all these activities in close cooperation with the participating member states and industry.

97. In the first Capability Development Plan (CDP) adopted in July 2008, the issue of helicopter availability figures explicitly among the 12 priorities identified. Crew instruction and training is the first aspect that the Agency will concentrate on. Here, as in NATO, efforts will to a large extent focus on European Mil Mi-17 helicopter resources. The Agency, like NATO, is conscious of the heterogeneous nature of Europe's helicopter fleet and of the member states' reluctance to invest heavily in external operations in the hot and high conditions of desert environments with no modern technical and support infrastructure.

98. In its 2009 programme of work the Agency's efforts to improve helicopter availability are geared to three activities:

“Training: (i) promote cooperation between pMS having the same needs and initiate solutions to address common problems; (ii) establish a Helicopter Tactics Training Programme; (iii) design Helicopter exercises.

Upgrades: (i) promote cooperation between pMS operating on the same types of helicopters in order to create upgrade and/or support programmes for enhancing deployability; (ii) develop simulation tools for comparing upgrading versus buying new assets; (iii) assess possibilities of outsourcing support in theatre.

Future Transport Helicopter: (i) follow implementation of the possible ad hoc Cat. B project<sup>5</sup>; (ii) define military requirements based on the initiators' inputs; (iii) explore the ground for other project participants”.

99. In 2009 the issue of helicopters for operations gave rise to three major practical initiatives. The EDA annual conference on 10 March 2009, dedicated to helicopters, provided the opportunity to take stock of the situation in the participating member states and other European countries.

100. Some 240 representatives of European institutions (ESDP), governments and industry got together to examine the reasons for the shortfalls in this area – on the basis of the lessons learned from EUFOR Tchad/RCA and the ISAF operation in Afghanistan – in order to come up with practical solutions for the short and medium term.

101. In his concluding remarks EDA Chief Executive Alexander Weis underlined the importance of the following points in particular:

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<sup>5</sup> The projects launched under EDA auspices are divided into three types: A, B and A umbrella, which is a new one. According to the Agency, A programmes “have a larger number of Member States contributing; work like an investment fund, from which individual projects are financed; all Member States who contribute to the fund decide on what projects the money is spent and they all decide on contract awards; there is one overall Programme/Technical Arrangement (Memorandum Of Understanding-type) for all projects”.

B projects “have a smaller number of Member States contributing; investment is per single project; each and every Category B project needs its own Programme/Technical Arrangement”.

The new category is a flexible combination of A and B : “it has a larger number in the overall Cat. A programme, but smaller number of Member States in the underlying Cat. B projects, thus allowing for selected participation and investment in the projects; the overall group does not decide on how the money is spent; decisions on spending are done in the smaller Cat.B groups; but only one PA/TA will be needed for all Cat. B projects”.

- the role of helicopters for Medevac (medical evacuation) operations and the possibility of developing modular kits that could be adapted for use on the different platforms, in particular the Mil Mi-17;
- standardisation in the field of flight simulators for crew instruction and training, particularly with respect to the virtual scenarios and environment created by the simulator;
- common standards for instruction and training in a multinational environment in order to generate greater confidence in the different countries' helicopter crews when called upon to transport and support the troops of other countries;
- integrated support solutions like those developed by NATO's NAMSA or those proposed by the United Kingdom and France for the various helicopters of US (CH-14, CH-53 and Apache) and European (Eurocopter, NH-90, Tiger) origin. The Agency could play a subsidiary role here, according to Mr Weis;
- transatlantic cooperation and competition with regard both to existing platforms and future projects (heavy-lift helicopter);
- the need for harmonisation and coordination in drawing up capability requirements, with the involvement of industry;
- more and better investment in research and technology (R&T);
- modernisation of helicopters, drawing in particular on R&T investments and the development of new programmes, including the heavy-lift helicopter. Mr Weis called for a cooperative approach geared to the type and origin of the helicopters.<sup>6</sup>

102. Crew instruction and training was a recurring theme throughout the conference. It was with that aim in mind that the Agency helped organise the Gap-Tallard 2009 mountain exercise from 6 to 20 March 2009 in France. Five participating member states out of the 14 present contributed 12 helicopters for this exercise: Belgium, Spain, France, Hungary and the Czech Republic.

103. The force was composed of CH-47, Mil Mi-17, EC725 Cougar and A109 (Agusta Westland) transport helicopters and Tiger and Gazelle attack helicopters. The main aim of this exercise conducted in the framework of the EDA's Helicopter Tactics Training Programme was to "develop interoperability through mutual understanding". Gap-Tallard 2009 focused on two aspects:

"Aircrew training, mainly on Support Helicopters (which are a specific shortfall), during their pre-deployment phase, focussing on interoperability (procedures, language and tactical skills, lessons learned and best practices sharing) and mountain flying (one of the main features of crisis management theatres of operations, where participating crews will be deployed);

Carrying out a test bed exercise with a view to building up future exercises and possible other initiatives adapted to aircrew training requirements, based on the gained experience and additional studies - currently ongoing through EDA".

A similar exercise was organised by Spain in May 2009 in the Pyrenees Mountains.

104. The Czech crews involved in Gap 2009 were the ones deployed for the NATO HHTF in Afghanistan using helicopters adapted with the help of the Franco-British fund. This is a good example of the synergy that is possible when there is a firm political will backed by financial and technical resources, however modest.

105. The Agency's involvement in this area was formalised by the official launch, at the 17 November 2009 Steering Committee meeting (of defence ministers), of a European instruction and training programme for helicopter crews in order to cover the short-term operational requirements for helicopters (for Afghanistan in particular).

106. The European Helicopters Training Programme (EHTP or HTP) began in 2010. It consists of instruction and training modules and two annual exercises, the first of which is due to take place in

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<sup>6</sup> EDA Special Bulletin: Helicopters – Key to Mobility; 10 March 2009. [www.eda.eu](http://www.eda.eu)

June 2010 in Spain (AZOR). One exercise is devoted to individual instruction and training in an environment similar to that of a possible theatre of operations (desert, hot and high conditions, mountain areas) and the other to interoperability and operational tactics (flying in formation, coordination, complementarity, mutual support, etc.).

107. The HTP is part of the same logic that led to the joint initiative by 14 EDA participating states for the creation of a European Air Transport Fleet (EATF). The project was formalised by a letter of intent – entailing no legal commitment or financial obligations – signed by the EDA defence ministers at the Steering Committee meeting of 17 November 2009.<sup>7</sup>

108. Above all the EATF entails coordination by the signatory states of airborne assets and their deployment. In the words of the letter of intent:

“The EATF is a flexible and inclusive partnership between national and multinational military air transport fleets and organisations in Europe (...). [It] aims at the efficient usage, through a networked fleet linking various European air transport fleets, of all present and future air transport assets made available by the pMS [participating Member States] for military needs, regardless of type and origin (...).

EU Member States participation to EATF, could take the following form, among others: making available military transport aircraft; purchasing flying hours; providing or exchanging flying hours; providing and benefiting from shared and/or pooled aircraft and/or support functions (...).”

109. The EATF must also be seen in relation to the European Airlift Center (formerly the European Air Lift Coordination Cell, set up in 2001) based at Eindhoven in the Netherlands. The defence ministers of Belgium, France, Germany and the Netherlands, meeting in that connection, decided in March 2010 to set up the European Air Transport Command at Eindhoven, which is due to commence activities in the course of 2010.

110. Both the EATF and the EATC concern above all the different types of transport helicopter being fielded by European forces, such as the C-130 and C-17 (American) and Transall (France and Germany), pending the arrival of the Airbus A-400M (EADS). Helicopters are not mentioned specifically in those cooperation initiatives but it is both logical and desirable that they should quickly be incorporated into them.

111. On 20 February 2010, for the purposes of its helicrew instruction and training programme, the EDA published a call for tenders for services in the field of instruction and training under the heading “interim synthetic helicopter tactics course”. The Agency is acting on behalf of the participating member states, which are funding the project. The invitation to tender relates to:

“delivery of 2 years of training at 10 courses a year and 4 helicopter crews per course. Each crew constitutes up to 4 personnel depending on aircraft type. The training should be delivered using simulation systems and should not involve “live” flying. The course and training media must be adaptable and reconfigurable to match the individual nations’ helicopter type. Course content and structure need to be able to deliver an understanding and proficiency in the helicopter tactics required to minimise the risk to the aircraft and crew when conducting missions in a high-threat, high-intensity theatre. The training should be delivered at a single fixed location within the borders of any contributing Member State. The instructors should be selected on the basis of relevant experience of high-intensity support helicopter operations in a nonpermissive theatre, as well as any recognised military instructional qualification. The contractor shall design, develop and deliver all course material. The course will be conducted in English.

The contractor shall also develop and deliver the same course, delivered as an instructor course and provide all relevant training facilities as prescribed in the technical specifications”.

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<sup>7</sup> The letter of intent was preceded by a joint declaration on 10 November 2008 on the same subject.

112. This tender addressed to public and private enterprises is a way of relieving the burden that would have to be borne by the national structures if they had to organise the training of crews from other states. This is already being done but only to a limited extent due to the human, technical and financial constraints weighing on the European states in question. The use of flight simulators is already common practice and is a way of keeping the costs down once the initial investment in equipment, instruction and training has been amortised; it also limits equipment wear and tear and reduces both the need to allocate equipment for training and practice and the risk of accidents.

113. During a visit to the German Army's Aviation School at Bückeberg the Subcommittee of the ESDA Defence Committee attended flight demonstrations on the EC-135 helicopter simulators. The basic training consists of 202 hours (divided into three modules), 98 of which on the simulator. The instruction and training system is the result of a public-private partnership of the kind targeted by the Agency's invitation to tender.

114. That partnership – a consortium called Helicopter Flight Training Services – is composed of the companies CAE (a European and world leader in the field of simulators and other civil and military aviation systems), Rheinmetall, Eurocopter and Thales. The consortium has delivered a complete solution for the instruction and training of NH-90 helicopter crews in the framework of a more than 480 million euro-contract signed in 2004 with the German Government for the supply of four simulators and the equipment and operation of three training centres and related services.

115. The aim of this project is to centralise the instruction and training of NH-90 helicopter crews. In 2009 six states were involved in Bückeberg training activities: Austria, Belgium, Finland, New Zealand, Oman and Sweden. The EDA participating states would like to organise something similar for the Mil Mi-17 but the project is currently facing difficulties in terms of funding (staff, infrastructure and equipment) and technological investment, in particular for the development of the simulators needed to reproduce the Mil Mi-17 characteristics.

116. The efforts to mobilise Mil Mi-17 helicopter resources and upgrade CH-47s (the United Kingdom and others) and CH-53s (Germany), and the gradual entry into service of the NH-90 aircraft are all indicative of a growing awareness at European level of the need to improve the availability of helicopter capabilities. The member states, the EDA, NATO and private enterprises are all contributing to that effort. However, a gap that remains to be filled concerns the design, development and production of a heavy transport helicopter (HTH).

117. For the moment the HTH is a Franco-German project, formalised in a declaration of intent signed on 20 June 2007 at the Le Bourget air show. According to specialised sources this will be a 40-tonne helicopter capable of transporting 13-15 tonnes of payload over 200-300 km. It will have three engines and an essentially interior payload capacity. With those characteristics, also adopted by the NATO Industrial Advisory Group in 2008, the HTH will be in a similar performance range as the "new" 33 to 38-tonne CH-53K with its three engines and the capacity to transport an external payload over 240 km.

118. In November 2007, at Istres, France also tested a Russian Mil Mi-26 helicopter, which, with its capacity to carry almost 20 tonnes of payload over a distance of 500 km, is the world's largest heavy-lift helicopter. However, the Russian aircraft was eliminated as a possible platform for the European HTH. A key factor in that decision – in addition to the issue of having to upgrade to European/NATO standards – was that the choice of the Russian platform would mean the countries concerned foregoing one of their principal objectives, which is to develop a European industry in this area.

119. In Europe only the CH-47 and CH-53 fit into the heavy-lift category but these platforms are more than 40 years old, and even with totally modernised materials, engines and flight systems have reached the limits of their performance possibilities in terms of distance, flight time, speed and payload capacity. The future development of heavier, more robust and faster helicopters means overstepping that qualitative threshold.

120. Notwithstanding the technological gap that exists in general terms between Europe and the United States in the field of defence equipment, when it comes to helicopters the two are more or less

at the same level. The US programme for renovating its heavy-lift transport capabilities (Joint Future Theater Lift, JFTL), which is supposed to be a joint project between the US Army (the leader) and the US Air Force, is marking time due to the failure of the two to agree on a common vision.

121. The army is in favour of a vertical takeoff or tilt rotor helicopter like Bell and Boeing's V-22 Osprey, while the Air Force is more interested in a fixed-wing aircraft to replace the C-130J.<sup>8</sup> Either way the future platform must be able to carry 20-30 tonne payloads to match the characteristics of the new armoured vehicles such as Stryker (30 tonnes with its equipment and systems) and others that are under development.

122. In 2005 five projects were announced: one by Boeing, two by Sikorsky, one by Bell-Boeing and one by Frontier Aircraft/Karem Aircraft. The US Army selected three of them for the concept design and analysis phase: Boeing, Bell-Boeing and Karem Aircraft in partnership with Lockheed Martin.

123. The Boeing project was a new version of the CH-47 Chinook, while the Boeing-Bell project was a quad tilt-rotor based on the V-22 Osprey, with four rotors instead of two. Karem Aircraft and Lockheed Martin proposed a tilt-rotor system called Optimum Speed Tilt Rotor (OSTR). The Army came out clearly in favour of a tilt-rotor system, which it felt more closely corresponded to the stated operational requirements: the capacity to transport a payload of up to 15-20 tonnes over 460 km at an altitude of 1 200 metres with temperatures of up to 35°C (hot and high).

124. The aircraft also needs to be auto-deployable (not needing to be transported in by air or sea) to a distance of more than 3 000 km and capable of being refuelled in-flight. However, that ambitious project does not have a big annual budget – only a few tens of millions of dollars – although the overall project, once the option has been chosen, has been evaluated by the Congress budget department at 14 billion dollars over 17 years for some 500 aircraft.

125. Despite appeals from Congress, the Army and Marines have been unable to agree to work together on the project. The Marines are working on their side to modernise the CH-53 and to move towards an upgraded version of the CH-53K produced by Sikorsky in the framework of the so-called Heavy Lift Replacement programme.

126. Germany is following the movement, going over to the CH-53GA and GS (search and rescue) version produced under licence by Eurocopter. The American K version (three engines) is nonetheless superior to Germany's bi-engine G version. The CH-53GA took its maiden flight on 10 February 2010; the programme will run until 2013 and produce 40 helicopters for the Germany army.

127. The European heavy transport helicopter (HTH), for the moment at the declaration-of-intent stage, is planned to arrive around 2020. The EDA, in contact with NATO, has the difficult job of harmonising the desired characteristics, with a view to avoiding the kinds of pitfalls that befell the A-400M transport aircraft. Cooperation with the United States can be envisaged only for a platform with a classic type of rotor like Boeing's Advanced Tandem Rotor Helicopter (a new Chinook) or those proposed by Sikorsky.

128. Sikorsky has proposed a crane helicopter and a transport helicopter shaped like a cargo plane with an external payload capacity of more than 30 tonnes, or an inside payload of 20 tonnes. Those models – the Joint Heavy Lift Crane (X2C) and Joint Heavy Lift High Speed Lifter (X2HS) – have coaxial rotors. Eurocopter (EADS group), which has good cooperation with Sikorsky in the field of helicopters (CH-53), could envisage a partnership on a transatlantic heavy-lift helicopter if the European states were to decide to open their project to the United States.

129. Eurocopter is also present in Russia with its subsidiary Eurocopter Vostok, which sells European helicopters on the Russian civilian market, in the civil protection area in particular (BO105 helicopters). In the military sector the Russian producer is a consortium, Russian Helicopters, bringing

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<sup>8</sup> EADS perceives the JFTL as an opportunity to promote the A-400M transport aircraft in the United States in the years to come. An article published online at [www.flightglobal.com](http://www.flightglobal.com) on 30 January 2010 examines the hypothesis of cooperation between EADS and Lockheed Martin (C-130J) in order to position the A-400M in the competition for the JFTL.

together Kaman, Mil and others. Although production increased in 2009 (up from 169 civilian and military aircraft in 2008 to 183 in 2009) and more than 100 units were exported, Russia is seeking partners in order to modernise its capacities.

130. In the framework of Russia-NATO cooperation Russia is also involved in the efforts to improve helicopter availability for ISAF operations in Afghanistan, with Mil Mi-17, Mil Mi-24 and Mil Mi-26 helicopters as well as contracts with private companies. It was Mil Mi-26 helicopters (belonging to the company Sportsflite) that were used in 2002 and in 2010 to recover damaged American CH-47 Chinooks at a cost estimated at more than 350 000 dollars for each recovery operation.

131. Russia has also expressed an interest in cooperating, together with NATO and the European states concerned, on the construction of the European heavy transport helicopter. Given the interest expressed by US firms such as Sikorsky and Boeing in a transatlantic partnership, Europe therefore has a choice of options. The American preference for tilt-rotor systems and Europe's choice of a classic rotor system would enable the companies concerned to maintain their skills in those two areas.

132. The option of cooperation with Russia also has advantages, although it is politically more sensitive. Russia has genuine expertise and experience in the field of heavy-lift helicopters, but needs Europe's financial and technological input in order to maintain and develop its helicopter industry. This puts European companies in a position to assert their own preferences and priorities, which would be harder to do with the United States.

133. In addition, the European HTH could be an opportunity for cooperation between two major European firms, Eurocopter and AgustaWestland.<sup>9</sup> Neither has yet built such a helicopter: even their most robust models do not exceed five tonnes of payload (the NH-90 can carry four tonnes, 20 soldiers, the AW101 five tonnes, 40 soldiers). AgustaWestland also has experience with the CH-47, and Eurocopter with the German CH-53. Both companies are therefore well placed for transatlantic cooperation on a European heavy transport helicopter.

134. If the European states were to so decide, one could imagine a competitive tender between two or three (if the Russians are involved) designs, with AgustaWestland and Boeing on the one hand and Eurocopter and Sikorsky on the other for the design, development and production of a Euro-American CH-X, or with Russian Helicopters for an entirely European model. AgustaWestland also cooperates with Russia on civilian helicopters (sale and co-production of the AW139).

135. The fact that Eurocopter and AgustaWestland are engaged in cooperation outside the transatlantic framework with Asian countries such as India, South Korea and also China, creates export opportunities for a future European heavy transport helicopter. Moreover China, with Russian assistance and cooperation, is also seeking to develop a heavy transport helicopter based on the Mil Mi-26 design.

136. The HTH is a flagship project which, provided it assimilates the lessons learned from the A-400M programme, offers major potential in terms of developing the projection and in-theatre operational capabilities of European forces, helping establish a better balance in transatlantic cooperation on defence equipment and preserving and developing European capacities, jobs and exports for the benefit of the European defence industrial technological base. There is also a large civilian market for this type of aircraft.

137. The development of the HTH would give European armed forces a projection and operational capability in the field of heliborne operations comparable to that of the United States. Having such a platform available would also relieve the pressure on the existing models (CH-47, CH-53, Caracal and NH-90) and reduce the number of platforms needed for deployment and a strong presence in a theatre of operations.

138. Pending the arrival of the HTH, another avenue that is being explored, mainly under American programmes, are UAV versions of vertical take-off and landing aircraft. European and Israeli firms are

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<sup>9</sup> AgustaWestland, under licence to Boeing, produces, sells and provides in-service support for the CH-47 Chinook in the United Kingdom, Italy and other European countries that possess that aircraft.

also present in this area, although no real operational requirements have so far been expressed, except for maritime surveillance drones (Northrop Grumman's Fire Scout and EADS' SHARC – Scouting and Hunting Autonomous Rotor Craft).

139. These are not small surveillance drones but large unmanned aircraft like a light plane or helicopter capable of transporting payloads of up to 1.5 tonnes, or, like the Israeli project, of evacuating one or two wounded soldiers or civilians. This so-called AirMule project is proposed by the company Urban Aeronautics.

140. Neither is it a helicopter, but rather a ducted fan SVTOL (short vertical take-off and landing) aircraft. The AirMule, according to the prototype specifications, must be able to transport a cargo of up to 250 kg over a distance of 300 km and has a maximum speed of 185 km/h. The project was launched in 2007 and the first flights for the purpose of “demonstrating autonomous hovers with the fly-by-wire system providing autostabilization” took place in January 2010 (but only at a height of one metre above the ground).<sup>10</sup>

141. Two other Israeli initiatives concerning the same range of equipment have been launched by the Fischer Institute For Air and Space Strategic Studies, which proposes a similar concept to that of AirMule, and by the Israeli Aerospace Industries (IAI), which proposes an unmanned helicopter, with a demonstrator based on the Bell 206 (an American platform), weighing one tonne and capable of transporting two wounded people. The company EMIT also has a UAV project called Butterfly, a parachute system equipped with a two-cylinder engine, which has a payload of 250 kg.

142. Israel's drive to improve airborne medical evacuation capabilities using UAVs is in part due to the lessons learned during the war against Hezbollah in Lebanon in 2006, when helicopter evacuations were dangerous due to the proximity of enemy forces and the fact that the lines were moving all the time.

143. In the area of transport capabilities, the United States also has a number of projects under study with developments and advanced demonstrators being proposed by Boeing and by Kaman in partnership with Lockheed Martin. Boeing has developed the A160 Hummingbird Warrior which can carry a 500 kg-1 tonne payload and has a flight endurance of 16 to 24 hours, a maximum speed of 258 km/h and a maximum range of 4 630 km, which is a considerable feat for a helicopter. This UAV is designed to operate autonomously within a range of pre-defined parameters without permanent human guidance.

144. Another innovative feature of the A-160 is that the number of rotations per minute of the blades can be adjusted according to altitude, to optimise flight and economise fuel. In March 2010, during a demonstration for the US Army, an A-160 transported more than 500 kg of cargo, in a sling, in a round trip covering a total distance of 280 km. The aim of the test was to demonstrate the aircraft's capacity to conduct ground-fuelling operations in a theatre of operations, with an advance base presumed to be at a distance of roughly 140 km. The UAV conducted part of its mission in autonomous flight following a pre-defined programme. A total of seven flights – including stationary and night-time flights – were conducted during the course of the demonstration.

145. The direct competitor to the A-160 is the K-MAX being presented by the companies Kaman and Lockheed Martin (Team K-MAX). This is a manned helicopter which can be converted as required to a UAV. The K-MAX (or K-1200) can carry cargoes of up to 2.7 tonnes (6 000 pounds) placed in a sling. The empty weight of the aircraft is only 2.3 tonnes (5 000 pounds). In its manned version the helicopter remains within the normal parameters: a range of 500 km and speeds ranging from 150 (cruising) to 185 km/h.

146. Since 2007, the unmanned version has flown more than 400 hours for concept validation and performance demonstration purposes. Early in 2010, a series of complex tests was conducted in the United States desert. According to the Lockheed Martin/Team K-MAX press release:

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<sup>10</sup> “Urban's AirMule shows it can hover”, Ares A Defense Technology Blog, Aviation Week, 11 January 2010. [www.aviationweek.com](http://www.aviationweek.com). Urban Aeronautics also proposes a similar but manned aircraft called X-Hawk for both civilian and security operations.

“The Unmanned K-MAX demonstrated autonomous and remote control flight over both line-of-sight and satellite-based beyond line-of-sight data link.

The system performed a rigorous set of cargo resupply scenarios as programmed, allowing the ground-based operator to monitor progress, and make adjustments to aircraft positioning only when requested by the Marine Corps for demonstration purposes.

Performance attributes demonstrated included hovering at 12 000 ft. [3 650 m] with a 1 500-pound [680 kg] sling load; delivering 3 000 pounds of cargo [1 360 kg] well within the six-hour required timeframe to a forward operating base (two 150 nm round-trip flights [280 km]); remotely controlling flight and a precision load delivery by a ground-based operator in both day and night conditions; and uploading a new mission plan to the aircraft’s mission management system during flight.

As an optional demonstration, Team K-MAX showcased the Unmanned K-MAX helicopter’s four-hook carousel, which enables multi-load deliveries in a single flight. Lifting a total cargo of 3 450 pounds [1 565 kg], the aircraft flew to three pre-programmed delivery coordinates, autonomously releasing a sling load at each location. At the customer’s request, the fourth load delivery was performed under manual control by the ground operator”.

147. The test parameters were the same as for the Boeing A-160 in March 2010. The performance of the K-MAX and A-160 places those aircraft in the light and medium-weight transport category. The K-MAX exists in a piloted version which can be adapted with very few changes into an unmanned version. The A-160 is a fully-fledged UAV, with a technical performance superior to that of the current helicopters in terms of range, flight endurance and speed, but inferior in terms of payload capacity for the moment.

148. There is as yet no equivalent in Europe to those two projects or to the Israeli medical evacuation UAV, apart, albeit in a different category, from the SHARC maritime surveillance UAV developed by EADS. The abovementioned demonstrators are designed essentially for tactical purposes. Above all they supplement the existing helicopters in terms of payload and regular use.

149. However, like most UAVs, they are more vulnerable than manned aircraft, and the addition of protection, defensive and offensive systems requires a major technological, technical and financial effort. Such aircraft have a role to play alongside traditional helicopters, but they cannot replace them in the medium term, before 10 to 15 years, and only at the price of a continued R&T effort in this area.

150. The helicopter, whatever its configuration or future modifications – design, materials, engines and other systems – will in the near future remain essential for the conduct of military operations in a wide range of theatres. It is as indispensable for counter-insurgency warfare – highly topical at the moment – as it is for high-intensity conflicts of the kind ranging from the Korean War to the wars against Iraq in 1991 and 2003.

151. The controversy and debate about the conditions of use of helicopters are due above all to different military and industrial choices and interests and to national egotism. The European helicopter fleet offers a wide choice and range of capabilities, but, as we have seen in Afghanistan, Iraq and Chad, it remains fragmented into “families” and by the different rules of engagement.

152. There is a need, first of all, to harmonise requirements and define minimum standards, and then to adopt a cooperative and proactive approach based on the complementarity between different types of helicopters and on joint training and logistics, for example. This calls for an effort on all sides, by governments and organisations (NATO, EU/EDA) alike.

153. Without such an effort towards convergence and pooling, the burden will inevitably continue to fall on those countries that contribute the most equipment, without all those countries that benefit having contributed to the maintenance, modernisation and replacement costs. This situation is approaching its limits and is detrimental to the cohesion of the coalitions engaged now or in the future in settling the conflicts of the 21<sup>st</sup> century.

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