CIVIL ROTORCRAFT OPERATIONS

EUROPEAN HELICOPTER ASSOCIATION

The Social & Economic Value of European Helicopter Operations

- Challenges Ahead -

THERE IS A RISK TO FUTURE EUROPEAN ROTORCRAFT[1] OPERATIONS. THE PURPOSE OF THIS PAPER IS TO PROVIDE INSIGHT INTO THE SOCIAL AND ECONOMIC VALUE OF ROTORCRAFT OPERATIONS, AND IDENTIFY WHAT IS REQUIRED TO EXPLOIT IN FULL THIS UNIQUE ELEMENT OF EUROPE'S TRANSPORT INFRASTRUCTURE.

[1] it refers to helicopters and tiltrotor

Cologne, November 2016

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1. EXECUTIVE SUMMARY:

The Helicopter is a unique form of transport.
It has special qualities of flexibility, adaptability and agility, enabling it to operate in areas denied to other aircraft or land based systems. Increasing use of helicopters in a wide range of roles is improving the safety of citizens, enhancing national security, improving resilience and adding economic value to the European Union's collective wealth. Improvements in technology, processes and training are broadening the already extensive range of helicopter functions, safely and efficiently. However, as other nations strive to exploit in full the capabilities of modern helicopters, Europe risks falling behind in investment on Research and Development, in improvements to infrastructure, and in liberating processes and procedures which threaten full integration of helicopters into future air transport plans.
Now is the time to show the strong political and commercial leadership necessary to reverse this trend – before it is too late.

2. UNIQUE CAPABILITIES AND SOCIAL BENEFITS

2.1. HELICOPTER EMERGENCY MEDICAL SERVICE (HEMS)

Helicopters save lives.

Vertical take-off aircraft are versatile, multi-purpose machines. Their unique capabilities as rescue platforms are best exemplified in the movement of seriously ill or injured patients, where their point-to-point speed, bypassing surface congestion and obstacles, can be critical to patient survival. Indeed, in many remote or congested areas, emergency care can only be achieved by utilising helicopter transport. In Europe, HEMS crews fly approximately 300,000 missions every year, the vast majority of which are in response to major trauma, serious brain injury, acute cardiac syndrome and stroke.

2.2. SEARCH AND RESCUE (SAR)

Helicopters are at the very core of SAR.

The member states of the International Civil Aviation Organisation and the International Maritime Organisation have all agreed to establish a 24-hour SAR service; this service is primarily a governmental task. In the North Sea, in particular, SAR has played an increasingly prominent role in support of remote Oil & Gas platforms, the fishery industry and the development of offshore wind energy farms.

When time is short, effective rescue can only be undertaken by helicopters. A SAR helicopter can respond immediately, detect survivors with advanced technologies and rescue up to 25 persons, returning them safely to shore, directly to medical care. Today, key SAR flying functions are automated, allowing the pilot to concentrate fully on commanding the overall rescue mission, thus increasing the safety of the SAR crew and the persons being rescued. This has markedly increased SAR success rates, especially where weather conditions or the nature of the incident demand an urgent response.

SAR response to onshore accidents forms part of a co-ordinated multi-agency disaster response capability in which the helicopter remains the best option for recovering casualties from inaccessible locations where a landing is not possible.

In Europe today, more than 150 helicopters are engaged in SAR missions[2].

[2] Flight Global Ascend

2.3. FIRE FIGHTING

Helicopters are the primary prevention resource in the fight against wildfires.

Forest fires are a major hazard to life and property in many European nations. When analyzing the forest fires in Southern Europe (Spain, France, Portugal, Italy and Greece), the official statistics[3] (1980-2012) show that the combined annual occurrence is circa 50,000 fires per year and 465,000 hectares of forest lost. Whilst alarming, this figure would be much higher were it not for the careful distribution of helicopters, which has resulted in keeping the average of burnt surface per fire remarkably low (below 10 hectares). The recent forest fires in southern Spain could not have been contained as effectively as they were without airborne assets, the majority of which were helicopters.

In southern European countries, some 500 aircraft, of which most are helicopters, are used to control and fight fires every summer.

2.4. SECURITY, POLICE OPERATIONS, BORDER CONTROL

The helicopter is today a key component in Society's security.

Helicopters are used extensively in public security operations, as they are fast, flexible and agile. Police, law enforcement activities and border control are reinforced by the use of helicopters equipped with specialist mission technology. They are used for disaster management, humanitarian relief, control of large-scale public events and incidents, traffic control, surveillance, high-speed pursuits, transport of special operations forces, environmental control, command and control activities, secure transport of world leaders, police troop transport, anti-terrorism and drug enforcement.

Police helicopters are modern multirole platforms, able to conduct missions by day or night, far more cost-effectively than by deploying land capabilities alone. Indeed, in some hostile terrain, only the helicopter is capable of responding to incidents.

In Europe close to 600 helicopters are contributing to our security, including 416 for law enforcement[4].

[3] EFFIS (European Forest Fires Information System)
[4] Flightglobal Ascend

2.5. OFFSHORE

Rotorcraft are pivotal to the safe and economic exploitation of offshore resources.

According to the International Energy Agency, oil and gas will continue to meet as much as 50% of the world's needs for heat, light, power and mobility for at least the next 20 years. Today, oil and gas makes a significant contribution to the European economy, generating more than €400 billion in revenues to European governments each year[5].

With world demand for oil and gas forecast to grow, offshore helicopter service providers deliver 'mission critical' support to the offshore industry in Europe and around the world. Offshore helicopters provide the safest, most efficient - and often only viable - form of transport for the oil and gas industry.

Whilst the offshore industry faces challenges associated with the continuing low price for crude oil, forecasts indicate that the number of manned production installations and associated facilities will increase, often at greater ranges from shore than before; moreover, decommissioning of existing installations depends heavily on helicopter support, and is expected to do so for the foreseeable future. It is clear that the need for rotary support will continue unabated, and indeed could accelerate if the price of oil returns to close to earlier levels.

Each year some 470 helicopters transport around half a million passengers to their offshore workplaces in the North Sea, and also provide vital SAR and medical evacuation services for the whole industry.

2.6. RENEWABLE ENERGY

The helicopter plays an integral role during the whole life cycle of renewable energy.

Offshore wind energy development in Europe is the fastest growing power sector; with currently more than 40 wind farms in operation and under construction. A recent European Wind Energy Association analysis[6] states that offshore wind will see €10 billion worth of investment over the next two years in the European Union.

Whilst the oil and gas industry utilises the largest segment of offshore helicopter transport, emerging renewable energy providers are increasingly turning to helicopters for the construction and maintenance of offshore wind turbines, and where necessary for the medical evacuation of personnel.

It is estimated that by 2030 more than 470 helicopters will be needed to support and

[5] Energy Taxation and Subsidies in Europe, NERA Economic Consulting
[6] WindEurope 2015 "The European offshore wind industry – key trends and statistics 1st half 2015"

secure this growing energy supply, especially as nations look to even more distant locations to place renewable energy platforms.

2.7. AERIAL WORK

Helicopters sustain communities.

A large number of small helicopter companies operate in a multitude of specialised operations that are collectively known as Aerial Work, all of which are essential for the personal and economic well-being of European citizens.

Using modern sensors and avionics, they have embraced a large range of diverse functions, including news gathering, event coverage, oil pipeline and power line inspection, construction and utility work. In many areas, especially those which are in mountainous terrain or remote from urban centres, the very fabric of life is sustained by helicopters, especially in the winter months.

2.8. HELICOPTER CHARTER

Helicopter charter plays a vital role in modernising and enhancing European mobility.

Helicopter charter operations include transit of executives or VIPs between major business centres, transport of passengers from airports to city heliports, or the transport of passengers for sightseeing and tourism.

For business users, helicopters are a productivity multiplier, saving time and providing a direct link between business centres and smaller airports that are not served by the major airlines.

Thanks to improvements in technology, procedures and training, such activities can now be fully integrated with other airspace users safely, in all weathers and at night, albeit only in a flexible regulatory environment.

2.9. UNMANNED AERIAL SYSTEMS (UAS)

Rotary UAS will provide additional, unique unmanned capabilities.

UAS, popularly known as drones, are increasingly being used for Aerial Work such as photography, survey and surveillance purposes, to complement or replace manned helicopter operations.

Whilst challenges to safety and integration with other airspace users remain, the potential for rotary UAS is vast, and will undoubtedly form a major component of overall rotorcraft capabilities in the future, providing its full potential is recognised, funded and developed.

3. ECONOMIC VALUE TO EUROPE[7]

Helicopters add substantial value, directly and indirectly, to the wealth of European Nations.

In 2014, the rotorcraft sector contributed to the European economy a total of €26.5 billion in gross value added.

The combined turnover of the two main helicopter manufacturers, Leonardo Helicopter Division and Airbus Helicopters, exceeds €11 billion, with more than 35,000 employees. Indeed, when the entire supply chain is included, the European rotorcraft sector employs more than 100,000 personnel.

Whilst breaking out specific detail in helicopter operations is complex, there are many striking examples of the contribution made by the sector to the European economy. In France alone, reliable records show a turnover in the sector of €330 million, with some 1800 full time employees in the commercial companies, with a further 2300 more employed indirectly in the supply chain. In the same nation, there are no less than 1627 registered helicopters, over 1500 commercial pilots and some 80,000 hours are flown in rotorcraft in support of civil activities each year.

In Spain, according to data provided by the Spanish Helicopter Operators Association, the annual turnover of commercial companies is around €325 million, employing 1950 direct employees, and 350 active civil helicopters dedicated to HEMS, firefighting, SAR, civil protection, Aerial Works, and commercial air transport. In addition the para-public sector related with law enforcement, traffic and border control is using 95 helicopters.

In the UK, 51 operating companies hold air operator certificates for commercial activity; that is the carriage of passengers, mail or freight for financial reward. According to recent CAA figures, a total of 427 aircraft are listed as being operated by these companies.

According to the Luftfahrtbundesamt 757 helicopters are registered in Germany and 45 companies are operating helicopters, with an annual turnover of circa €182 million.

A recent study conducted for the EHA, concluded that across Europe there was a growing trend to increase helicopter operations, employ more people in high quality jobs, and add even greater economic value to national budgets.

This level of activity, clarified in several studies across Europe, is clear evidence of the significant economic value provided by helicopter development, manufacture, operations and support.

4. FURTHER CONSIDERATIONS

4.1. IMPROVEMENT IN SAFETY

Helicopter safety is improving globally, and rigorous measures underway will continue to enhance safety and reassure the client base.

Millions of people are transported in helicopters each year, and their safety is the top priority for the helicopter industry. But all involved in the industry

[7] Unless otherwise specified, source is WINGX Study

recognise that more must be done, both to improve safety, but also to reassure clients that their safety is paramount. Accordingly, through the leadership of the International Helicopter Safety Team, which is linked to the European Helicopter Safety Team, global helicopter accidents have been reducing 2% per annum since 2005. This has been achieved through a series of improvements in helicopter technologies, operational best practices and improved air navigation and landing facilities. Moreover, the industry has initiated a series of measures focused on improving proactive collaboration and the sharing of safety data. In Europe, the European Aviation Safety Agency (EASA) has embarked on a series of regulatory measures, aimed both at better harmonisation but also at enhanced safety across all airspace operations.

4.2. HARMONISATION AND REGULATION

The change to a more pragmatic, flexible and balanced regulatory framework could help to exploit in full helicopter operations.
In the European Union, EASA and the Member States have responsibility for the safe regulation of rotorcraft operations. Whilst much has been done to achieve a better operating environment, the need for flexibility, together with the desirability of balancing risk across all areas, including commercial risk, has yet to be achieved. This has been especially acute in helicopter operations, where the complex range of activities limits absolute harmonisation, or does so at inordinate cost and with consequences to operational efficiency. EASA has now recognised the need for a more balanced approach to cross-European regulations, and is reviewing where practicable current and proposed measures.

4.3. GREEN CREDENTIALS

Rotorcraft research and development is improving substantially helicopter green credentials.
In the past decade, rotorcraft have benefited from major technological developments which have reduced the environmental impact. Whilst the sound level produced by a helicopter depends, like any other aircraft, on several factors (aircraft type, altitude, etc.), the modern helicopter is no noisier than most other means of urban transportation, thanks largely to improvements in rotor blade technology, which continue, both in Europe and in the USA. The European rotorcraft manufacturers are committed to reducing the sound level generated by helicopters through international research programs. In particular, Leonardo Helicopter Division and Airbus Helicopters are amongst the leading promoters of a European research programme, designated 'Clean Sky', which aims to reduce significantly the environmental impact of all aircraft, including helicopters. Additionally, a related European Union programme, known as REACH, is focused on reducing toxic emissions and improving recycling across the industry.
Consideration of the environment is now a principal consideration in helicopter design, manufacture and operation.

4.4. IMPROVING EFFICIENCY AND CONNECTIVITY

Helicopter operations are becoming increasingly efficient. Due to major improvements in helicopter avionics and flight systems, it is now possible, safely, efficiently and in a coordinated manner, to operate aeroplanes and helicopters alongside each other at even the busiest airports. The success of such operations has already been seen in the USA and some European nations, where revised procedures, together with new technologies, have enabled safe and mutually-supporting operations between fixed-wing aeroplanes and helicopters.

The European Union has recognised the importance of close integration of all air capabilities in pursuit of enhanced regional connectivity.

The Single European Sky (SES) initiative aims to meet future air transport capacity and air safety needs. The Single European Sky Air Traffic Management Research (SESAR) programme is the technological and operational dimension of the SES initiative. Following aggressive intervention, SESAR now contains specific references to rotorcraft.

Despite unique rotorcraft operational needs and capabilities, there is a continuing trend to include helicopter operations within General Aviation (GA), with the risk of compromising the unique potential of rotorcraft.

Under the innovative and forward looking SESAR programme, the European Rotorcraft community must be kept fully involved in its own right within all phases of this important initiative.

5. RISKS

Despite what might appear to be a positive message above, there are several substantial risks, in addition to those previously identified, which could prevent the full exploitation of safe rotorcraft operations. In particular, Europe risks falling behind in rotorcraft Research and Development. Moreover, the regulatory burden, and the inadequate investment in infrastructure, threatens full integration of helicopters into future air transport plans. Unless steps are taken to mitigate these risks, Europe will continue to fall behind competitive nations in this vital area of air transport.

6. CRITICAL SUCCESS FACTORS

In order to achieve the many benefits of helicopter transport for the future, it is important to ensure that the following key critical success factors are achieved:

6.1. CONTINUE TO IMPROVE SAFETY

Aviation safety has a proud heritage of extremely high standards and a constant drive for improvements in safety performance.
This is achievable through leadership, lessons learnt, safety culture, greater collaboration, better allocation of resources, innovation and performance based regulation. Enhancing the ability to share safely the airspace with other users, whilst encouraging innovative measures to attain higher levels of safety, is key to the success of helicopter operations.
To achieve this, it will be necessary to maintain momentum on the following:

I. Senior leaders, legal and social framework should continue to promote a lessons learning culture where we learn from potential problems, rather than merely apportion blame.
II. All parties must work together to support the European Aviation Safety Plan[8], creating momentum behind those actions that will make the greatest difference to preventing accidents. This includes sharing information, allocating resources and tracking progress to ensure sufficient improvement.
III. Regulatory regimes need to focus on safety and not just harmonisation. This can be enhanced through a more performance based approach, using a range of regulatory tools, and rules that are less prescriptive and encourage innovation towards higher levels of performance.
IV. Enhanced ability to share airspace safely with multiple users, including UAS.

6.2. GROUND INFRASTRUCTURE IMPROVEMENTS

The added value of helicopter operations can only be achieved through investment in heliports, aerodrome facilities and complementary infrastructure. The natural reluctance in Europe to ignore the lessons of the USA, where heliports are common, and where integrated aircraft operations are well established, must be overcome with firm political leadership.

6.3. TRANSPORT SYSTEM INTEGRATION

Safe, effective integration of rotorcraft into a full transport system can only be achieved if appropriate processes and procedures are developed and applied across all user communities. In this context, continuing attention to Rotorcraft operations in the SESAR programme is vital.

6.4. RESEARCH AND INNOVATION

Helicopter research must be maintained and enhanced to ensure continuing improvements in safety, environmental aspects and efficiency.

[8] European Aviation Safety Plan

Greener helicopters with intelligent systems that are less costly to build, more efficient and reduce their carbon footprint can be developed to meet this goal but requires continuous government investment in research and innovation.

6.5. COMMERCIAL AND REGULATORY FRAMEWORK

As mentioned above, increasing safety is a central aim of the helicopter industry and all associated stakeholders. However, the political inclination to focus on harmonisation as the key driver in a regulatory framework must be balanced against the need to exploit the inherent flexibility of helicopters, recognition of regional differences, and the commercial penalties of implementing a one size fits all policy.

7. CONCLUSION

Helicopters save lives, enhance regional connectivity, enrich and make more secure communities and add value to the economies of member nations.

Modern rotorcraft, equipped with sophisticated sensors, critical component monitoring systems and with advanced support procedures, are now capable, with increasing safety, of full integration into the European transport system.

However, as with all forms of transport, the helicopter sector needs to be part of a holistic air transport policy. This demands greater investment in infrastructure and R&D, reduction in regulatory burden and, above all, strong political leadership to realise the unique potential of rotorcraft.

The helicopter is today a key component in Society's security!

The helicopter is a unique form of transport!

Helicopters are at the very core of SAR!

The helicopter plays an integral role during the whole life cycle of renewable energy!

Helicopters sustain communities!

Helicopters save lives!

Helicopters are the primary prevention resource in the fight against wildfires!

Helicopter charter plays a vital role in modernising and enhancing European mobility!

Rotorcraft are pivotal to the safe and economic exploitation of offshore resources!

Rotary UAS will provide additional, unique unmanned capabilities!

Helicopters add substantial value, directly and indirectly, to the wealth of European Nations!

APPENDIX

About EHA:

The European Helicopter Association (EHA) is a non-profit Association representing 13 countries in Europe, whose main members are the National Helicopter Associations Committee (NHAC) and HeliOffshore, the Rotorcraft community of specialists within the Off-Shore operators. The Association's mission is to speak as the voice for the European Rotorcraft industry at the European Institutions and elsewhere, representing and promoting the best interests of all sectors.

The Association's mission is the recognition of the unique capabilities of the rotorcraft; tailored and sustainable rules and an equal access to the Single European Sky.

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