



FPS MOBILITY AND TRANSPORT
BELGIAN CIVIL AVIATION AUTHORITY

Belgian Plan for Aviation Safety 2020-2024

Update 2020



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Contents

Executive Summary	2
Introduction	4
Link to the EPAS and the ICAO GASP	4
Content and structure of the Belgian Plan for Aviation Safety (BPAS)	5
Belgian Plan for Aviation Safety - information.....	6
Accidents and serious incidents	7
Commercial Air Transport (CAT)	7
General Aviation (GA).....	9
Systemic safety & competence of personnel	12
1. Further implementation of the Belgian Aviation Safety Program & Plan	12
2. Safety training, safety promotion & human factors	16
Operational Safety	19
A. Outline of risks in the Belgian civil aviation sector	19
B. Operational actions	21
1. Ground safety – ground handling operations	21
2. Runway safety – runway incursions & excursions	25
2.1 Runway incursions	25
2.2 Runway excursions	29
3. Airborne conflict (mid-air collisions).....	32
3.1 Airspace infringements	32
3.2 Loss of separation	34
4. Deviation from intended flight path	37
5. Aircraft environment – smoke/fumes & dangerous goods.....	39
6. Wildlife strikes	41
7. Unmanned Aircraft Systems - drones	44
8. Disruptive passengers.....	46
9. Helicopters	48
10. General Aviation	51
11. Miscellaneous.....	53
11.1 Setting up a dialogue with the Belgian aircraft operators on FDM programs.....	53
11.2 Flight time specification schemes	54
Appendix A: Acronyms and definitions	55
Appendix B: BCAA risk management process.....	60
Appendix C: BPAS Status Report	61

Executive Summary

The BPAS contains global and national safety initiatives to address safety risks in aviation. The operational safety risks are identified based on the analysis of safety outcomes (i.e. accidents, serious incidents and incidents). The BPAS is consistent with what EASA and ICAO are doing at European level. Most of the safety risks and safety actions of the EPAS and the ICAO GASP have therefore been introduced in this BPAS update. We are fully committed to work in partnership with EASA and ICAO to ensure Europe and Belgium maintain the highest possible standards of aviation safety. Systemic risks (e.g. regulatory/policy issues) that underlie the operational performance of the civil aviation system are also addressed in this BPAS update.

Regulation (EU) No 2018/1139 (the 'Basic Regulation') introduced a dedicated chapter on aviation safety management, thereby creating a strong legal basis for the establishment and maintenance of the BASP and the BPAS. The actions contained in the BPAS cover a wide field; rulemaking, safety promotion and focused oversight. The plan plays an important role in prioritizing these actions, so as to ensure that aviation safety is maintained and steadily improved at European and national level. Each action area in the BPAS includes the identification of safety issues as well as the objectives to be achieved. During the period of this plan, the progress on the actions are monitored and evaluated. This feedback loop ensures effective implementation aiming at continuous improvement. The coordinated actions proposed in this edition of the BPAS are expected to make a difference in avoiding accidents and serious incidents.

The EASA MS including Belgium shall anticipate new threats and associated challenges by developing safety risk management principles. Those principles are strengthened by SMS implementation supported by ICAO Annex 19 on safety management and Regulation (EU) No 376/2014 on the reporting, analysis and follow-up of occurrences for reporting reinforcement. In 2020, the focus remained on the further implementation of Regulation (EU) No 376/2014 and the optimization of our safety risk processes and procedures. Our attention mainly went out to a uniform introduction of safety data into the ECCAIRS database, the protection of this data and to the analysis and follow-up of the reported occurrences. We also have started with the introduction of the common European Risk Classification Scheme (ERCS). The application of this scheme shall contribute to an improvement of our safety information management, allowing continuous identification of potential critical areas to be addressed at both State and Service Providers levels.

The focus also remained on the further development of a Just Culture climate. Two Royal Decrees on Just Culture have been recently approved by the Minister of Transport. The first Royal Decree mainly addresses the creation of a Just Culture body and the protection of the reporter. The second Royal Decree deals with the establishment and functioning of a Just Culture platform. This platform ensures the necessary exchange of knowledge and experience in the field of Just Culture in collaboration with judicial authorities.

To ensure the safe operations of drones and a level playing field within the European Union, EASA has developed common European Rules. These Regulations contribute to the development of a common European market while ensuring safe operations and respecting the privacy and security of EU citizens. They establish three categories of UAS operations - 'open', 'specific' and 'certified' with different safety requirements, proportionate to the risk. The safe integration of all new entrants into the Belgian airspace will be one of the main challenges in relation to the integration of UAS technologies and related concepts of operations.

Finally, the COVID-19 pandemic resulted in an extreme reduction in operations that began in late March 2020 and has continued through to the end of May 2020. As governments have signalled that restrictions on travel began to ease in June 2020, many airlines and airports were increasing the level of their activities. The shutdown and return to service have led to many changes to the operating environment. EASA and the MS have been working closely with industry partners to identify the new or emerging safety issues in relation to COVID-19. The over-arching theme to all of these safety issues was the need for well-functioning management systems, which ensure that we are able to identify and manage our risks effectively. It is vital that everyone is focused on the goal of delivering safe and effective operations. These will continue to evolve until we reach a “new normal”. This means that we need to address the management of change effectively and to ensure that the results are safe and effective.

The BCAA Director General

Koen Milis
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Introduction

Link to the EPAS and the ICAO GASP

In the European aviation system, rulemaking, oversight and safety promotion activities are shared between the MS and the European Institutions. The European Aviation Safety Program (EASP) describes the roles and responsibilities that each of them have while performing these functions. As certain competencies have been transferred from the MS to the European Union, to obtain a complete picture of safety in Belgium, both the EASP and the BASP need to be considered. The EASP describes among other things the process to develop and update the EPAS. The safety risks identified in the EPAS are mitigated by safety actions that EASA, the European Commission, the aviation sector and EASA MS take on board. All the partners work together, streamline their activities and add their efforts to drive the accident rate further down.

The BR (EU) No 2018/1139 determines that the BASP shall include at least the elements related to the safety management responsibilities described in the ICAO SARPs. The BR also determines that the BPAS shall include the risks and actions identified in the EPAS that are relevant for Belgium.

The EPAS defines a number of MSTs (Member State Tasks) to support the implementation of the BPAS. EPAS MSTs are derived from operational issues identified in the EASA ASR, safety priorities in the ICAO GASP and GANP or through the EASA standardization process. Safety priorities include, but are not limited to, maintaining effective oversight capabilities, the effective implementation of the BPAS and related safety action planning.

Through the BPAS, the BCAA aims to contribute to the realisation of the EPAS. The alignment between the EPAS and the BPAS is shown for all relevant safety actions. EASA shall perform future standardization inspections on the implementation of the BPAS and relevant EPAS actions including the identification of possible associated organizational and safety oversight capability shortcomings.

The ICAO Regional Office for the EUR/NAT region and EASA are working together to develop a Regional Aviation Safety Plan (RASP) based on the EPAS, thus allowing Belgium that is part of the ICAO EUR/NAT region to benefit from this approach. The aim of the RASP is to facilitate the achievement of the GASP and GANP goals at regional level.

The EPAS considers the objectives and priorities of the ICAO GASP to enhance the level of safety in aviation and to better prepare EASA MS for the USOAP audits of their SSPs. The high-risk categories of occurrences in the GASP are addressed in the following sections of the EPAS: Aircraft upset in flight, runway safety, airborne conflict (mid-air collisions) and terrain collision.

The purpose of the ICAO GANP is to drive the evolution of the global air navigation system to meet the ever-growing expectations of all sectors of aviation community, in a safe, secure and cost-effective manner while reducing the aviation environmental impact. To this end, the GANP provides a series of operational improvements to increase capacity, efficiency, predictability, flexibility while ensuring interoperability of systems and harmonization of procedures. The GANP provides a global basis on which regional and national air navigation implementation plans are developed.

The ATM Masterplan is the European planning tool for setting ATM priorities, aligned with the GANP and enabling the Single European Sky ATM Research (SESAR) 'Target Concept' to become a reality. The SESAR 'Target Concept' aims at achieving a high performance ATM system by enabling airspace users to fly their optimum trajectories through effective sharing of information between air and ground. An alignment between the EPAS and the ATM MP needs to be accomplished including the development and deployment of the SESAR program.

Content and structure of the Belgian Plan for Aviation Safety (BPAS)

The BPAS forms a part of the BCAA aviation safety policy and seeks to eliminate potential sources of safety problems through safety promotion activities and through the optimization of regulatory and supervisory activities. The BPAS is the primary tool to report on safety action implementation. The BCAA normally publishes a yearly update of the BPAS. When the BPAS is not updated annually, depending on the timely realization of safety actions, a report on the implementation of safety actions shall be published at least annually. This edition of the BPAS covers the five-year period between 2020 and 2024. Unfinished actions of the previous plan are also included in this 2020 update.

The BPAS consists of two categories of safety issues: systemic and operational, each one addressing the main safety areas and risk mitigating actions.

Therefore, safety actions are divided into two different types:

- Systemic Actions (SA)
- Operational Actions (OA)

These safety actions are realised through rulemaking, safety promotion activities or through focused oversight.

The BPAS provides following information for each safety issue:

- Description - Why has the issue been identified as an important safety issue?
- Objectives - The expected safety benefits
- Safety Performance indicators – How is the improvement monitored?
- The safety actions
- The alignment with the EPAS (MSTs)

The BPAS is complemented by an **Appendix C** containing a status report on the progress made. The following information is provided for each action item:

- A summary of the work done
- The assessment whether the action is progressing according to the BPAS
- The identification of the status of the key deliverables. An action is considered closed when the proposed deliverable is achieved

This edition of the BPAS applies to commercial air transport (CAT) operations, aerial work operations and general aviation (GA) operations. Safety actions derived from safety recommendations by the Belgian Air Accident Investigation Unit (AAIU(Be)) may also be included in the BPAS.

Belgian Plan for Aviation Safety - information

The BPAS is available on the BCAA website:

NL: https://mobilit.belgium.be/nl/luchtvaart/belgisch_veiligheidsprogramma/veiligheidsplan

FR:

https://mobilit.belgium.be/fr/transport_aerien/programme_belge_de_securite/plan_de_securite_belge

Accidents and serious incidents

This chapter provides information on the number of fatal accidents, non-fatal accidents and serious incidents in Belgium and fatal accidents, non-fatal accidents and serious incidents with Belgian registered aircraft abroad. It also outlines the number of fatalities and serious injuries in the domains of Commercial Air Transport (CAT) and General Aviation (GA).

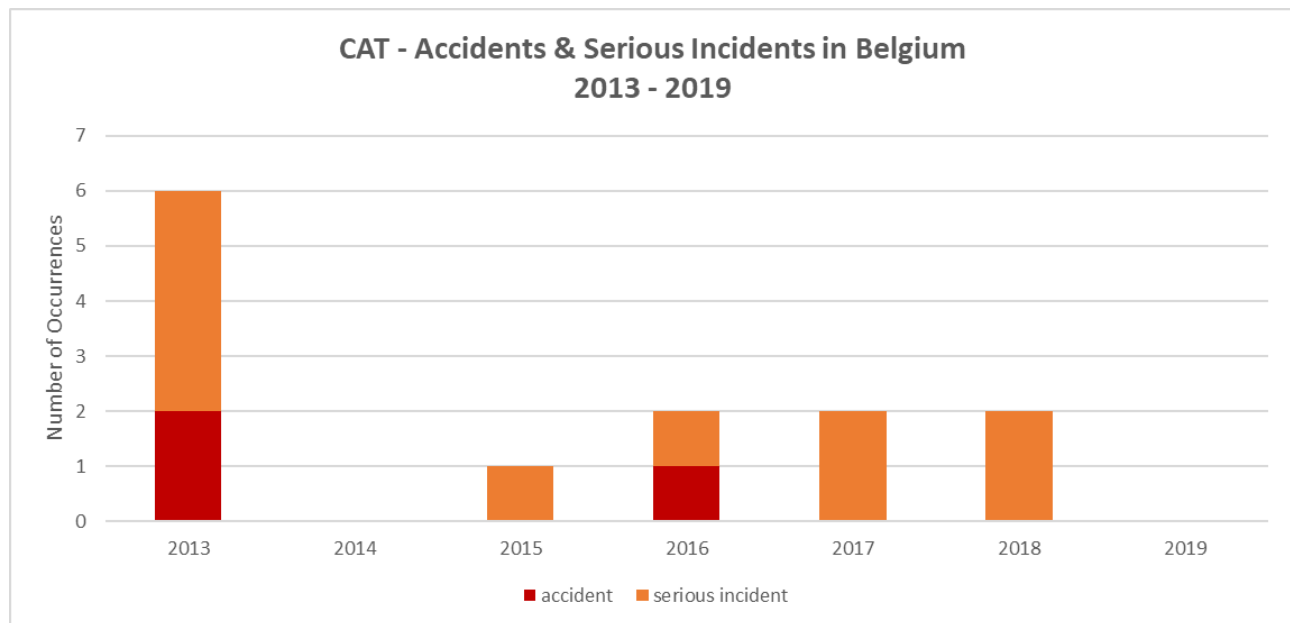
The classification of accidents and serious incidents was done by the Belgian Air Accident Investigation Unit in accordance with the provisions of the European Parliament and of the Council of Regulation (EU) No 996/2010 and ICAO Annex 13. All data are based on the accidents and serious incidents collected by the BCAA as per Annex 13 investigations.

Commercial Air Transport (CAT)

This domain addresses all types of CAT operations involving airplanes (passenger and cargo operators) and also air taxi and other such operations. This chapter also covers operations in the offshore helicopter domain and all other CAT operations involving helicopters such as passenger flights, air taxi and HEMS.

The key statistics for the CAT domain are in the figures below and include comparison of the number of accidents (fatal and non-fatal) and serious incidents for a 7-year period (2013-2019). It also includes the comparison of the fatalities and serious injuries sustained in those accidents during the same timeframe.

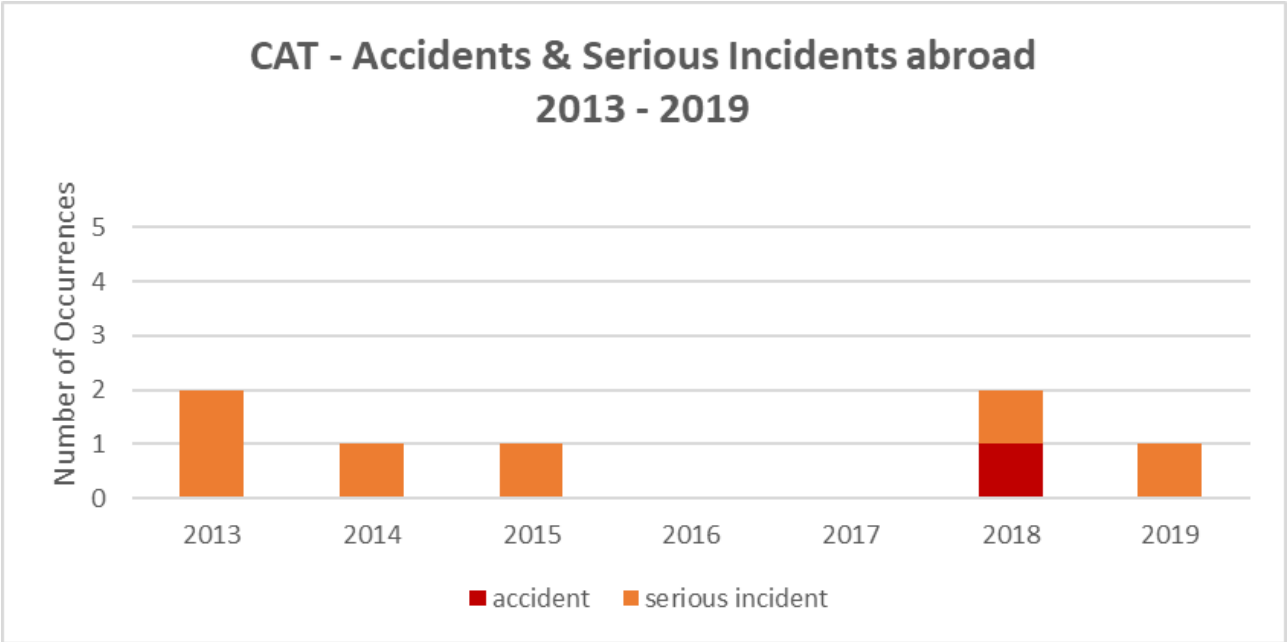
Accidents and serious incidents in Belgium



In 2018, there were 2 serious incidents involving CAT operations. These serious incidents were both related to separation minima infringements between commercial airplanes above Belgian territory. Separation minima infringements occur whenever specified separation minima are breached. However, the MS Aviation and Safety Investigation Authorities introduced a more stringent classification of separation minima infringements after the entry into force of Regulation (EU) No 376/2014.

In 2019, there were no accidents and serious incidents involving CAT operations with airplanes and helicopters. There were also no fatalities or serious injuries during the 2018-2019 period.

Accidents and serious incidents with Belgian registered aircraft abroad



In 2018, the accident with a passenger airplane was related to an abnormal runway contact. The airplane sustained substantial damage during the hard landing. The serious incident with a passenger airplane was related to an in-flight failure of both engines, however not simultaneously, on the same flight.

In 2019, the serious incident with a cargo airplane was also related to an abnormal runway contact. The aircraft sustained abrasion damage during the landing.

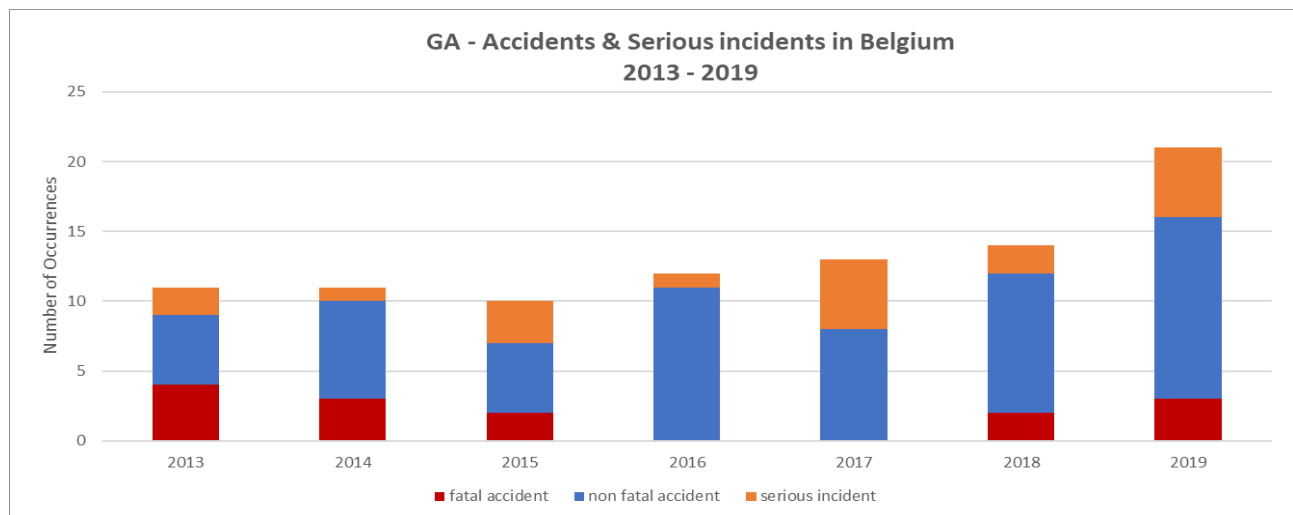
There were no fatalities or serious injuries during the 2018-2019 period.

General Aviation (GA)

This area includes aerial work and GA operations performed by airplanes and helicopters as well as operations performed by gliders, balloons and microlights.

The key statistics for the GA domain are in the figures below and include comparison of the number of accidents (fatal and non-fatal) and serious incidents for the 7-year period (2013-2019). It also includes the comparison of the fatalities and serious injuries sustained in those accidents during the same timeframe.

Accidents and serious incidents in Belgium

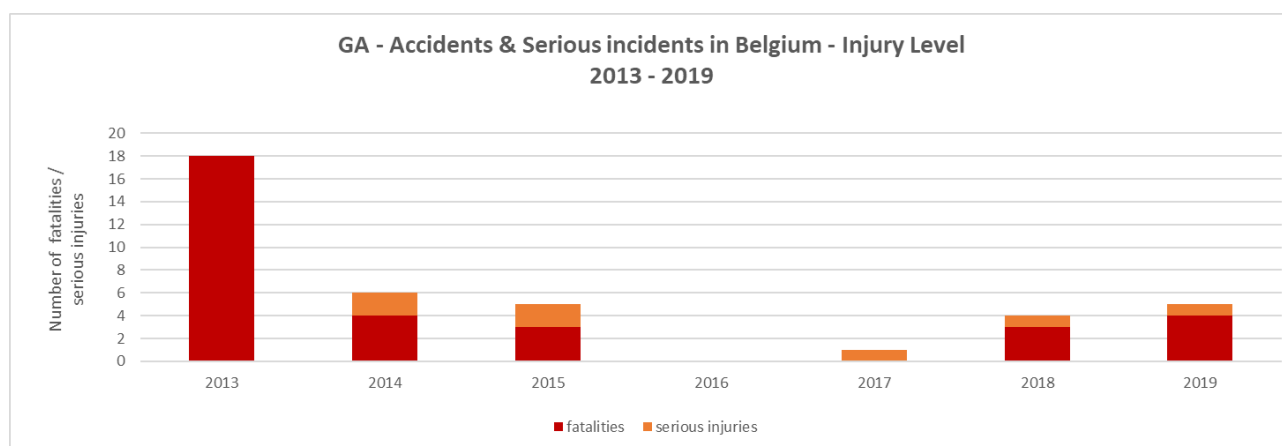


UAS accidents and serious incidents are not included in the above graph.

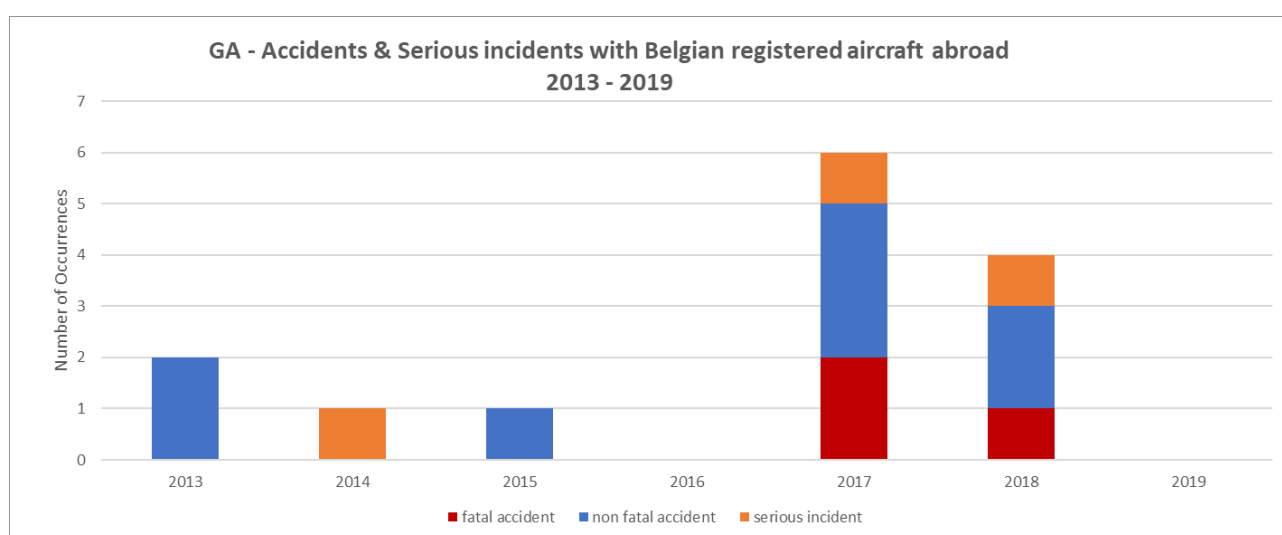
The first fatal accident of 2018 was related to a loss of control inflight with a small Belgian registered airplane. The highest number of fatalities in a single accident in 2018 occurred during this accident where 2 persons died. The second fatal accident was also related to a loss of control inflight with a French registered gyrocopter. The direct cause of the loss of control with the gyrocopter could not be determined. It could have been due to excessive vibrations or the consequence of either insufficient handling following an engine failure or incapacitation of the pilot.

The first fatal accident of 2019 was with a French registered microlight. The highest number in a single accident in 2019 occurred during this accident where 2 persons died. The second fatal accident was related to a loss of control inflight with a paramotor aircraft. The last fatal accident was with a small Belgian registered aircraft.

Since 2016, the rate of accidents and serious incidents continues to increase slightly. However, the low number of accidents and serious incidents in this domain prevents any conclusions from being drawn regarding possible causes of the increase.



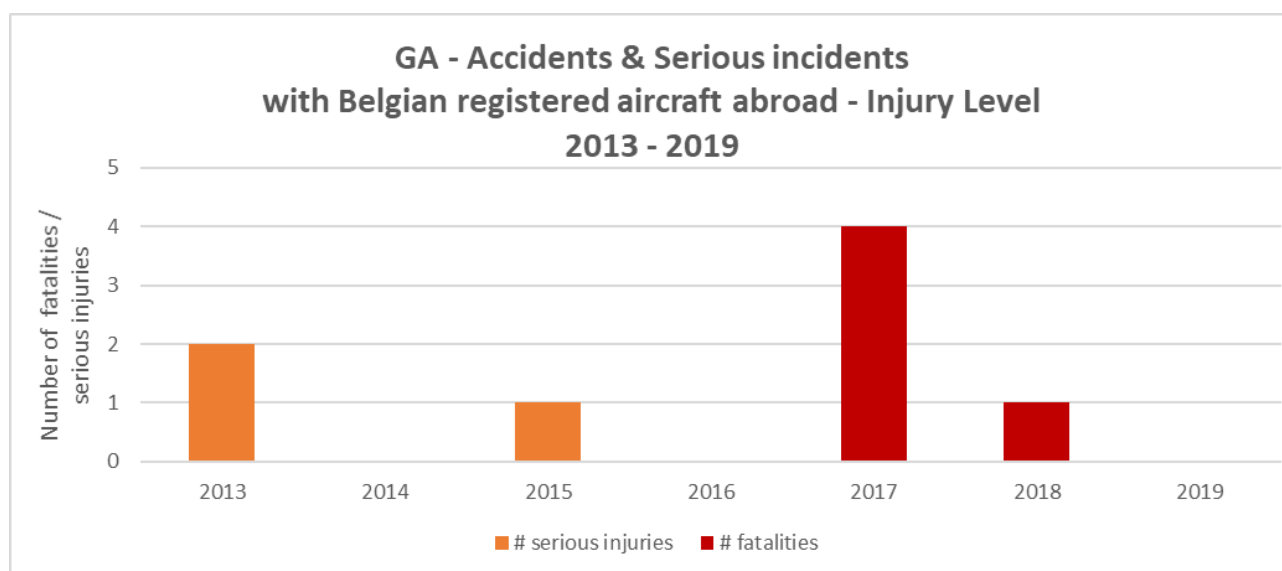
Accidents and serious incidents with Belgian registered aircraft abroad



UAS accidents and serious incidents are not included in the above graph

In 2018, there was only one fatal accident with a Belgian registered microlight aircraft in France. In 2019, there were no accidents or serious incidents during GA operations abroad.

During the period 2018-2019, there was only one fatal accident related to general aviation activities with Belgian registered aircraft abroad. The low number of accidents and serious incidents prevents any conclusions from being drawn.



Accidents and serious incidents in Belgium and with Belgian registered aircraft abroad – aircraft categories

The table below includes comparison of the number of accidents (fatal and non-fatal) and serious incidents in Belgium and with Belgian registered aircraft abroad during GA operations for different aircraft categories for a 3-year period (2017-2019).

Aircraft Category	2017		2018		2019	
	accidents	serious incidents	accidents	serious incidents	accidents	serious incidents
NCO Aeroplanes	2	4	5	0	6	3
NCO Helicopters	2	1	1	0	1	0
Microlights	1	0	1	0	5	1
Balloons	0	0	0	2	0	1
Sailplanes	1	0	3	0	3	0
Gyroplanes - Paragliders	0	0	2	0	1	0
UAS	2	0	2	0	4	0
Total	8	5	14	2	20	5

The rate of accidents and serious incidents continues to increase since 2017. A significant increase in the number of accidents involving microlights can be observed during the 2017-2019 period.

Systemic safety & competence of personnel

This area addresses system-wide problems that affect aviation as a whole. These problems often relate to deficiencies in organisational processes and human factor aspects. The BCAA and the aviation organizations should anticipate new emerging threats and associated challenges by developing SRM principles. Those principles are strengthened by SMS implementation supported by ICAO Annex 19 and Regulation (EU) No 376/2014 on the reporting, analysis and follow-up of occurrences in civil aviation.

1. Further implementation of the Belgian Aviation Safety Program & Plan

Description

The BASP describes the various regulations and activities for maintaining and improving aviation safety and ensures that Belgium operates in compliance with EU regulations and the safety management requirements set forth in ICAO Annex 19. Included in the BASP is the requirement for implementation of SMS by the service providers. The transition to a SSP requires increased collaboration across operational domains to identify hazards and risks. The analysis of various forms of safety data (accident investigation reports, safety occurrences reports etc.) is needed to develop effective mitigation actions. This requires that service providers and the BCAA work closely together on safety risk management.

Collaborative efforts between service providers and the BCAA are also essential to the development of safety performance indicators (SPI's). Safety data are analyzed to support the development and maintenance of SPI's related to the risks of the Belgian aviation system.

The BCAA is a member of the EASA Network of Analysts (NoA). The EASA NoA provides a collaborative framework for the EASA Member States to work together on safety analysis activities. The EASA NoA was formalized within Regulation (EU) No 376/2014 on the reporting, analysis and follow-up of occurrences in civil aviation and has a role in analyzing the European Central Repository (ECR) of occurrences to support both the EPAS and the SSP's of the EASA MS. The primary mission is to improve aviation safety by identifying safety risks and bringing such risks to the attention of the decision makers. The EASA NoA establishes among others appropriate indicators and analysis methodologies that facilitate the sharing of information. The BCAA is an active member of the EASA NoA Working Group 'Safety Performing Indicators' and the Working Group 'Data Quality & Taxonomy'.

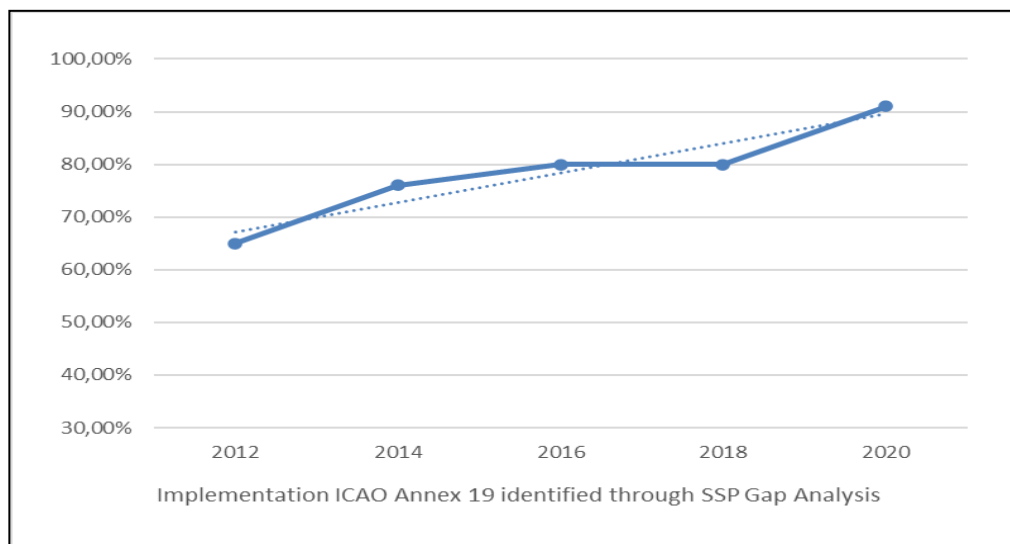
The BCAA conducted a new gap analysis in 2020 to determine the remaining gaps and actions for the further implementation of the BASP. This analysis was done by means of the ICAO Gap Analysis Tool on iSTARS. The further application of ICAO Annex 19 has been delayed by the postponement of the ERCS and by having difficulties with the establishment of Acceptable Levels of Safety Performance (ALoSP), a concept of safety performance indicators and their associated targets. This chapter has been reviewed in accordance with the outcome of the latest version of the EPAS and the result of the latest gap analysis on iSTARS.

Objectives

- Work with international organizations, service providers and military to further implement safety management
- Improve the Belgian safety performance to enable proportionate and timely corrective actions to be taken

Safety Performance Indicator

- Implementation of actions and gaps as identified through the ICAO Annex 19 State Safety Program gap analysis



Actions

Action Number	Action title & Objective	Alignment EPAS
SA01.01	Alignment of the BCAA's safety management processes and procedures with Regulation (EU) No 376/2014	MST.001 MST.028
	Objective: To optimize the BCAA's safety management processes and procedures with Regulation (EU) No 376/2014 on the reporting, analysis and follow-up of occurrences in civil aviation. The introduction of the new ECCAIRS 2.0 platform and the application of the ERCS are the most important elements of this optimization.	
SA01.02	Publication and application of the Royal Decrees related to just culture in order to designate a body responsible for the implementation of just culture principles	MST.001
	Objective: To encourage occurrence reporting by protecting reporters against possible sanctions taken against them by their employer or by the relevant authorities.	

SA01.03	Development of a leaflet on safety and just culture principles in accordance with Regulation (EU) No 376/2014	MST.001 MST.027
	Objective: To explain the roles of different stakeholders regarding safety and just culture and the functioning of the body responsible for the implementation of just culture principles in order to foster positive safety behaviors and encourage occurrence reporting.	
SA01.04	Improvement of industry compliance with applicable SMS requirements	MST.026
	Objective: To provide feedback to EASA on how the EASA management system assessment tool is used for the purpose of standardisation and continual improvement of the assessment tool and to regularly inform EASA about the status of compliance with SMS requirements and SMS performance of the Belgian aviation industry.	
SA01.05	Enhance collaboration with military where relevant for State management activities including safety promotion initiatives	MST.001 MST.028
	Objective: To identify where civil-military coordination and cooperation need to be enhanced to meet the BASP objectives including the possible joint cooperation in the field of safety promotion.	
SA01.06	Start a promotion campaign to further improve the reporting culture of occurrences in civil aviation	MST.001
	Objective: To encourage the reporting of occurrences by ATO's, flying clubs, SPO operators, airfields and general aviation pilots. This campaign is applicable to all possible types of aircraft (airplanes, helicopters, balloons, drones etc.) and includes the development of specific guidelines for the reporting of occurrences through the European reporting portal (https://www.aviationreporting.eu/AviationReporting/).	
SA01.07	Manage the BCAA internal risks related to the COVID-19 pandemic	MST.001
	Objective: To regularly assess the most important internal risks related to the COVID-19 pandemic by determining the gaps and mitigating actions and to follow-up the mitigations already taken.	
SA01.08	Improve the system to plan the availability of personnel	MST.032
	Objective: To expand the quantitative and qualitative elements of the system to plan the availability of personnel to ensure that a sufficient number of suitably qualified personnel within each domain are employed in order to ensure the proper completion of all BCAA activities.	

SA01.09	Perform data-driven risk-based inspections by the BCAA Aviation Inspectorate	MST.032
	Objective: In addition to the system of periodic inspections, the BCAA Aviation Inspectorate shall conduct risk-based inspections. These inspections shall be data-driven and are based, among other things, on the most important aviation risks.	

2. Safety training, safety promotion & human factors

Description

According to the EPAS, **competence of aviation personnel** (flight crew, cabin crew, maintenance staff, ground handling staff, air traffic controllers and BCAA staff) is a strategic priority. As new technologies and/or operating concepts emerge on the market and the complexity of the system continues increasing, it is of key importance to have the right competencies and adapt training methods to scope with new challenges.

The BCAA provides for appropriate initial and recurrent training to maintain and enhance the competence of their technical personnel performing safety-related functions at the desired level. Therefore, the BCAA maintains an internal safety training program that ensures that their staff is trained and competent to perform their BASP duties. Training programs and individual training plans are adapted to fit the needs and complexity of the BCAA's organization. The scope of the safety training is appropriate to each technical functions' involvement in the BASP. The provision of appropriate training to all staff, regardless of their level in the organization, is an indication of the BCAA's management commitment to an effective SSP.

Human factors and the impact on human performance, as well as medical fitness are also strategic EPAS priorities. As new technologies and/or operating concepts emerge on the market and the complexity of the system continues increasing, it is of key importance to properly assess human factors and human performance, in terms of both limitations and its contribution to delivering safety. Human factors relates to fatigue and fatigue management, personal readiness, perception or resource management and communication.

One of the safety objectives in the EPAS is reducing the risk of ineffective communication when pilots and/or controllers need to face an unexpected situation and to use plain language. EASA has started to have a closer look at the language proficiency tests that are provided in the different Member States. The BCAA shall provide feedback to EASA on how the language proficiency requirements implementation is implemented for the purpose of harmonization and uniform implementation. After a thorough analysis, EASA plans to promote the selected best practices with the view to harmonizing testing methods.

Safety promotion is a major component of the BASP and together with the BCAA Safety Policy an important enabler for continuous safety improvement. Safety promotion actions in the BPAS involves safety training, awareness/education and dissemination of safety relevant information to further engage and interact with relevant aviation stakeholders in order to positively influence or change individual behavior with the ultimate objective of achieving predetermined aviation safety objectives. It includes the promotion of safety topics, rulemaking and awareness, communicating about safety intelligence, priorities and actions and other tasks to raise awareness with individuals, as well as organizations. Safety promotion can involve a wide range of deliverables that include guides, videos, text for use in websites and printed media, social media and outreach activities.

The External Communication Unit of the Federal Public Service of Mobility and Transport and the BCAA have developed formal means of safety communication. These means of safety communication include, but are not limited to:

- The organization of or participation in seminars and workshops
- The sending of emails to Belgian aviation personnel (pilots etc.) and aviation organizations
- The publication of safety information on the website of the Federal Public Service of Mobility and Transport
- The spreading of safety messages through social media...

The BCAA organizes or participates in safety seminars and workshops in collaboration with the commercial and general aviation sector, the Belgian Air Accident Investigation Unit, the Ministry of Defense and EASA.

Extensive guidance safety promotion material has been developed by teams of the SMICG and the EASA SPN which among others addresses SMS principles and implementation.

Latest SMICG deliverables include:

- Improved SMS evaluation tool
- Industry Safety Culture evaluation tool and guidance
- Organizational Culture self-assessment tool for regulators
- Position paper on SMS/QMS relationship

Finally, the BCAA is also a member of the EASA SPN. The EASA SPN is a voluntary partnership between EASA, the EASA Member States and other aviation organizations. The objective of the EASA SPN is to enhance aviation safety in Europe by providing a framework for the collaboration of safety promotion activity across the EASA Member States.

Objectives

- The BCAA staff is trained and competent to perform their SSP duties
- Safety information is communicated and disseminated to the aviation personnel and sector
- Improvement of industry compliance with applicable SMS requirements

Safety Performance Indicator

Not applicable

Actions

Action Number	Action title & Objective	Alignment EPAS
SA02.01	Encourage the implementation of safety promotion material developed by the SMICG and the EASA SPN	MST.002 MST.025
	Objective: To encourage the implementation of the methods, guidance, best practices, etc. presented in the safety promotion material developed by the SMICG and the EASA SPN to the service providers and the general aviation sector. https://mobilit.belgium.be/nl/luchtvaart/belgisch_veiligheidsprogramma/veiligheidspromotie https://mobilit.belgium.be/fr/transport_aerien/programme_belge_de_securite/promotion_de_la_securite	

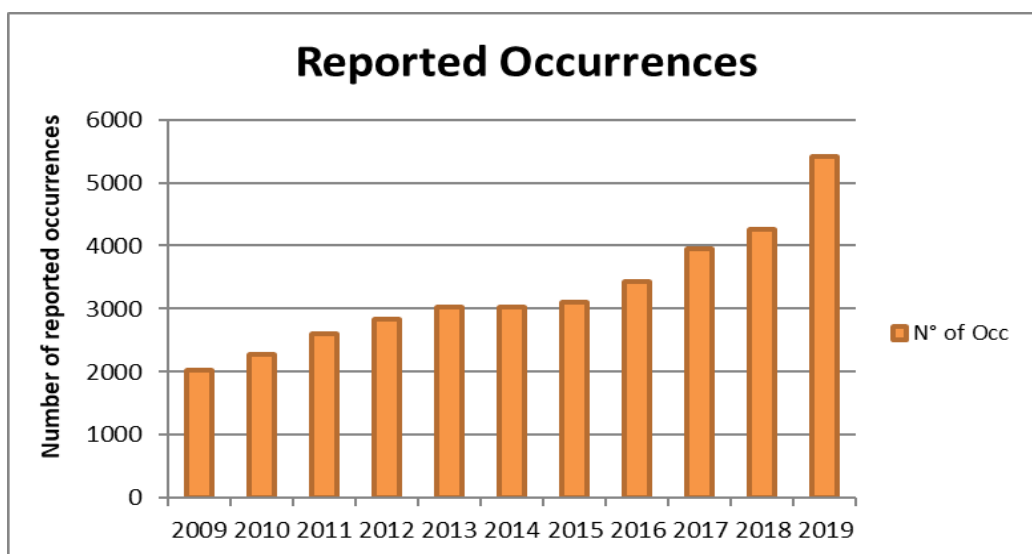
SA02.02	Organize and/or participate in safety seminars and workshops	MST.015 MST.025
	Objective: To organize and/or participate in safety seminars and workshops to discuss the most important safety risks with the aviation sector and license holders.	
SA02.03	Share best practices with EASA, to identify areas for improvement for the uniform and harmonized language proficiency requirements implementation	MST.033
	Objective: To provide feedback to EASA on how the language proficiency requirements are implemented for the purpose of harmonization and uniform implementation	
SA02.04	Focus on the risk of fraud cases in Part-147 examinations	MST.035
	Objective: To focus on the risk of fraud in Part-147 examinations, including by adding specific items in audit checklists and collecting data on actual cases of fraud.	
SA02.05	Revision of the Royal Decree regulating the operation of ultra-light aircraft	–
	Objective: To reduce the numbers of accidents and serious incidents involving ultra-light aircraft by improving national regulation including in the field of pilot training.	
SA02.06	Raising awareness within the general aviation sector on human factors	–
	Objective: To reduce the numbers of accidents and serious incidents of general aviation aircraft through the organization of training related to human factors and the development/communication of promotional materials.	

A. Outline of risks in the Belgian civil aviation sector

The risk management performed by the Belgian State relates to any occurrence taking place on Belgian territory and in Belgian airspace. In addition, occurrences taking place on foreign territory and foreign airspace involving Belgian aircraft operators are also included. The various aspects of aviation are considered, including aircraft, companies operating in the aviation sector, approved training organizations, ATC services, airports, ground handling services, maintenance organizations etc.

All aviation occurrences reported are entered in the occurrence database ECCAIRS. The ECCAIRS database is used to gain better insights into potential accident scenarios and to generate specific measures for accident prevention. The ECCAIRS system foresees in the encoding of events and factors. The objectives of encoding are various: memory of accidents, dissemination of safety data, elaboration of safety indicators and safety studies. Another key issue is to identify recurrent factors or patterns to prevent future occurrences. The main safety risks can be deduced from the analysis of these occurrences, and the operational actions to be set by the management in view of accident prevention can be determined. These actions concern both general and commercial aviation. The BCAA Safety Committee addresses the aviation risks to be dealt with as a priority, selected by considering factors such as the level of risk-mitigation actions already in place (see also Appendix B).

The improvement of the reporting culture within the aviation sector and the reporting of occurrences using formats compatible with the ECCAIRS software in accordance with Regulation (EU) No 376/2014 on the reporting, analysis and follow-up of occurrences in civil aviation, are most probably the main reasons for the increase in the number of occurrences reported to the BCAA. In the course of 2019, the BCAA handled more than 5000 occurrences. During this period, the BCAA received more than 10.000 occurrence reports from the Belgian commercial and general aviation sector because of the dual and triple reporting of the same occurrence by different actors and because of the notification of initial, follow-up and final reports by the aviation organizations.



The BCAA sends the data of the ECCAIRS database to the ECR of the European Commission in accordance with Regulation (EU) No 376/2014 to support the development of the EASA ASR and the EPAS. This transfer includes the collection of information on occurrences but also information on accidents and serious incidents investigated pursuant to Regulation (EU) No 996/2010.

A risk analysis and risk classification for the period 2018-2019 were conducted to determine the highest aviation risks. The risk classification also takes into account the seriousness of the occurrences (accidents, serious incidents and incidents) as well as the number of occurrences that was reported and stored in the ECCAIRS database.

The table below shows the types of occurrences that are considered posing the highest aviation risks derived from the 2018-2019 risk analysis:

Commercial Air Transport (CAT)	
	Ground handling operations
	Runway safety (runway incursions & excursions)
	Airborne conflict
	Deviation from intended flight path
	Aircraft environment (transport of dangerous goods)
	Wildlife strikes
	Disruptive passengers

General Aviation (GA)	
	Airborne conflict (airspace infringements)
	Runway safety (runway incursions & excursions)
	Deviation from intended flight path
	Flight crew communications

B. Operational actions

1. Ground safety – ground handling operations

Description

This risk area includes all ground handling and apron management related issues as well as collisions of aircraft with other aircraft, obstacles or vehicles while the aircraft is moving on the ground, either under its own power or being towed. It does not include collisions on the runway. This risk area leads to possibly significant damage to aircraft and equipment, as well as personal injuries to ground staff, highlighting the need for greater safety efforts in ground operations.

Following occurrences are classified as ground handling occurrences and are included in this operational domain: aircraft marshalling, aircraft parking, de-icing, line maintenance, servicing, loading/unloading (baggage, cargo), as well as collision of towed aircraft with objects/obstacles and collision aircraft-vehicle while the aircraft is standing still or being pushed-back or towed.

The Belgian State didn't have sufficiently detailed national regulations in place with respect to ground handling. Therefore, the BCAA has published regulations on the approval of suppliers of ground handling services at Brussels-National airport. Part of the regulation is the introduction of SMS at the suppliers of ground handling services. An SMS involves a systematic approach that includes the administrative structures, accountability, safety policy and procedures required for safety management. Suppliers of ground handling services shall use their SMS to identify safety threats, ensure corrective action to maintain appropriate levels of safety, carry out continuous monitoring and regular assessment of safety levels, and strive for continuous improvement of the SMS. The implementation of following actions should result in lower risk levels as well as in a relative decline in the number of occurrences related to ground handling activities.

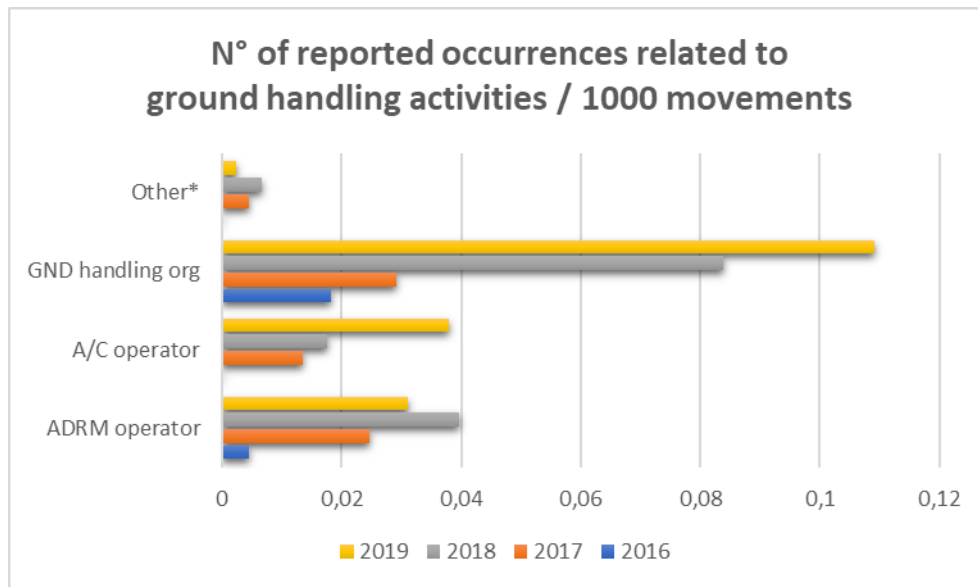
Objectives

- Improved reporting culture by ground handling organizations
- Increased supervision and auditing of ground handling organizations

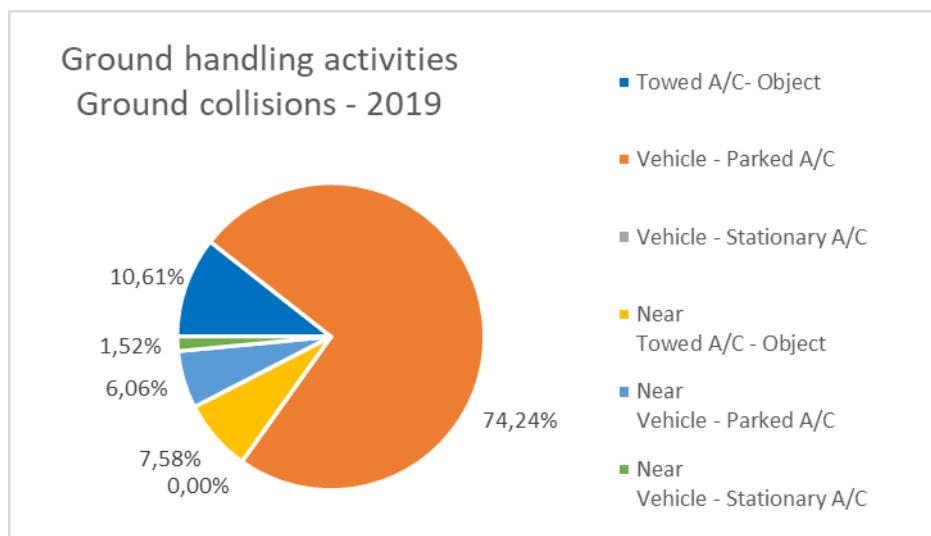
Safety Performance Indicators

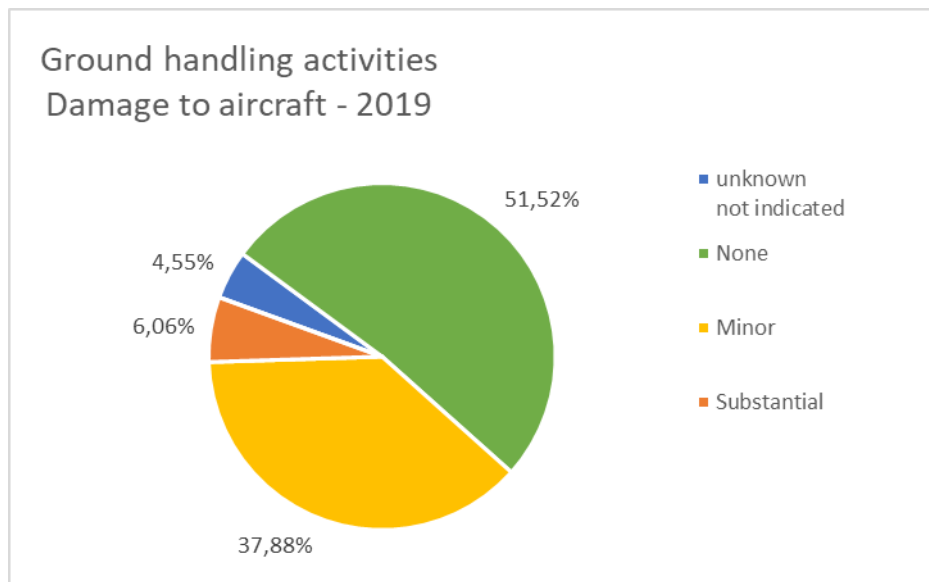
- Number of reported occurrences by ground handling organizations in proportion to the number of movements
- Collisions on ground at Belgian aerodromes because of ground handling activities in proportion to the number of movements
- Damage to aircraft due to collisions on ground at Belgian aerodromes because of ground handling activities in proportion to the number of movements

The BCAA launched a promotion campaign to improve the reporting culture of ground handling organizations by developing a guideline on occurrence reporting and by accentuating the importance of occurrence reporting in the context of safety management. The BCAA monitors the reporting rate of individual ground handling organizations and oversees received occurrence reports on data quality and data completeness. The graph below clearly shows that the reporting culture of the ground handling organizations has improved considerably.



Most collisions during ground handling activities happen between vehicles of ground handling organizations and parked aircraft during loading and de-loading activities of baggage and cargo, followed by collisions between aircraft being towed and objects/obstacles.





Almost 45% of the collisions due to ground handling activities leads to minor and substantial damage to aircraft which in turn can lead to flight delay and cancellation.

Actions

Action Number	Action title & Objective	Alignment EPAS
OA01.01	Approval of maintenance and renewal programs of centralized infrastructure at Brussels National airport	MST.028
	Objective: Airlines need safe, functional and affordable airport infrastructure for their operations. This infrastructure should be maintained and renewed at a high level. In relation to this, the BCAA shall approve the centralized infrastructures' maintenance and renewal program of the Brussels Airport Company.	
OA01.02	Perform focused inspections on the conditions for roadworthiness testing of rolling stock at Brussels-National airport	MST.028
	Objective: To improve ground handling safety by organizing BCAA focused inspections on the conditions for roadworthiness testing of rolling stock at Brussels-National airport for ground handling organizations in accordance with the relevant legislation.	
OA01.03	Improve the reporting culture at Brussels-National airport for ground handling organizations	MST.028
	Objective: To improve the reporting culture of ground handling organizations by monitoring the reporting rate of individual ground handling organizations and to oversee received occurrence reports on data quality and data completeness. The BCAA shall use these results as an indicator of the reporting culture within a ground handling organization.	

OA01.04	Conduct continuous oversight of ground handling activities at Brussels-National airport for ground handling organizations with a focus on management system requirements	MST.028
	Objective: To improve aviation safety by organizing a continuous oversight of ground handling activities at Brussels-National airport for ground handling organizations in accordance with the relevant Ministerial Decree with a focus on compliance with management system requirements (SMS/QMS relationship).	
OA01.05	Improve safety awareness related to ground safety at Brussels Airport	MST.028
	Objective: To continuously increase safety awareness on the prevention of incidents related to ground handling activities at Brussels Airport through safety promotion material (safety leaflets, videos) developed by Brussels Airport Company. https://www.youtube.com/playlist?list=PLkFpCH_t7P-QCoG0M-fZamGf0v4qf-Lrm	
OA01.06	Start the renewal process of ground handling approvals at Brussels-National airport	MST.028
	Objective: To improve aviation safety by starting up the renewal process of the ground handling approvals at Brussels-National airport in accordance with the relevant Ministerial Decree with a focus on compliance with management system requirements (SMS/QMS relationship) and safety risk registers.	

2. Runway safety – runway incursions & excursions

2.1 Runway incursions

Description

This key risk area includes all occurrences involving actual or potential runway collisions between an aircraft and other aircraft, vehicle or person that occurs on the runway of an international airport or other designated landing area. This includes occurrences involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft. It does not include occurrences involving wildlife on the runway.

The prevention of runway collision is a key issue for airport safety. The European Action Plan for the Prevention of Runway Incursions (EAPPRI) contains several recommendations to authorities, aerodrome operators, air navigation service providers and EASA to mitigate the risks. EASA has already included many of these recommendations in the Aerodromes Regulation (EU) No 139/2014 and in the relevant acceptable means of compliance/ guidance material.

The implementation of EAPPRI recommendations will enhance runway safety. The development of mature and performant Local Runway Safety Teams (LRST's) at the certified airports remains a key objective for the BCAA. LRST's should be dealing with runway safety and runway incursions based on local risks. The BCAA is an active member of all LRST's.

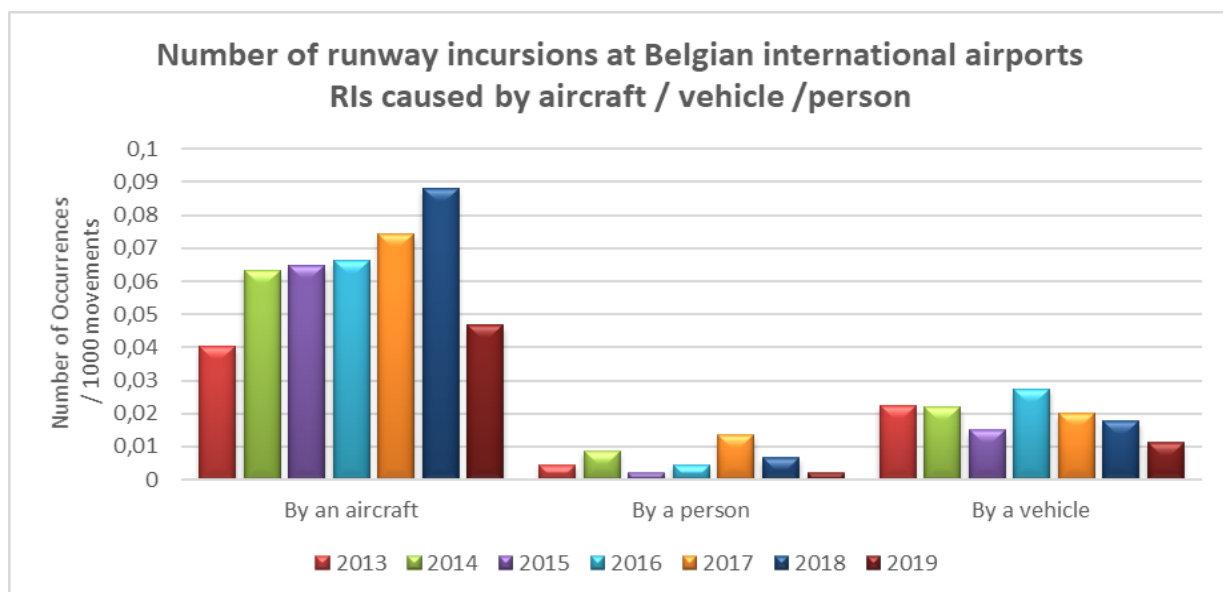
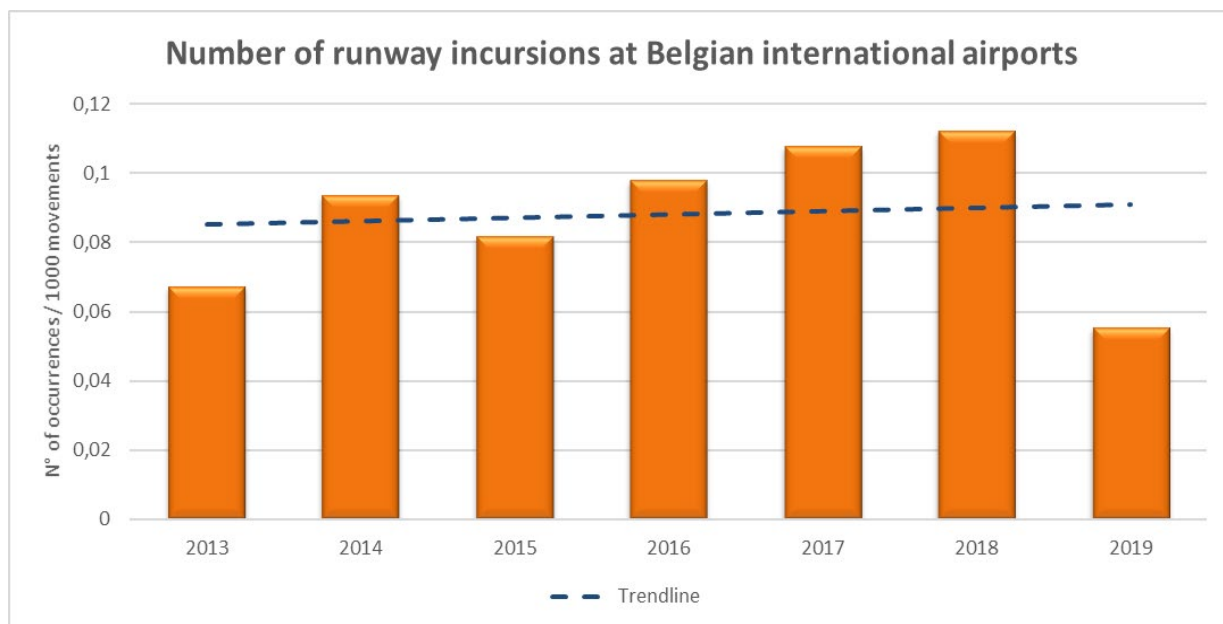
The BCAA sends for each runway incursion a standard questionnaire to the pilot. The BCAA then performs an in-depth statistical analysis of all questionnaires to gain insight into the possible hazards that can lead to runway incursions. The analysis of the reported incidents indicates that a significant number of runway incursions are caused by general aviation aircraft.

Objectives

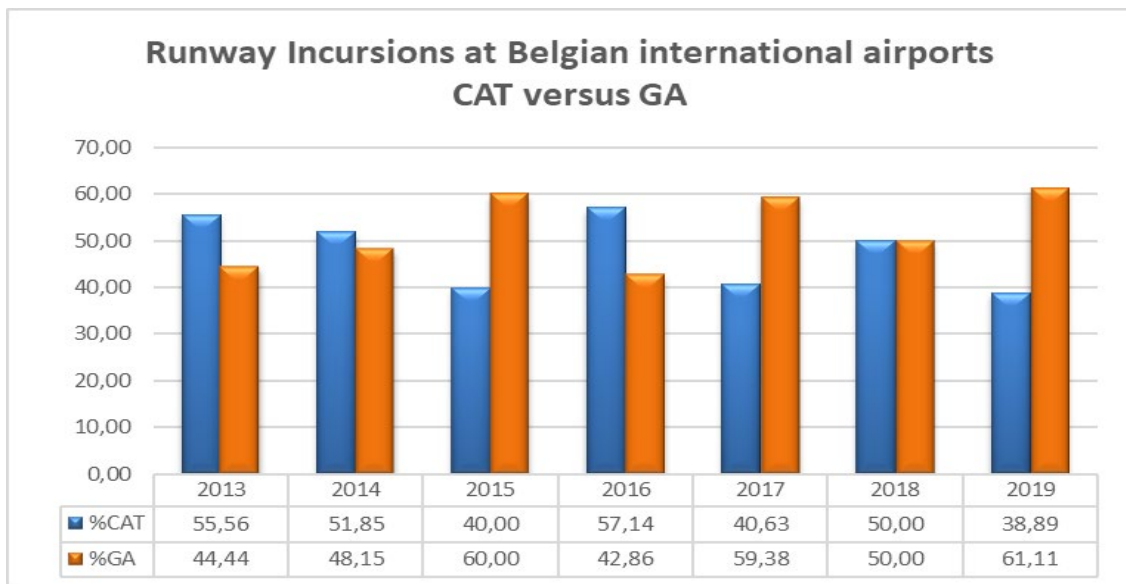
- Reduce the number of RIs in general and commercial air transport

Safety Performance Indicators

- Number of RIs at Belgian international airports in proportion to the number of movements
- Number of RIs by aircraft at Belgian international airports in proportion to the number of movements
- Number of RIs by vehicles at Belgian international airports in proportion to the number of movements
- Number of RIs by persons at Belgian international airports in proportion to the number of movements
- RIs at Belgian international airports - ratio CAT versus GA
- RIs at Belgian international airports – ANS Risk Analysis Tool (RAT) risk levels



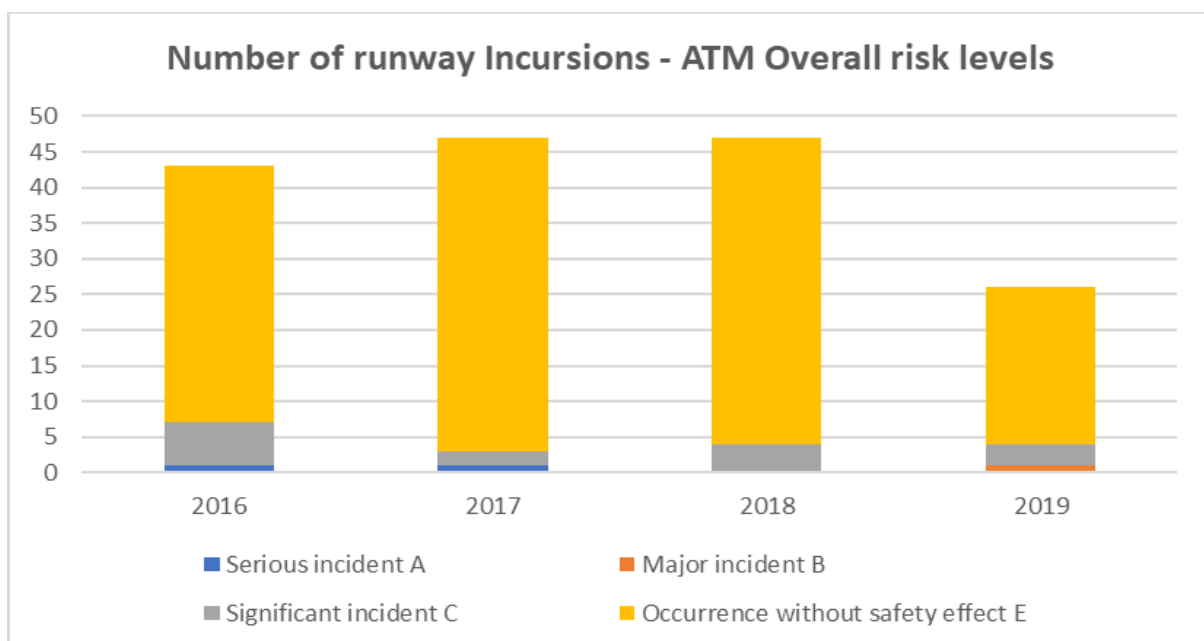
The number of runway incursions in 2019 has decreased considerably. This decrease is mainly due to the reduction of the number of runway incursions caused by aircraft. A large number of runway incursions are caused by general aviation aircraft at international airports. Therefore, the BCAA shall perform an analysis of the runway incursion occurrences and the reported runway incursion questionnaires. Depending on the results, the CAA shall develop new safety promotion material or update existing ASIL's on the prevention of runway incursions.



The risk classification for the runway incursion occurrences has also been performed by means of the ANS “Risk Analysis Tool (RAT)” in accordance with the performance framework in the ATM/ANS domain. The RAT methodology allows a report of an “Overall” score composed of the ATM (Air Traffic Management) ground and the ATM airborne part. The ATM ground being the extent to which ATM ground’s actions contributed to the occurrence and the ATM airborne being the extent to which pilot’s actions contributed to the occurrence.

The RAT uses the following incident classification:

- A: serious incident
- B: major incident
- C: significant incident
- D: not determined
- E: no safety effect



Class A and class B can be considered as high risk events. Class D incidents are not included in the graph because the BCAA has an “Overall” score for all RI incidents. In view of the growth of air traffic, the global number of runway incursions during the 2019 period has decreased considerably compared to previous years. Most of the runway incursion occurrences had no safety effect.

Actions

Action Number	Action title & Objective	Alignment EPAS
OA02.01	Ensure that Local Runway Safety Teams are in place and effective	MST.028
	Objective: LRST's have been established at each Belgian international airport, which comprise representatives from aircraft operators, air navigation service providers (civil and military), airport operators and the BCAA. The BCAA is an active member of those teams. LRST's focus on local solutions for the prevention of runway incursions where participating partners have management control.	
OA02.02	Development of safety promotion material on the prevention of runway incursions	MST.028
	Objective: To further reduce the number of runway incursions. The BCAA shall perform an analysis of the reported runway incursion occurrences and the runway incursion questionnaires to gain insight into the possible hazards. Depending on the results, the BCAA shall develop new or update existing safety promotion material.	
OA02.03	Promote the European Action Plan for the Prevention of Runway Incursions (EAPPRI) to organizations	MST.028
	Objective: To increase the understanding of runway incursion causal and contributory factors and to help organizations implement effective runway incursion prevention measures.	
OA02.04	Improve safety awareness related to airside safety at Brussels Airport	MST.028
	Objective: To continuously increase safety awareness on the prevention of runway incursions at Brussels Airport through safety promotion material (safety leaflets, videos...) developed by Brussels Airport Company https://www.youtube.com/playlist?list=PLkFpCH_t7P-QCoG0M-fZamGf0v4qf-Lrm	

2.2 Runway excursions

Description

Runway excursion covers materialized runway excursions, both at high and low speed, and occurrences where the flight crew had difficulties in maintaining the directional control of the aircraft or of the braking action during landing, where the landing occurred long, fast, off-centered or hard, or where the aircraft had technical problems with the landing gear (not locked, not extended or collapsed) during landing.

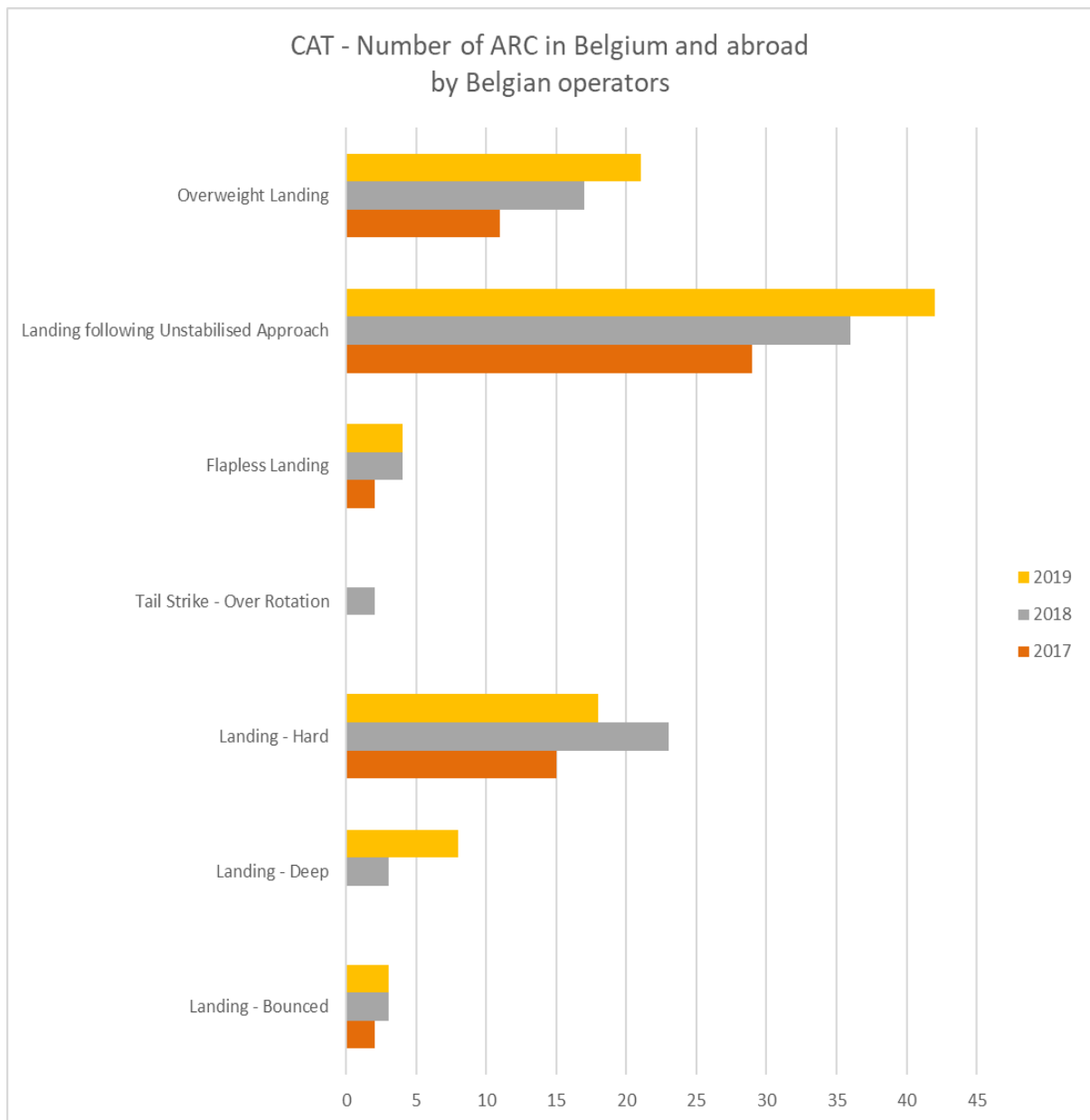
Provision of weather information and runway safety conditions to the crew by ground (e.g., tail wind on ground, gusts) during the approach phase may lead to an increasement of the risks of runway excursions. Investigations revealed shortfalls in the accuracy and timeliness of the current assessment and reporting methods of these runway safety conditions. The new ICAO Global Reporting Format (GRF) is based on a total assessment of the coverage with contaminants of the runway surface. Therefore, the ANSP 'skeyes' and the BCAA shall develop safety promotion material on this issue.

Objectives

- Reduce the number of REs in general and commercial air transport

Safety Performance Indicators

- Abnormal Runway Contacts by Belgian CAT operators in Belgium and abroad



The chart shows the abnormal runway contacts (ARC) involving aircraft from Belgian operators in Belgium and abroad. Most of these incidents are related to landings following unstable approaches or hard landings. Overweight landings are often the result of aircraft return due to medical emergencies or technical problems with the aircraft.

Actions

OA02.05	Promote the new European Action Plan for the Prevention of Runway Excursions (EAPPRE) to organizations	MST.028
	Objective: To increase the understanding of runway excursion causal and contributory factors and to help organizations implement effective runway excursion prevention measures.	
OA02.06	Develop safety promotion material on the Global Reporting Format (GRF) by the ANSP 'skeyes' and the BCAA	MST.028
	Objective: To decrease the risk of runway excursion by developing safety promotion material on the new ICAO Global Reporting Format for assessing and reporting runway conditions and by promoting the results to Belgian pilots.	

3. Airborne conflict (mid-air collisions)

Airborne conflict includes direct precursors such as loss of separation, separation minima infringements (SMIs), genuine traffic collision avoidance system (TCAS) resolution advisories or airspace infringements.

3.1 Airspace infringements

Description

Airspace infringement is also referred to as an unauthorized penetration of airspace and is generally defined as a flight into notified airspace without previously requesting and obtaining approval from the controlling authority of that airspace in accordance with international and national regulations. Airspace infringements by GA aircraft into controlled airspace is an important safety risk specifically in the context of the collision risk posed by aircraft without transponders.

The Aviation Safety Directorate (ASD) of the Ministry of Defense, the ANSP 'skeyes' and the BCAA joined forces in order to reduce the number of airspace infringements. The approach to this problem is one of documenting the incidents, drawing conclusions, implementing improvements and stimulating awareness and training on the matter instead of blaming and punishing. The BCAA sends for each reported airspace infringement a standard questionnaire to the pilot. The BCAA performs a periodic in-depth statistical analysis of these questionnaires to gain insight into the possible hazards that can lead to airspace infringements in Belgian airspace. The analysis of the reported incidents clearly indicates that most of the infringements are committed by GA flights. The analysis also shows that airspace infringements affect both novice and experienced pilots and can occur in all phases of flight and at all altitudes. However, the vast majority of them occur in daylight and in excellent meteorological conditions.

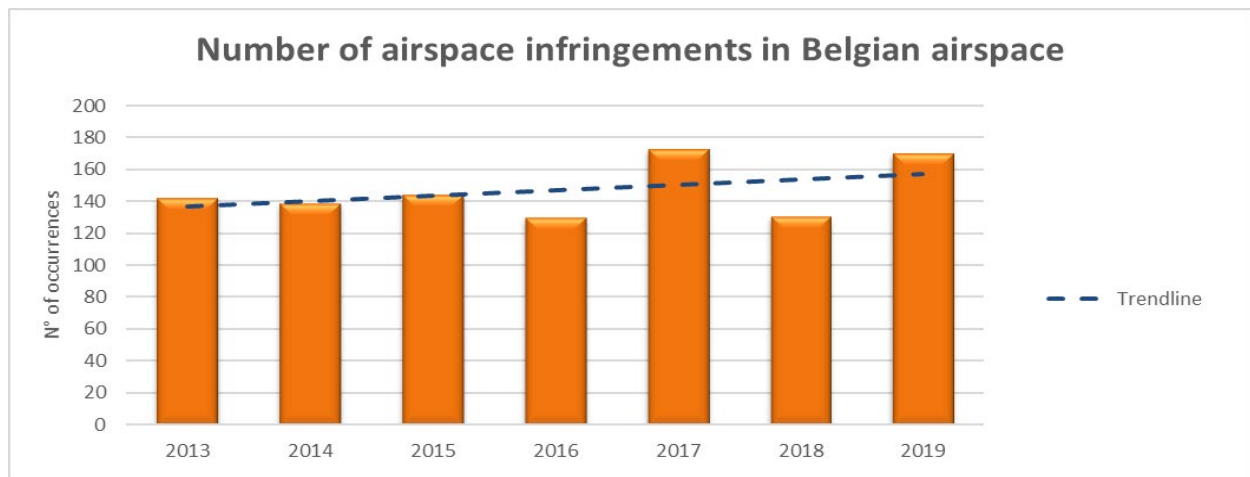
The BCAA also contributed to the implementation of a pan-European safety promotion campaign in cooperation with the EASA SPN by making a video on the prevention of airspace infringements to reduce the risk of mid-air collisions. The Belgian campaign mainly focused on the importance of flight preparation, GA pilot's awareness of the Belgian airspace complexity, the correct use of navigation technology and the use of the transponder. The BCAA website also provides links to entertaining yet informative videos from other European countries and suggests useful tips that will help pilots to reduce the risk of airspace infringement and mid-air collisions.

Objectives

- Increase safety by reducing the risk of mid-air collisions caused by airspace infringements

Safety Performance Indicator

- Number of airspace infringements in Belgian airspace



The chart above shows the number of airspace infringements in Belgian airspace caused by general and commercial aviation pilots. In 2018 there was a significant reduction in the number of airspace infringements. This reduction was probably due to the EASA SPN and the BCAA safety promotion campaign on the prevention of airspace infringement.

A large number of airspace infringements are caused by general aviation pilots. Therefore, the BCAA shall periodically perform an analysis of the airspace infringement occurrences and the reported airspace infringement questionnaires. Depending on the results, the BCAA shall promote new safety promotion material on the prevention of airspace infringements to all Belgian pilots.

Actions

Action Number	Action title & Objective	Alignment EPAS
OA03.01	Raise awareness among pilots with regard to the prevention of airspace infringements in Belgian airspace	MST.028
	Objective: To decrease the number of airspace infringements in Belgian airspace by periodically analyzing the reported airspace infringement occurrences and the received questionnaires. The BCAA shall periodically revise the airspace infringement analysis and communicate the results to all Belgian pilots for raising awareness of the hazards involved with this type of occurrence. The BCAA shall also promote new safety promotion material from the pan-European campaign on the prevention of airspace infringements (new videos, flyers, brochures...) to all Belgian pilots.	

3.2 Loss of separation

Description

The horizontal or vertical spacing between aircraft during flight is referred to as a separation. Loss of separation between aircraft occurs whenever specified separation minima are breached. The minimum separation is meant to secure traffic procedures and thus to maximize airspace capacity.

EPAS action MST.024 relates to the loss of separation between civil and military aircraft and the application of ICAO Circular 330 on Civil/Military Cooperation in ATM. States should closely coordinate to develop, harmonise and publish operational requirements for State aircraft to ensure that 'due regard' for civil aircraft is always maintained. States should also support the development and harmonisation of civil/military coordination procedures for ATM at EU level.

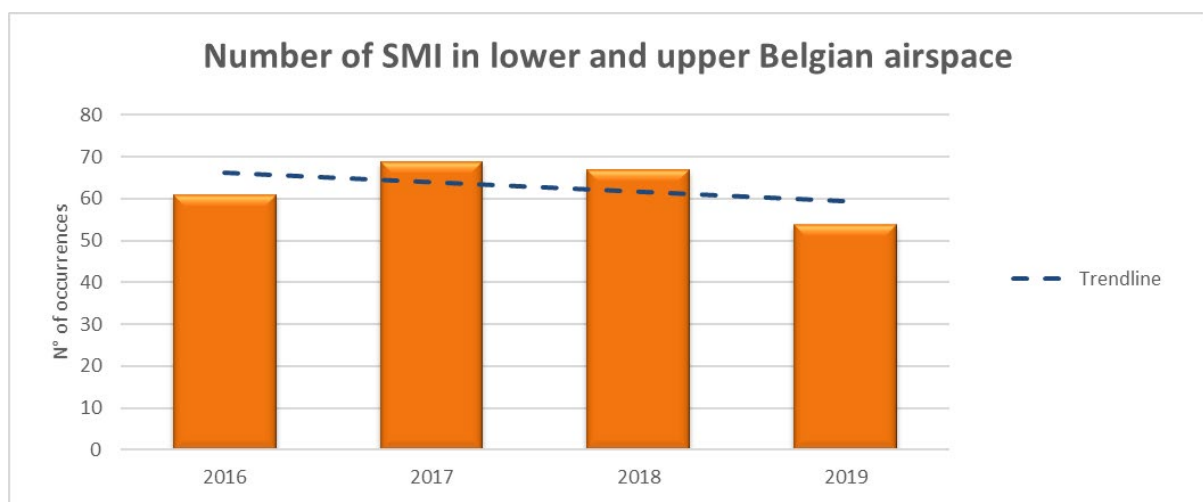
Belgium applies the recommendations as specified in ICAO Circular 330. Letters of agreement are applicable between civil and military service providers in Belgium. These Letters of Agreement describe the coordination procedures and separation minima to be applied between the different centres. The AMC handbook and the Letter of Agreement on Flexible Use of Airspace (FUA) regulate the management of the airspace at pre-tactical and tactical level. As a result of these agreements, the loss of separation between civil and military aircraft is neglectable. However, improvement could be reached by developing a high level document, "the airspace charter" that describes the responsibilities at a more strategic level.

Objectives

- Increase safety by reducing the risk of mid-air collisions caused by loss of separations

Safety Performance Indicator

- Number of Separation Minima Infringements in lower and upper Belgian airspace
- Separation Minima Infringements in lower and upper Belgian airspace – ANS Risk Analysis Tool (RAT) risk levels

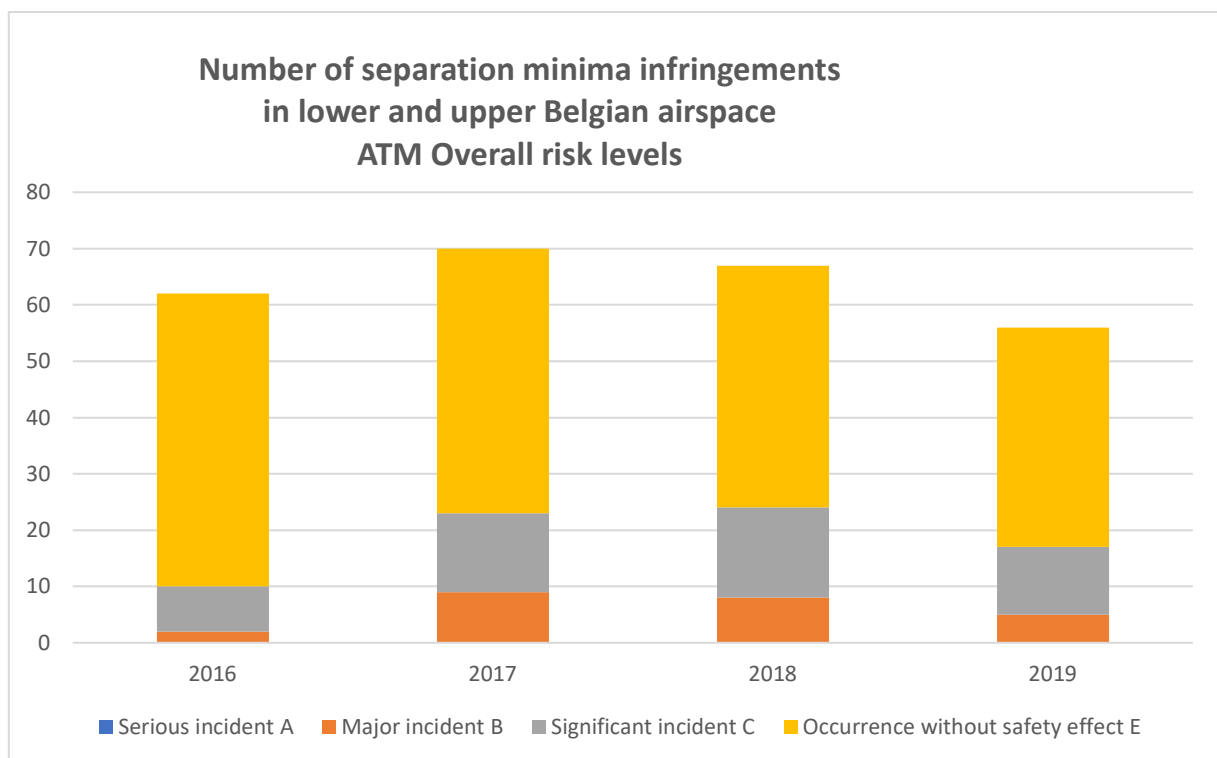


The chart shows the number of SMI in lower and upper Belgian airspace. A small decrease in the number of SMIs can be observed.

The risk classification for the SMI occurrences has also been performed by means of the ANS “Risk Analysis Tool (RAT)” in accordance with the performance framework in the ATM/ANS domain. The RAT methodology allows a report of an “Overall” score composed of the ATM (Air Traffic Management) ground and the ATM airborne part. The ATM ground being the extent to which ATM ground’s actions contributed to the occurrence and the ATM airborne being the extent to which pilot’s actions contributed to the occurrence.

The RAT uses the following incident classification:

- A: serious incident
- B: major incident
- C: significant incident
- D: not determined
- E: no safety effect



Class A and class B can be considered as high risk events. Class D incidents are not included in the graph because the BCAA has an “Overall” score for all SMI incidents. In view of the growth of air traffic, the global number of SMI during the 2019 period has decreased compared to previous years. Most of the SMI occurrences had no safety effect. There were no Class A risk events.

Actions

Action Number	Action title & Objective	Alignment EPAS
OA03.02	Develop an “airspace charter” related to the civil/ military cooperation in ATM	MST.024
	Objective: To describe the responsibilities related to the civil/ military cooperation in ATM at a more strategic level to fully apply the recommendations as specified in ICAO Circular 330 on civil/ military cooperation in ATM.	
OA03.03	Deconfliction between IFR versus VFR flights	MST.028
	Objective: To introduce airspace classes where an effective deconfliction between IFR and VFR flights is provided to prevent AIRPROX events and ultimately airborne collisions.	

4. Deviation from intended flight path

Description

The phrase “loss of control” may cover only some of the cases during which an unintended deviation from flightpath occurred. Therefore, the term ‘Deviation from Intended Flightpath’ is a more accurate description of the safety topic at stake and focusses on areas that were identified as some of the most frequent contributing factors like aircraft upset, flight parameter exceedance, weather and environmental encounters, warning systems triggered and aircraft handling.

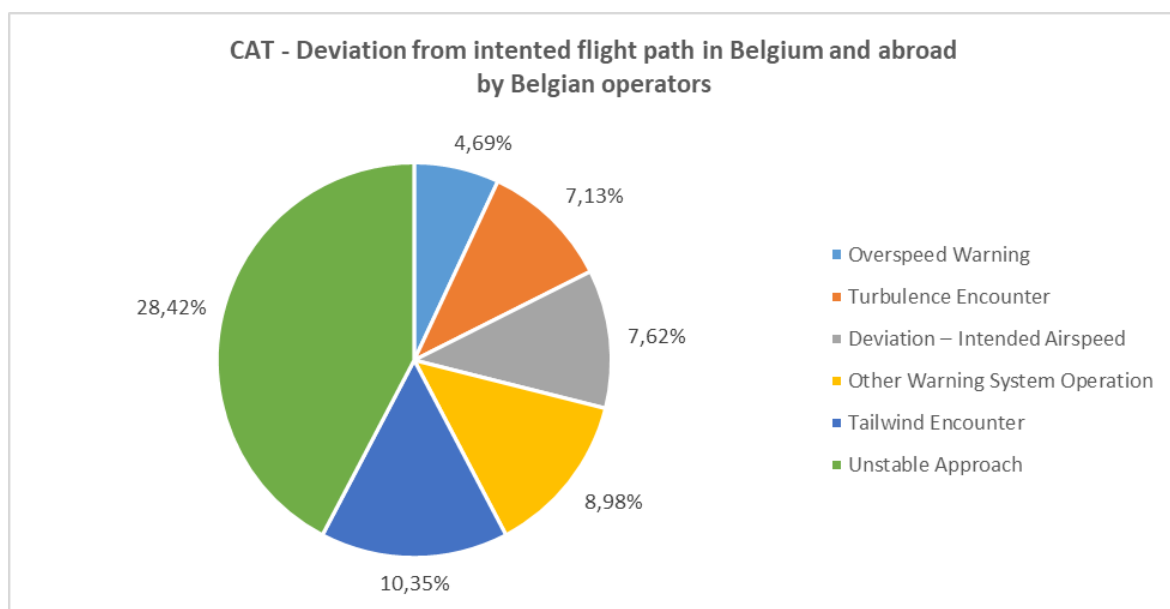
Deviation from intended flight path also addresses subjects such as flying skills, pilots’ awareness and the management of the upset or stall at take-off, in flight, or during approach and landing, flight preparation, aborting take-off and going around.

Objectives

- Increase safety by mitigating the risk of deviation from intended flight path

Safety Performance Indicator

- Deviation from intended flight path in flight by Belgian operators in Belgium and abroad



The safety indicator focusses on occurrences that involved areas that were identified as some of the most frequent contributing factors concerning deviation from intended flightpath:

- Aircraft upset
- Flight Parameter Exceedance
- Warning System Triggered
- Aircraft handling
- Weather and Environmental Encounters

Actions

Action Number	Action title & Objective	Alignment EPAS
OA04.01	Raise awareness among pilots with regard to the prevention of aircraft upset in flight	MST.024
	Objective: To systematically inform pilots and organizations on the availability of new safety promotion materials covering topics such as aircraft performance, flight preparation and management, aircraft upset and recovery, and startle and surprise management.	
OA04.02	Promote the European Action Plan for the Prevention of Runway Excursions (EAPPRE) to organizations	MST.028
	Objective: To increase the understanding of runway excursion causal and contributory factors and to help organizations implement effective runway excursion prevention measures.	

5. Aircraft environment – smoke/fumes & dangerous goods

Description

Dangerous goods are articles or substances which are capable posing a risk to health, safety, property or the environment. These include obvious things, such as: explosives, radioactive materials, flammable liquids, dangerous or volatile chemicals, strong acids, compressed gases, poisons and aerosols. Everyday items that are considered dangerous goods include toiletries, aerosols, tools and lithium batteries.

One of the safety actions related to fire, smoke and fumes are aimed to raise awareness on the risks associated with the transportation of lithium batteries. Smoke or fumes, whether they are associated with fire or not, can lead to passenger and crew incapacitation. The major risk associated with the transport of lithium batteries and battery-powered equipment is thermal runaway, where the batteries heat up and produce toxic and flammable gasses because of short circuit, malfunctioning or mishandling of the batteries. Aircraft operators should be informed of the risks associated with the transport of dangerous goods and more particularly with the transport of lithium batteries. Passenger awareness should also be raised, therefore preventing them from unintentionally carrying non-allowed items while acknowledging the risks posed by lithium batteries.

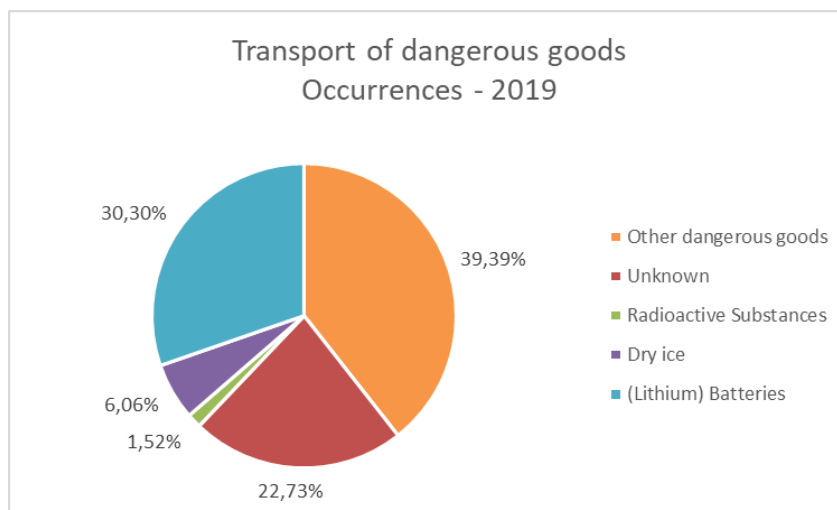
The important risks associated with fire, smoke and fumes and in particular the transportation of lithium batteries on board an aircraft are identified from the EASA SRM process, accidents/serious incidents and inputs from EASA stakeholders. Therefore, The BCAA shall contribute to the development of new EASA SPN material covering lithium battery education for passengers and ground staff as well as other associated cabin safety topics in accordance with EPAS Task SPT.101.

Objectives

- Further reduce the risks of accidents and serious incidents related to the transport of dangerous goods

Safety Performance Indicator

- Occurrences related to the transport of dangerous goods reported by Belgian organizations



Actions

Action Number	Action title & Objective	Alignment EPAS
OA05.01	Approval of the transport of dangerous goods activities for ground handling companies	MST.028
	Objective: To approve the transport of dangerous goods activities for ground handling companies in accordance with the relevant Belgian legislation.	
OA05.02	Systematic auditing of operators' outstations in the field of the transport of dangerous goods	MST.028
	Objective: To improve aviation safety by organizing a systematic monitoring of the transport of dangerous goods at the operators' outstations.	
OA05.03	Contribute to the development of safety promotion material covering the transportation of lithium batteries on board an aircraft	MST.028
	Objective: To inform all involved parties (operators, ground handlers, forwarders, airport operators, etc.) and raise passenger awareness on the risks associated with the transport of lithium batteries on board an aircraft. Therefore, the BCAA shall contribute to the development of new EASA SPN material covering lithium battery education for passengers and ground staff.	
OA05.04	Approval of training activities on the transport of dangerous goods	MST.028
	Objective: To approve the training activities on the transport of dangerous goods for training organizations in accordance with the relevant Belgian legislation to achieve a safer transport of dangerous goods in the air.	

6. Wildlife strikes

Description

The presence of wildlife strikes (birds and other animals) on and near an aerodrome poses a serious threat to aircraft operational safety. Most collisions occur at low altitudes, near an airport during take-off and landing. Operators of a certified aerodrome are required to take the necessary actions to identify, manage and mitigate the risk to aircraft operations posed by wildlife by adopting actions likely to minimize the risk of collisions between wildlife and aircraft, to as low as reasonably practicable.

The appropriate authorities are required to have in place procedures for the identification and control of wildlife hazards on and near an aerodrome, and to ensure that competent personnel evaluates the wildlife hazard on a continuing basis.

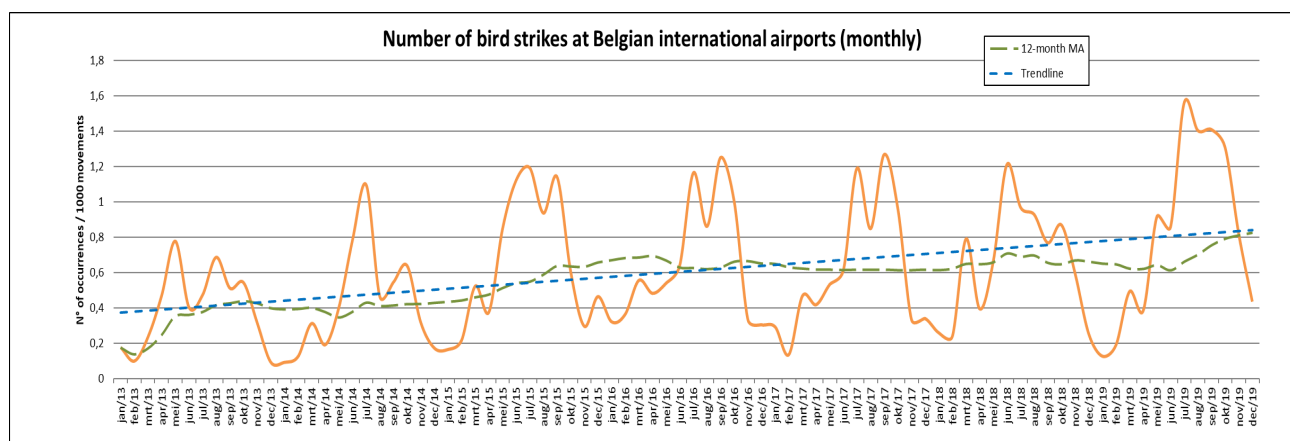
At present, hundreds of wildlife strikes are reported each year to the BCAA. These type of occurrences can be a significant threat to aircraft safety. For smaller aircraft, significant damage may be caused to the aircraft structure and all aircraft, especially jet-engine powered ones, are vulnerable to the loss of thrust which can follow the ingestion of birds into engine air intakes. Larger jet-engine powered aircraft are most likely to experience the hazardous effects of strikes as the consequences of engine ingestion. Partial or complete loss of control may be the secondary result of either small aircraft structural impact or large aircraft jet engine ingestion.

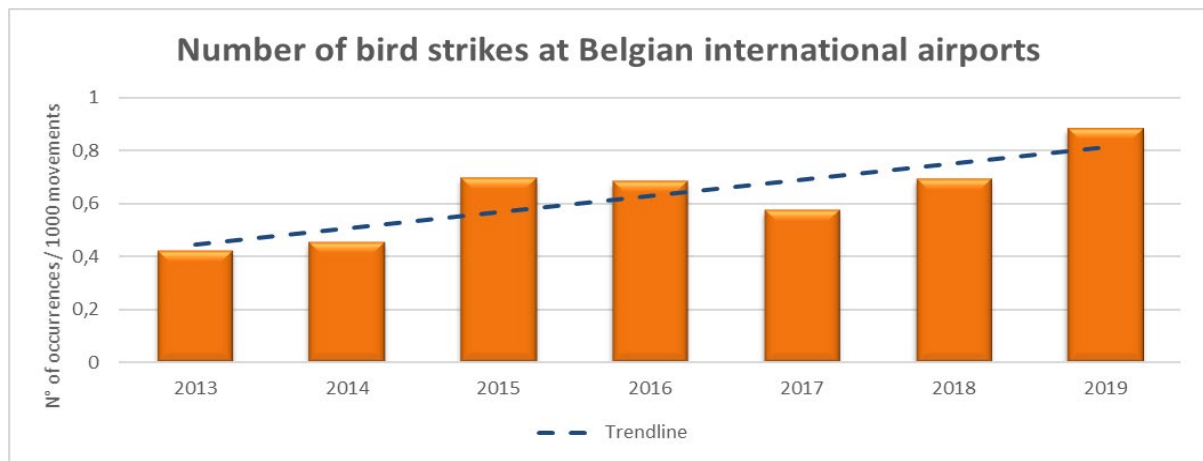
Objectives

- Reduce the risk of collision with birds and other animals

Safety Performance Indicator

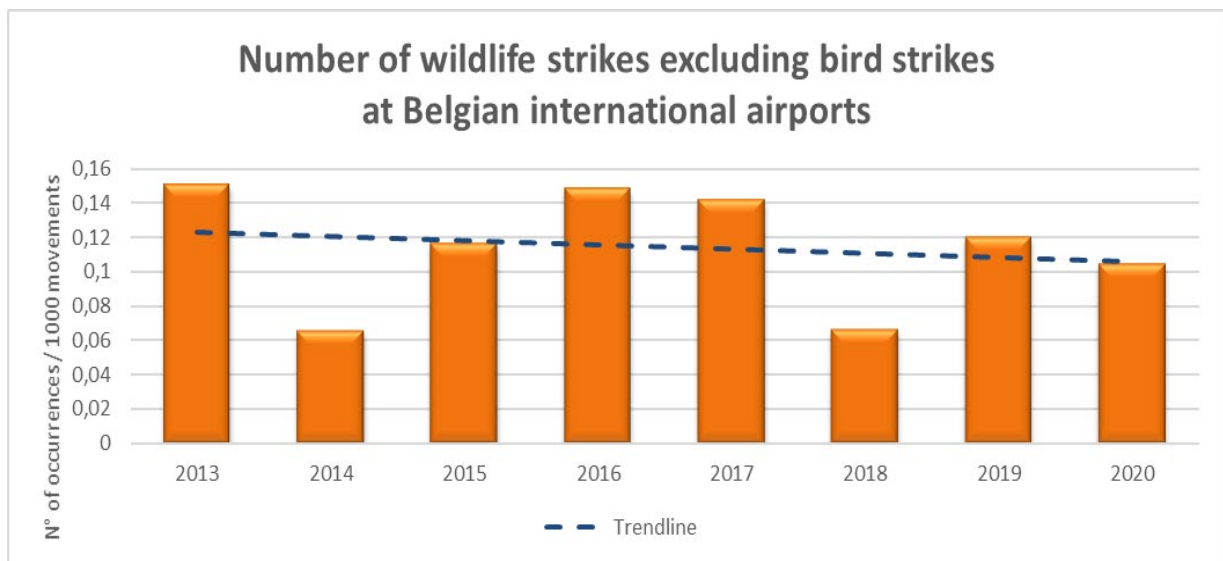
- Number of bird strikes at Belgian international airports
- Number of wildlife strikes excluding bird strikes at Belgian international airports
- Consequential events related to wildlife strikes with Belgian operators in Belgium and abroad



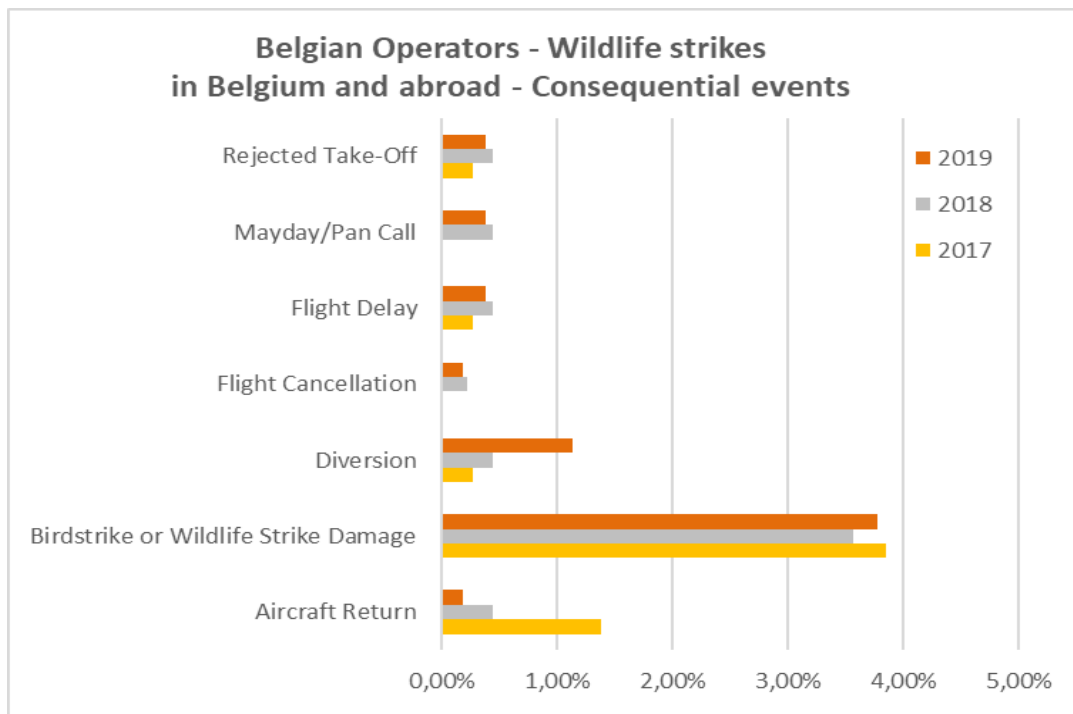


Note: the 12-month moving average (MA) is the average calculated over the previous 12 months

The charts above show the number of bird strikes at Belgian international airports during the period 2013-2019. An increase in the number of bird strikes can be observed. The monthly indicator also shows a significant increase of the number of bird strikes during the summer period.



The charts above shows the number of wildlife strikes excluding bird strikes at Belgian international airports during the period 2013-2019. A small decrease in the number of wildlife strikes can be observed.



The chart shows the consequential events with Belgian operators related to the number of wildlife strikes in Belgium and abroad during the period 2017-2019. Almost 4% of the wildlife strikes results in minor or substantial aircraft damage. In turn, damage to aircraft causes aircraft return, diversion, flight delay and rejected take-off.

Actions

Action Number	Action title & Objective	Alignment EPAS
OA06.01	Periodic exchange of experiences on specific technical issues in the field of wildlife management through the Belgian Aviation Wildlife Hazard Committee (BAWiHaC)	MST.028
	Objective: To create a strong and open collaboration between the international airports for Bird Control Unit matters and to give a higher priority to wildlife issues on all levels of management. The BCAA shall interact with the BAWiHaC to translate the identified trends and hazards in the field of wildlife management into safety actions.	
OA06.02	Consult stakeholders on the reporting of data related to wildlife strikes	MST.028
	Objective: To obtain a more detailed reporting of wildlife and bird strike information in the ECCAIRS database for improving the identification of trends and hazards in the field of wildlife management.	

7. Unmanned Aircraft Systems - drones

Description

To ensure the safe operation of drones and a level playing field within EASA Member States, EASA has developed common European rules. They contribute to the development of a common European market while ensuring safe operations and respecting the privacy and security of EU citizens.

Commission's Implementing Regulation (EU) No 2019/947 regulates the operations of UAS in Europe and the registration of drone operators and of certified drones. Commission's Delegated Regulation (EU) No 2019/945 defines the technical requirements for drones. Both were published on 11 June 2019. The Delegated Regulation is immediately applicable while the Implementing Regulation will become gradually applicable from the end of 2020. With these regulations, the proposed EASA general concept, establishing three categories of UAS operations ('open', 'specific' and 'certified' with different safety requirements, proportionate to the risk), is adopted at the European level and will be implemented. Moreover, as the number of UAS operations increases, there is a need to establish unmanned traffic management (UTM) systems (named 'U-space' in Europe). There has been a huge development of U-space during the last year. The ATM Master Plan reflects the details about the integration of UAS in the EU airspace. The safe integration of all new entrants into the airspace network will be one of the main challenges in relation to the integration of UAS technologies and related concepts of operation.

The unauthorized use of drones at or around aerodromes may lead to unacceptable disruption of operations, affecting the air and transportation system. Other safety issues with UAS are the insufficient separation between unmanned and manned aircraft in Belgian airspace and the possible increase of the number of airspace infringements caused by unmanned aircraft. Therefore, education of the public to prevent and reduce misuse of drones remains a safety priority. An adequate occurrence reporting in accordance with Regulation (EU) No 376/2014 shall also play an important role in maintaining a record of UAS occurrences for trend analysis and initiating proactive measures.

Objectives

- Incident rate caused by UAS in Belgian airspace remains below UAS operations rate

Safety Performance Indicator

- Not applicable

Actions

Action Number	Action title & Objective	Alignment EPAS
OA07.01	Communicate about the implementation of the new EU rules and promote safe operations of drones to the public and the UAS business	MST.028 / SPT.091
	Objective: To continuously inform and sensitize the public and the UAS business of the hazards involved in flying UAS.	
OA07.02	Further improve the collaboration between all stakeholders for handling infringements with UAS	MST.028
	Objective: To improve the cooperation between the ANSP, the Federal Police, the Brussels Airport Company and the BCAA to develop, review and assess the procedures to follow in the case of infringements to the new EU rules with UAS.	
OA07.03	Implement the EU common rules on drones	MST.028
	Objective: To implement the new EU rules for UA in Belgium, in particular in relation to the harmonized implementation of the adopted regulations for the 'open' and 'specific' categories, the implementation of future regulations for the 'certified' category and the safe and harmonized development and deployment of U-space across the EU. This action includes organizational changes to the BCAA.	

8. Disruptive passengers

Description

A disruptive passenger is defined by Annex 17 to the ICAO Chicago Convention as: "A passenger who fails to respect the rules of conduct at an airport or on board an aircraft or to follow the instructions of the airport staff or crew members and thereby disturbs the good order and discipline at an airport or on board the aircraft." And by the Tokyo Convention (1963) as: "Acts which, whether they are offences [against the penal law of a State], may or do jeopardize the safety of the aircraft or of persons or property therein or which jeopardize good order and discipline on board."

Basically, disruptive passenger refers to a passenger behavior that jeopardizes or might jeopardize the safety of the aircraft, persons or property therein or the accepted level of good order and discipline on board.

Most of the disruptive passenger occurrences are related to smoking in the lavatories of the aircraft, the use of mobile devices on board of the aircraft and to drunk passengers. Potential consequences of disruptive passengers are the return of the aircraft, flight delay and flight diversion. Unruly passenger incidents on board of an aircraft which threaten safety and security have become a significant issue faced by airlines, flight and cabin crew on a daily basis. A large increase of the number of reported incidents related to disruptive/unruly passengers can be noticed in the graph below

These occurrences have a direct impact on both the safety of crew and of passengers. Any kind of unruly or disruptive behavior whether related to intoxication, aggression or other factors introduces an unnecessary risk to the normal operation of a flight. An intoxicated person will not be able to follow safety instructions when needed, aggressive behavior distracts the crew from their duties. Physical violence results in injury and it is a traumatic experience for everybody on board and if a member of the crew gets injured, their capacity to act in case of an emergency is reduced.

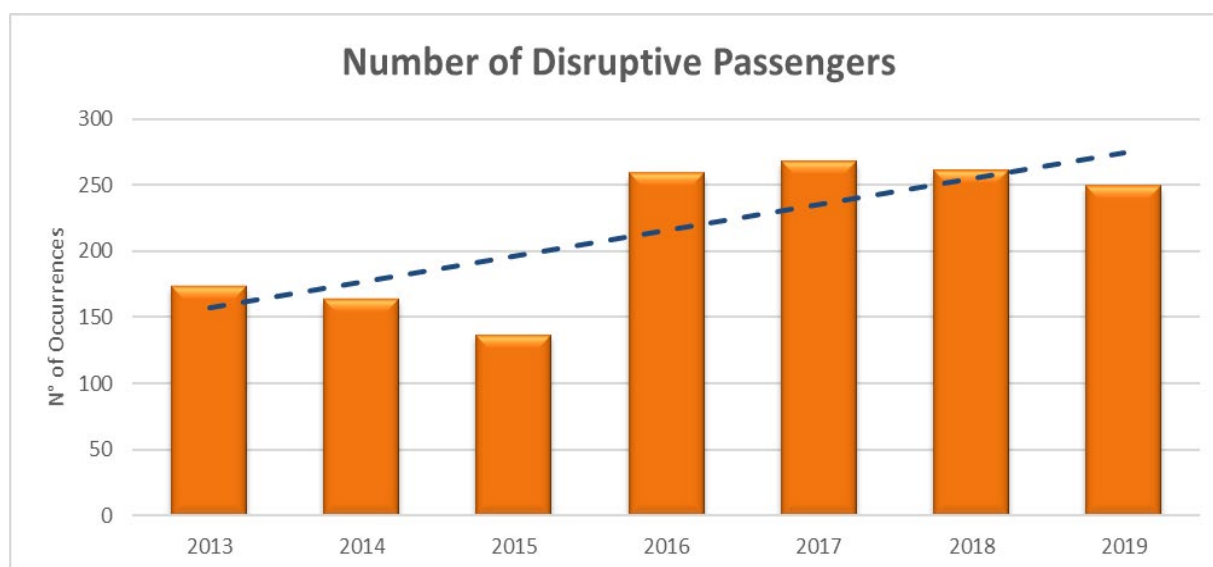
Even though the number of **disruptive** passengers is small considering the total number of people flying, the impact of their actions can have a disproportionate effect both on the smooth operation of the flight and, most importantly, on its safety. The rise in serious **disruptive** passenger behavior is a great concern to the aviation community and particularly to airlines.

Objectives

- Reduction of the number of occurrences related to disruptive passengers

Safety Performance Indicator

- Number of Disruptive Passenger Occurrences



The chart shows that the number of reported occurrences has more or less stabilized the last years. The increasement of the number of reported occurrences between 2016 and 2019 is mainly caused by the awareness among Belgian airlines to report this type of occurrence to the BCAA in accordance with Regulation (EU) No 376/2014 on the reporting, analysis and follow-up of occurrences in civil aviation.

Actions

Action Number	Action title & Objective	Alignment EPAS
OA08.01	Further improve the collaboration between all stakeholders for handling infringements with disruptive passengers	-
	Objective: To strengthen the cooperation between the Federal Police, the airports authorities and the BCAA to improve the prosecution of disruptive passengers. Actual offences are transferred to the competent Crown Prosecutor.	

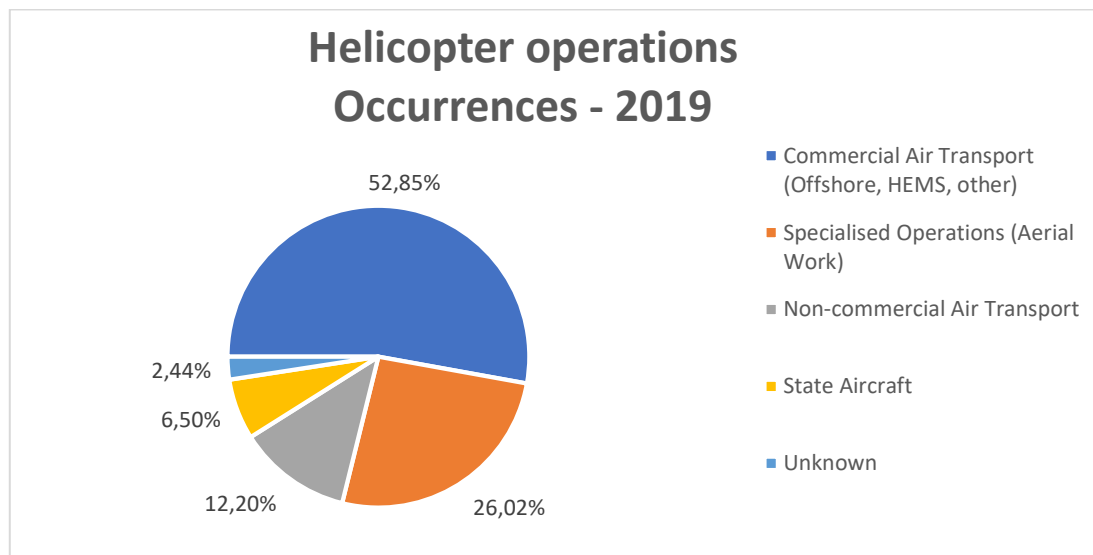
9. Helicopters

Description

This chapter groups the actions in the area of rotorcraft operations. The EASA Roadmap aims at significantly reducing the number of rotorcraft accidents and incidents and focusses on traditional/conventional rotorcraft including GA rotorcraft where the number of accidents is recognized to be higher. The EASA Roadmap focuses on safety and transversal issues that are affected by the different domains including training, operations, initial and continuing airworthiness, environment and innovation.

Helicopter operators perform a wide range of highly specialized operations in Belgium. This area includes five types of operations involving certified helicopters:

- passenger and cargo flights to and from offshore installations in CAT (Belgian AOC holders)
- other CAT operations, passenger and cargo (Belgian AOC holders)
- SPO, such as advertisement, photography...(Belgium as State of operator or State of registry)
- Non-commercial operations (NCO) with helicopters registered in Belgium or for which Belgium is the State of operator
- Operations with state aircraft



The largest number of reported occurrences relates to CAT operations with helicopters (offshore, HEMS and commercial transport of passengers) followed by specialized operations (aerial work).

Objectives

- Further reduce the risks of accidents and serious incidents related to operations with helicopters.

Safety Performance Indicator

- Accidents and serious incidents in Belgium (see also chapter “Accidents and serious incidents)
- Accidents and serious incidents with Belgian registered aircraft abroad (see also chapter “Accidents and serious incidents

In the CAT offshore helicopter domain and in other CAT helicopter operations, no accidents or serious incidents occurred during the 2017-2019 period.

In SPO there were 2 accidents and 1 serious incident in 2017 leading to 4 minor injuries. No accidents and serious incidents occurred during the 2018-2019 period.

In non-commercial aviation, there were 2 helicopter accidents during the period 2017-2019, 1 accident in 2018 and 1 accident in 2019. The non-fatal accident in 2018 happened with a foreign registered helicopter and led to 1 minor injury. The non-fatal accident in 2019 did not cause any injuries. (see also chapter “Accidents and serious incidents”).

These data are based on the accidents and serious incidents collected by the BCAA as per Annex 13 investigations. The low number of accidents and serious incidents in this domain prevents any conclusions from being drawn regarding the most important key risks. The accident in SPO leading to 4 minor injuries was related to a helicopter upset in flight (loss of control). In non-commercial aviation, the non-fatal accident in 2018 with a foreign registered helicopter was related to a powerplant failure or malfunction. The accident investigation of the non-fatal accident of 2019 is still ongoing.

The EPAS highlights the following key risk areas:

- Helicopter upset in flight (loss of control)

This is the key risk area with the highest priority in offshore and CAT helicopter operations. Loss of control for offshore helicopter operations generally falls into two scenarios: technical failure that renders the aircraft uncontrollable or human factors. In addition, it is the second most common accident outcome for aerial work operations.

- Terrain and obstacle conflict

This is the second priority risk area for helicopter operations (offshore, other CAT, SPO and non-commercial aviation). Obstacle collision is the second most common accident outcome in the CAT helicopters domain. This highlights the challenges of HEMS operations and their limited selection and planning for landing sites. Terrain and obstacle conflict is the most common outcome for SPO (aerial work operations).

Actions

Action Number	Action title & Objective	Alignment EPAS
OA09.01	Participate in helicopter safety events and workshops with helicopter industry representatives and license holders every two years	MST.002 / MST.015 MST.025
	Objective: To discuss the most important safety risks and to promote safety promotion materials to the helicopter sector (see also safety action SA02.02).	

10. General Aviation

Description

This area includes aerial work and GA operations performed by aeroplanes as well as operations performed by gliders, balloons, microlights and paragliders.

Recognising the importance of General Aviation and its contribution to a safe European aviation system, EASA in partnership with EC and other stakeholders has created the GA roadmap and is now starting a new phase of the project called **GA roadmap 2.0**.

It is difficult to precisely measure the evolution of safety performance in GA due to lack of consolidated exposure data (accumulated flight hours, number of movements). However, the statistics below justify the actions already undertaken to mitigate risks leading to accidents and serious incidents with GA aircraft. These actions address also systemic or transversal issues that affect GA as a whole and are common to several risk areas.

Objectives

- Further reduce the risks of accidents and serious incidents related to operations with GA aircraft

Safety Performance Indicator

- Accidents and serious incidents in Belgium (see also chapter “Accidents and serious incidents)
- Accidents and serious incidents with Belgian registered aircraft abroad (see also chapter “Accidents and serious incidents)

The table includes comparison of the number of accidents (fatal and non-fatal) and serious incidents in Belgium and with Belgian registered aircraft abroad for different aircraft categories for a 3-year period (2017-2019).

Aircraft Category	2017		2018		2019	
	accidents	serious incidents	accidents	serious incidents	accidents	serious incidents
NCO Aeroplanes	2	4	5	0	6	3
NCO Helicopters	2	1	1	0	1	0
Microlights	1	0	1	0	5	1
Balloons	0	0	0	2	0	1
Sailplanes	1	0	3	0	3	0
Gyroplanes - Paragliders	0	0	2	0	1	0
UAS	2	0	2	0	4	0
Total	8	5	14	2	20	5

Since 2017, the rate of accidents and serious incidents continues to increase slightly. This increase is largely due to the high number of accidents with microlights during the 2019 period. Therefore, the BCAA will take the necessary regulatory actions to reduce the number of accidents with microlights (see action SA02.05).

These data are based on accidents and serious incidents collected by the BCAA as per Annex 13 investigations.

Investigation of the accidents and serious incidents with GA aircraft for the 2017-2019 period identifies aircraft upset as the most important key risk area. Aircraft upset with GA aircraft generally falls into two scenarios: human factors and technical failure that renders the aircraft uncontrollable. Most of these technical failures were related to powerplant failures.

Actions

The following systemic and operational BPAS actions are also applicable or partly applicable to the general aviation sector:

Action Number	Action title
SA01.03	Development of a leaflet on safety and just culture principles in accordance with Regulation (EU) No 376/2014 (EPAS MST.027)
SA01.06	Start of a promotion campaign to further improve the reporting culture of occurrences in civil aviation
SA02.01	Encourage the implementation of safety promotion material developed by the SMICG and the EASA SPN
SA02.02	Organize or participate in safety seminars and workshops (EPAS MST.025)
SA02.05	Revision of the Royal Decree regulating the operation of ultra-light aircraft
SA02.06	Raising awareness within the general aviation sector on human factors
OA02.02	Development of safety promotion material on the prevention of runway incursions
OA03.01	Raise awareness among pilots with regard to the prevention of airspace infringements in Belgian airspace
OA04.01	Raise awareness among pilots with regard to the prevention of aircraft upset in flight
OA05.03	Transportation of lithium batteries on board an aircraft
OA09.01	Participate in helicopter safety events and workshops with helicopter industry representatives and license holders every two years

11. Miscellaneous

11.1 Setting up a dialogue with the Belgian aircraft operators on FDM programs

Description

Many of the safety performance measures established to monitor safety issues at industry level rely on data from FDM programs. FDM is the pro-active use of digital flight data from routine operations to improve aviation safety and is mandatory for aeroplanes with a Maximum Certificated Take-Off Mass more than 27.000 kg. FDM offers the ability to monitor and evaluate operational safety trends, identify hazards and risk precursors, and take appropriate remedial action.

EASA and National Aviation Authorities have formed a group of experts called the European Authorities coordination group on FDM (EAFDM). EASA will foster actions by States to improve FDM programs by the aircraft operators and assist States to monitor the standardization of FDM events relevant to State Safety Program top safety priorities.

The BCAA shall promote the operational safety benefits of FDM and shall foster an open dialogue on FDM programs.

Objectives

- Improve and promote FDM programs with the objective to bring safety benefits to operators
- Sharing experience between aircraft operators

Safety Performance Indicator

Not applicable

Actions

Action Number	Action title & Objective	Alignment EPAS
OA11.01	Maintain a regular dialogue with the Belgian aircraft operators on FDM programs	MST.003
	Objective: To make concerned professionals aware of the European operators FDM forum (EOFDM) by publishing, as part of SMS-related information, general information on EOFDM activities on the BCAA website. The operators will be encouraged to make use of the good-practice documents produced by EOFDM and similar safety initiatives. Therefore, the BCAA shall organize an information event to promote EOFDM good practice documents to the Belgian CAT operators. Safety managers and FDM program managers of all concerned operators shall be invited.	

11.2 Flight time specification schemes

Description

One of the new safety areas in the EPAS focusses on the effective implementation of operators' flight time specification schemes. The BCAA technical personnel should possess the required competence to approve and oversee these schemes, particularly those including provisions subject to fatigue risk management. The BCAA shall focus on the verification of effective implementation of the processes established to meet operators' responsibilities requirements and to ensure an adequate management of fatigue risks. The BCAA shall consider the latter when performing audits of the operator' management system.

Objectives

- Qualified technical personnel to support effective safety oversight

Safety Performance Indicator

Not applicable

Actions

Action Number	Action title & Objective	Alignment EPAS
OA11.02	Oversight capabilities /focus area: flight time specification schemes	MST.034
	Objective: To ensure that the BCAA technical personnel possesses the required competence to approve and oversee the operator's flight time specification schemes, in particular, those including fatigue risk management.	

Appendix A: Acronyms and definitions

Acronyms

A/C	aircraft
AAIU(Be)	air accident investigation unit (Belgium)
ADRM	aerodrome
ALoSP	acceptable level of safety performance
ANS	air navigation service
ANSP	air navigation service provider
ARC	abnormal runway contact
ASD	aviation safety directorate
ASIL	aviation safety information leaflet
ASR	annual safety review
ATC	air traffic control
ATM	air traffic management
ATO	approved training organization
BASP	Belgian aviation safety program
BAWiHaC	Belgian aviation wildlife hazard committee
BCAA	Belgian civil aviation authority
BPAS	Belgian plan for aviation safety
BR	basic regulation
CAT	commercial air transport
CFIT	controlled flight into terrain
EAFDM	European authorities coordination group on flight data monitoring
EAPPRI	European action plan for the prevention of runway incursions
EAPPRE	European action plan for the prevention of runway excursions
EASA	European aviation safety agency
EASP	European aviation safety program
EOFDM	European operators flight data monitoring
EU	European Union
ECR	European central repository
ECCAIRS	European coordination center for aviation incident reporting systems

EPAS	European plan for aviation safety
ERCS	European risk classification scheme
EUR/NAT	European and North Atlantic
FDM	flight data monitoring
FUA	flexible use of airspace
GA	general aviation
GANP	global air navigation plan
GASP	global aviation safety plan
GND	ground
GRF	global reporting format
HEMS	helicopter emergency medical service
ICAO	international civil aviation organization
IFR	instrument flight rules
iSTARS	integrated safety trend analysis and reporting system
LOC-I	loss of control in flight
LRST	local runway safety team
MA	moving average
MAC	mid-air collision
MP	master plan
MS	member state
MST	member state task
NCO	non-commercial
NoA	network of analysts
OA	operational action
QMS	quality management system
RASP	regional aviation safety plan
RAT	risk analysis tool
RE	runway excursion
RI	runway incursion
RMT	rulemaking task
SA	systemic action
SARP	standards and recommended practice
SESAR	single European sky ATM research
SMI	separation minima infringement

SMICG	safety management international collaboration group
SMS	safety management system
SPI	safety performance indicator
SPN	safety promotion network
SPO	specialized operations
SPT	safety promotion task
SRM	safety risk management
SSP	state safety program
TCAS	traffic alert and collision avoidance system
UAS	unmanned aircraft systems
USOAP	universal safety oversight audit program
UTM	unmanned traffic management
VFR	visual flight rules

Definitions

Aerial work

Aerial Work is an aircraft operation in which an aircraft is used for specialized services such as agriculture, construction, photography, surveying, observation and patrol, search and rescue or aerial advertisement.

Airspace Infringement

Airspace infringement occurs when an aircraft penetrates an area into which special clearance is required without having such clearance.

Belgian Aviation Safety Program

The Belgian approach to the ICAO requirements of State Safety Programs. It contains an integrated set of regulations and activities to improve safety within the Belgian State. The latest version is available at http://mobilit.belgium.be/nl/luchtvaart/belgisch_veiligheidsprogramma/beleid_en_programma (Dutch version) and http://mobilit.belgium.be/fr/transport_aerien/programme_belge_de_securite/politique_et_programme (French version)

Commercial air transport

Commercial air transport operations involve the transportation of passengers, cargo and mail for remuneration or hire.

Controlled Flight Into Terrain

Controlled Flight Into Terrain (CFIT) occurs when an airworthy aircraft under the complete control of the pilot is inadvertently flown into terrain, water, or an obstacle. The pilots are generally unaware of the danger until it is too late.

European Aviation Safety Program

European regional approach to the ICAO requirements of State Safety Programs. It contains an integrated set of regulations and activities to improve safety within EASA Member States. The latest version is available at <http://easa.europa.eu/easa-and-you/safety-management/safety-management-system/sms-europe>.

General Aviation

General Aviation means all civil aviation operations other than commercial air transport or an aerial work operation.

Mid-air collision

A mid-air collision (MAC) is an accident where two aircraft come into contact with each other while both are in flight.

Local Runway Safety Team

Local Runway Safety Teams (LRSTs) are aerodrome-centric, multi-organizational groups of experts providing practical suggestions to resolve runway incursion causal factors.

Loss of Control In-Flight

Loss of control in-flight (LOC-I) usually occurs because the aircraft enters a flight regime which is outside its normal envelope, usually, but not always at a high rate, thereby introducing an element of surprise for the flight crew involved.

Occurrences

Any safety-related event which endangers or which, if not corrected or addressed, could endanger an aircraft, its occupants or any other person and includes an accident or serious incident.

Runway excursion

According to the definition provided by ICAO, a runway excursion (RE) is a veer or overrun off the runway surface. Runway excursion events can happen during take-off or landing.

Runway incursion

A runway Incursion (RI) is defined as 'any occurrence at an aerodrome involving the incorrect presence of an aircraft vehicle or person on the protected area of a surface designated for the landing and take-off aircraft'. (ICAO Doc 4444 - PANS-ATM)

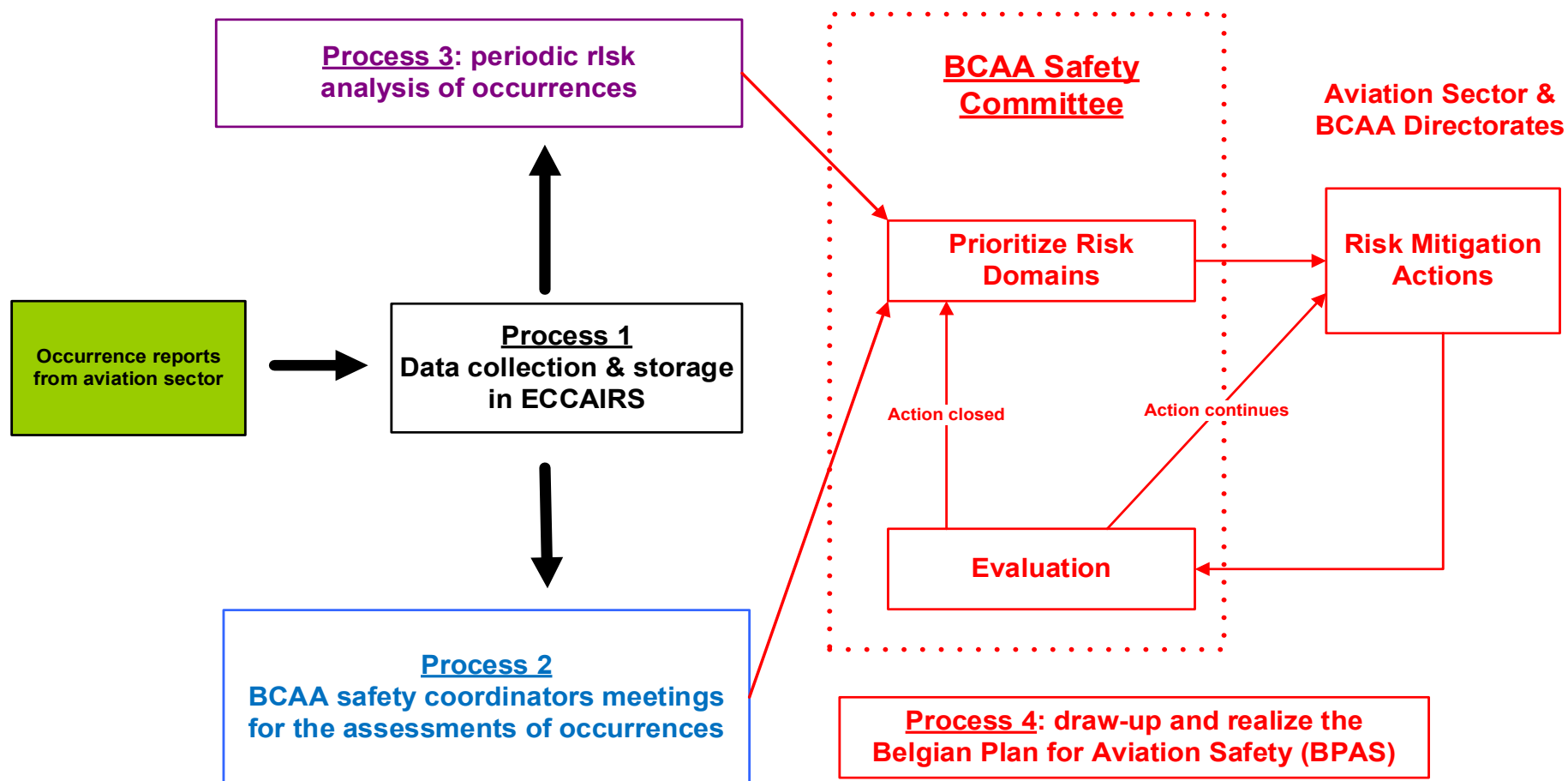
Safety management system

A safety management system (SMS) is a systematic approach to manage safety, including the necessary organizational structures, accountabilities, policies and procedures (ICAO). ICAO through various Annexes to the Chicago Convention has incorporated requirements for service providers in various domains of aviation to have an SMS.

State Safety Program

According to the ICAO definition, a State Safety Program (SSP) it is an integrated set of regulations and activities aimed at improving safety. ICAO requires contracting States to implement SSPs.

Appendix B: BCAA risk management process



Appendix C: BPAS Status Report

This document provides the individual details concerning each of the BPAS action items. It includes the latest status of the implementation of each action until December 2020.

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