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The specifics of unmanned aircraft insurance in conjunction with both national and EU rules and procedures.

BACHELOR THESIS

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I declare that this thesis is my own work, and that all references to, or quotations from, the work of others are fully and correctly cited.

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ABSTRACT

Insurance in many areas of law has been a core matter on both EU and national levels. The currently available research lack or often show no sign of the insurance matters related to Unmanned Aircrafts and other type of aviation objects. This thesis aims to determine what are the core elements of insurance area when discussing Unmanned Aircraft technologies as emerging new component of aviation market. To understand the EU law applicability on MS national legal systems, there arises a question, as to what are the main issues regarding Latvian Unmanned Aircraft legislation concerning insurance for these aircrafts in comparison with the newly developed EU law? In this context, Unmanned Aircrafts are considered to be aircrafts that are designed to operate autonomously or to be remotely piloted, therefore introducing differing matters as to those in manned aviation.

The thesis research, due to the lack of available sources, is mostly based on doctrinal and comparative research methods where analysis and comparison of several primary and secondary sources of law such as national legislation and EU regulations provided base substance of information. The thesis also includes and analyses several empirical and interdisciplinary sources, where reports and expert opinions provide more concise understanding of insurance related matters.

Issues regarding insurance related matters were mostly based on lack of legal certainty in national legislation. The research indicated that there is huge potential in the Unmanned Aircraft industry, that is, if the regulating authorities both on EU and national level provide comprehensive and accessible legal framework for these new technologies.

SUMMARY

The aviation industry has proven to be one of the most actively developing and growing industry of all means of transport currently available for society. But rather than focusing only on being an industry that is based on purely providing transport, with new emerging technologies such as Unmanned Aircraft and other additional components, Aviation to a certain extent, has also entailed fundamental changes on consumer business, related to new technologies and products offered on the market. More specifically, Unmanned Aircrafts are positioned as a new force of advancement for several other industries, concerning recreational and commercial businesses, providing new opportunities and ways of conducting business across the globe.

Previously, Unmanned Aircrafts were only viewed as a small additional feature mainly for the purpose of entertainment with small efficiency, however, with the rapid industry development, several major legislation changes on EU level have been amended, obliging national authorities to completely revise their regulations and rules for these types of aircrafts.

The first part of the thesis includes the Unmanned Aircraft development as part of the EU regulation, providing reasons for initiating this subject towards such major changes throughout the aviation industry and EU legislation, and also briefly analysing the steps towards the adoption of regulatory framework.

The second part more closely analyses and researches Unmanned Aircraft insurance peculiarities currently included in Latvian national legislation in comparison with EU law. It describes and provides background for Unmanned Aircraft insurance in general, while also providing differing matters opposed to general aviation insurance. Further on it analyses the insurance contracts for these type of aircrafts, more specifically their associated risks and civil liability provisions, ending the part with insurer's point of view.

The third part more closely includes and analyses current shortcomings and issues in the national legislation, commenting on the areas necessary for revision and areas where integration could pose some difficulties.

The fourth part includes a brief introduction on the potential market development, commenting on economic influence and concludes it with researchers assessment of the possible solutions and scenarios stemming out of the matters discussed in the thesis.

In the conclusion, the paper briefly reviews the researched topics, their impact on future development of Unmanned Aircraft system market and its future for the society.

Key words: Unmanned Aircraft, EU regulatory framework, Unmanned Aircraft Insurance, Third Party liability, Regulation implementation, Market potential.

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AUTHORITIES, TABLES AND ABBREVIATIONS

Drone – Autonomous or remotely piloted aircraft

RPAS – Remotely Piloted Aircraft System

RPV – Remotely Piloted Vehicle

UA – Unmanned Aircraft

UAS – Unmanned Aircraft System

UAV - Unmanned Aerial Vehicle

M-RPAS – Military Remotely Piloted Aircraft System

C-RPAS – Civil Remotely Piloted Aircraft System

*depending on the context and source, the usage in research may vary between these terms.

BVLOS – Below Visual Line of Sight

CAA - Civil Aviation Agency [of Latvia]

EASA - European Aviation Safety Agency

EC - European Commission

EEC – European Economic Community

EU – European Union

FPV – First Person View

ICAO - International Civil Aviation Organization

IMF – International Monetary Fund

JARUS – Joint Authorities for Rule-Making on Unmanned Systems

MS – Member State [of European Union]

MTOM – Maximum Take-Off Mass

SDR – Special Drawing Rights

SESAR – Single European Sky Air Traffic Management Research

SORA – Specific Operations Risk Assessment

VLOS - Visual Line of Sight

INTRODUCTION

The aviation segment, with all its components, fills a tremendously large part of each and our lives. With the development of Hot air balloon during the 18th century, Aviation as such, began its climb towards becoming the most adaptive and far-reaching means of transport on planet earth. Throughout decades, many different forms of innovative technologies and types of aircrafts have appeared, however, none of them stand even close to the advancement and high-end progress made in the sphere of Unmanned Aerial Vehicles.

One must understand the difference between commercial types of Unmanned Aircrafts as opposed to the military types, therefore the distinction is of the utmost importance here because of the different types of restrictions, rules and regulations, as well as insurance characteristics. Since the use of Unmanned Aircrafts affect many industries and different areas, the formation and integration process of the EU rules and procedures for Unmanned Aircrafts has attracted a lot of attention from the governing authorities for more than a decade now. The important at the same time difficult matter which the legislators had to face was the development of such regulation, which would not over encumber the domestic legislators from implementing it and not restricting the market excessively, while protecting the interests and rights of third parties that are directly or indirectly affected by Unmanned Aircrafts.

Since the new regulation is directly effective across the whole EU territory, procedures and rules, as well as insurance requirements are studied within the territory of Europe and Latvia, and are even limited as to those of international level, since many areas are deliberately left to be governed by domestic law, such as insurance claim assessment procedures, registration requirements and others. The period of research focuses on the first initiative where the creation of a new framework was reflected, ending with the current state of integration.

The European Commission alongside Member States and several aviation authorities in their proposals for the new regulatory framework for Unmanned Aircraft established a primary concept to divide all aircrafts into three categories, for the purpose of distinguishing between differing safety requirements, proportionality of risks and applicability towards current market trends, therefore focusing on commercial aircraft regulation, which also entails the highest potential for integration into several market segments and industries. The risks posed to privacy, security and data protection issues were also taken into account, leaving the insurance matter as a pure competence of the MS. Technical and operational requirements that are also included, allow both the producers and insurers to revise their portfolios and strategies, as to what potential growth is expected and what market trends are more likely to occur. Keeping in mind the aforementioned steps towards integrating Unmanned Aircrafts into our everyday lives, the thesis allows us to better comprehend the current state of innovation for these type of technologies, and emphasize areas where more amendments and narrowing of provisions are necessary.

1. UA DEVELOPMENT AS PART OF THE AVIATION SEGMENT AND THE INITIATIVE FOR UA RULES AND REGULATIONS.

From kite flying in China several hundred years before Christ, until jetpack hover boards able to carry humans in mid-air and 150 million worth aircrafts able to travel around four thousand kilometres per hour. Aviation with all its components in modern times is considered to be one of the most popular means of transport as well as one of the most innovative industries out there. Up until recent decades, aircrafts smaller than palm and able to capture high quality material whilst being remotely controlled from several kilometres away - seemed like a true spy movie or only a distant future element, which would take decades of development. However, the Unmanned Aircraft segment has taken far bigger steps in both military and civil areas, than most ever anticipated.

While it may seem that nowadays all UAs share a common principle of being remotely controlled, the earliest recorded use of UA took place around Venice in 1849, when Austrians used unmanned balloons carrying explosives that would damage the city of Venice and those on the ground.¹ Carried by wind, most of them were not successful to deal any damage, however, the history had been written, and the first attempt to use such innovation in warfare had been recorded. Nevertheless, here an important distinction must be noted between the types and objectives of UAs, where, as mentioned earlier, the use of military and commercial UAs are regulated and viewed upon differently.

Although the next encounter was also of military nature, where aerial imagery was used to capture maps of enemy locations during the WWI, the method and intention could not be characterised as anything other than one of the most useful innovations to follow us a century later. Most modern day UAs are equipped with more or less similar though advanced technologies, that allow to create images, various media coverages, maps and other commercially based material, whose roots can be traced a century ago, where the only real purpose was to access space's and locations, where you could not do that by ground.

As mentioned earlier, different types were produced and purposes were assigned to more advanced and capable aircrafts, nevertheless, their recognition as a serious type of aircraft that could be used throughout the aviation segment for commercial and recreational purposes, came many decades later, since throughout the 20th century, it was mostly just viewed as a military tool, to perform warfare conduct.

As military personnel understood and started to introduce new techniques of modern and modernised warfare, the use of M-RPAS increased significantly, to the extent that nowadays it may almost seem impossible to find a modern military operation, without some kind of drone or small remotely controlled aircraft assisting on it. Market for military UAs continued to increase and the demand for such technology followed naturally. However, M-RPAS were not the only type that gained recognition and proposed potential significant changes in the aviation segment and civil use of these aircrafts. As the technology advanced, many markets and domestic spheres were influenced and introduced changes in the policies they were conducting. A range of non-military applications for state, industrial, commercial

¹ Sachdeva G.S., *Drone Operations: A Jurislogue*, (K W Publishers Pvt Ltd, 2015), Chapter 2, Para 1.

and recreational purposes created new jobs and also introduced changes in entertainment industry - even attracted flying sports enthusiasts to create their own FPV drone racing, where FPV stands for first person view meaning that the remote controller wears a special kind of goggles that are connected to the drone camera while performing and racing throughout various obstacles and competing against other competitors. Nevertheless, all these changes and recognition patterns attracted the attention of the regulatory body, since the use of UAs were no longer a matter of military nature only. The aviation segment had been influenced, and this was no longer just a “toy” or a tool for military warfare, but its regulation and recognition as a serious part of the aviation industry had to be introduced on both international and national level.

This chapter will briefly provide background of the development of UA rules and procedures, in turn helping to better understand the necessity of such rules, as well as emphasise the rationale behind their creation and will provide grounds for understanding insurance related manners.

As the development of the aforementioned aircrafts differs from state to state, the markets as well as the demand for them varied from more developed ones, who already introduced RPAS in commercial and industrial types of activities, and those who were capable to access RPAS just as a military tool. This of course was purely the competence of specific national players, rather than a directly effective tool for whole EU or international level application. Therefore, the regulatory body of the EU made a clear distinction between those Civil UAs whose weight does not exceed 150kg and those that do. While the aircraft weights under this mentioned weight the control remains as a competence for the national rules, and those over 150kg are controlled at a European level by the European Aviation Safety Agency.

Even after the regulatory intrusion of EASA, some member states continued to authorise RPA flights in regular airspace, and while that may seemed to be working for some states respecting the flying of RPAS, growing concern of the safety, insurance and mobility issues attracted more serious and critical attention from the European Commission. By responding to expressed appeals for the structured development of the C-RPA market, EC alongside European Defence Agency and other affected industry regulators initiated several high-level consultation conferences over the years 2009 until 2012, with the intention to harmonise rules for safe and innovative RPAS integration in whole EU territory. The outcome of these meetings in this stage, resulted in summarized document which was released in 2012 - ‘‘Commission staff working document: Towards a European strategy for the development of civil applications of Remotely Piloted Aircraft Systems (RPAS)’’², which was established with the intention to follow a series of activities and provisions, which would help the RPA integration in EU airspace by 2016. Needless to say, the document also included *three societal aspects of RPAS development*, which were the potential benefits of RPAS, issues with

² European Commission. *COMMISSION STAFF WORKING DOCUMENT Towards a European strategy for the development of civil applications of Remotely Piloted Aircraft Systems (RPAS)*, 2012. Available on: [https://circabc.europa.eu/sd/a/3a6d53da-0197-4fa7-8c90-01637cb57055/Commission%20Staff%20Working%20Document%20\(SWD\(2012\)259\)%20-%20Towards%20a%20European%20strategy%20for%20the%20development%20of%20civil%20applications%20of%20Remotely%20Piloted%20Aircraft%20Systems%20\(RPAS\).pdf](https://circabc.europa.eu/sd/a/3a6d53da-0197-4fa7-8c90-01637cb57055/Commission%20Staff%20Working%20Document%20(SWD(2012)259)%20-%20Towards%20a%20European%20strategy%20for%20the%20development%20of%20civil%20applications%20of%20Remotely%20Piloted%20Aircraft%20Systems%20(RPAS).pdf). Accessed March 17, 2020.

responsibility and liability - particularly the insurance and monitoring of the operations, and of course privacy and data protection.

Since smaller drones had historically created regulatory problems for the EU, the regulatory body had found a ‘golden thread’ towards which now they could follow and help frame their future rules, regulations and recommendations. Previously, lighter drones and RPAS were only subject to certain and disintegrated safety rules - specific to each MS national legislation, but now, the working document of the commission, provided useful and practical ideas how to develop the market further, and not lose the sight of safety matter in the meantime.

Years from 2008 up until 2018, constituted a decade of important cornerstone for the UA integration into EU and MS national airspaces. Many European transport as well as economic experts suggested that such a reform in aviation rules was also necessary to follow, since the estimated increase of air traffic in the EU for the next 20 years is expected to rise for approximately 50 percent. The impact of the emerging industry economic-wise is enormous, thus, a unified and harmonised regulation is of utmost importance.

1.1. UA regulatory framework adoption.

Although Latvia generally plays only a tiny part in the development of the drone market as well as regulation wise, a small though important initiative allowed Latvian aviation industry to shine in March 2015. The Ministry of Transport of Latvia and the Civil Aviation Agency of Latvia organized a conference in Riga, in cooperation with the EC during the Latvian presidency in the Council of the EU. The outcome of the event crystallized in a document - *Riga Declaration on remotely piloted aircraft (drones) “Framing the future of aviation”*³, which introduced specific and complete actions towards the sustaining development of the RPA market and its future in the aviation segment.

The declaration also included important provision developed by several parties related to the matter of RPAS market:

The Latvian Presidency of the Council of the European Union, European Commission representatives, Directors General of Civil Aviation of the EU Member States, data protection authorities and leaders of manufacturing industry and service providers confirmed the importance of joint European action, building on the orientations given in the EC Communication on opening the Remotely Piloted Aircraft Systems (RPAS) market.⁴

Other important aspects that the declaration suggested, as speaking from the position of *The aviation community* were five principles which were developed with the idea that by following them, the regulatory framework development in Europe would go smoothly and would help EU states to raise their standards as to create single European market for RPAS,

³ European Commission. *Riga Declaration on remotely piloted aircraft (drones) “Framing the future of aviation”*, 2015. Available on: <https://ec.europa.eu/transport/sites/transport/files/modes/air/news/doc/2015-03-06-drones/2015-03-06-riga-declaration-drones.pdf>, Accessed on March 18, 2020.

⁴ COM (2014)207 on a New era for aviation - Opening the aviation market to the civil use of remotely piloted aircraft systems in a safe and sustainable manner. See also the EESC opinion TRAN/553 of 15 October 2014.

rather than raise issues or pose restrictions on previous rules. First of the established principles stated that:

Drones need to be treated as new types of aircraft with proportionate rules based on the risk of each operation.⁵

What the principle essentially suggested, is that rules should be simple and performance based, similar to product safety regulations in other sectors, however, *the safety aspect* should be treated *as strictly as in civil aviation in general*, since although there is no one physically inside the RPA, the highest threat levels are because of ground accidents or unscheduled landings - both of which are insurance matters.

Although next principle may seem to simply suggest that “EU rules for the safe provision of drone services need to be developed now”⁶, it actually entailed that the EASA should develop these aforementioned safety rules based on the national experience of each EU MS, thus making the harmonising process more comprehensive and would also help private sector operators, which are eager either to invest in the market, produce RPAS or insure them.

Further on, the next principle speaks for itself, by declaring that “Technologies and standards need to be developed for the full integration of drones in the European airspace”⁷, where more in-depth recommendations and guidelines are laid down in the “SESAR programme”, which is one of the EU's modern projects which was created with the idea to contribute to the implementation of the Single European Sky.

Nevertheless, the next and fourth principle could be considered the most important for the successful growth and development of the drone market, stating the following fact, that “Public acceptance is key to the growth of drone services”⁸. This is essentially true and applicable in this case, since the protection of citizen rights in EU is one of the core fundamental principles, data-gathering and filming for both commercial and non-commercial purposes still posed and poses potential threats and violations, which can only be reduced or regulated by developing “necessary guidelines and monitoring mechanisms to ensure the full respect of existing protection rules”⁹. However, the principle highlights a certain relevant issue, that:

(...) potential security risks [and] the malicious use of drones cannot be entirely prevented by design or operational restrictions [therefore] It is the task of the national police and justice systems to address those risks¹⁰,

Therefore ultimately making the public acceptance matter also a key national police and legislation matter.

The fifth and last principle could be described as the key cornerstone for all the previous principles to be successfully followed, in the meantime remaining the most tricky and hardest to regulate throughout the EU and the whole drone market. The principle clearly

⁵ *Supra* note 3, para 5.

⁶ *Supra* note 3, para 8.

⁷ *Supra* note 3, para 11.

⁸ *Supra* note 3, para 13.

⁹ *Supra* note 3, para 14.

¹⁰ *Supra* note 3, para 16.

states, that “The operator of a drone is responsible for its use”¹¹, and while it may seem as to be speaking for itself, it is not necessarily the case. The principle clarifies that the authorities regulating drone aviation should be able to act and hold the remote pilot accountable for any violation at any time. While there are states that are trying to implement some type of electronic identity chips, the most common and so far popular way of identifying the owner and pilot is through web-portals or registration systems, where the operator is also able to legally register their operation, therefore denying the possibility of flying over restricted territories and lowering the risk of other violations. What the authorities are certain of, is that accidents will happen anyway. Alongside some unified guidelines and restrictions from the EU, MS should still be responsible for the introduction with the applicable *insurance* and *third-party liability* specifications to the civil RPA users and insurance offerors. Another important part in this principle states, that:

Reporting on drone incidents should be integrated into the overall incident reporting requirements. Systematic and coherent incident reporting will improve safety and will be instrumental for insurance companies in their risk analysis on which third party liability insurance premiums are based.¹²

Although this declaration in no way is or was binding towards the authorities when later developing and forming the EU-level regulation, it played a highly important and crucial role in its development - especially with the structured principles.

In between followed a “bridge of communication” between the authorities, developing opinions and recommendations in terms of comprehending the context and scope of the new rules. On February 2019, the EASA committee provided a positive vote supporting the EC proposal towards an Implementing Act that would regulate UAS in both specific and open categories, meaning that open category which includes mainly Civil drones flying below 120 metre altitude or in VLOS¹³, and the specific category which includes drones flying above the VLOS - both of the categories without the need of authorisation, however, still under the UA traffic management system guidance. Closer examinations of the categories mentioned in this paragraph, are considered below in Chapter 2.3.

Further on, in March, after consultations with EC and EU MS, the EASA was able to propose and adopt a delegated act, which defines technical requirements for those RPAS operating in EU territory. This act came in with high importance, since it described safety rules and requirements for drones and operations - regardless of their weight or previously mentioned class. Finally, the year 2020 shapes the drone aviation segment the most, since starting from July 2020, the registration of RPA operators as well as their operations become *mandatory*.¹⁴ As the EASA would characterize the new rules:

¹¹ *Supra* note 3, para 17.

¹² *Supra* note 3, para 19.

¹³ *Infra*. Note 34.

¹⁴ European Aviation Safety Agency, *Civil drones (Unmanned aircraft)*, para 3. Available on: <https://www.easa.europa.eu/easa-and-you/civil-drones-rpas>, Accessed on March 26, 2020.

[They] are based on an assessment of the *risk of operation*, and strike a balance between the *obligations* of drone manufacturers and operators *in terms of safety*, respect for *privacy*, the *environment*, protection against *noise*, and *security*.¹⁵

As for now, national legislators and aviation authorities are in a transitional stage, where requirements have to be met by the middle of the year 2020, and matters like safety, registration and harmonization with previous jurisdiction cannot be put off any further. The important matters such as insurance and safety of third parties will play a crucially decisive part in the upcoming months and years throughout the newly developing UA market across the EU, as to see how well MS national authorities adapt to the changes and are able to satisfy both citizen and EU governing bodies. Nevertheless, it is needless to say, that although these transformations are currently applicable to the territory of the EU, it should be remembered, that for more than half a century now, international aviation has been governed by the Chicago Convention, and although it provides states to govern their airspace depending on domestic law, it still requires them to meet some minimal international standards¹⁶, therefore obliging also EU legislators to comply with the standards set for aviation industry.

¹⁵ European Aviation Safety Agency, *Drones - regulatory framework timeline*, para 1. Available on: <https://www.easa.europa.eu/drones-regulatory-framework-timeline#0>, Accessed on March 29, 2020.

¹⁶ Brian F. Havel; John Q. Mulligan, "*Unmanned Aircraft Systems: A Challenge to Global Regulators*," DePaul Law Review 65, no. 1 (Fall 2015): 107-122

2. UA INSURANCE PECULIARITIES AND THE LATVIAN CABINET OF MINISTERS RULE(S) CONJUNCTION WITH EU LAW

Although insurance as such in modern days tends to speak for itself, the specific type such as aircraft insurance - particularly Unmanned Aircraft insurance, requires closer expertise as to what it is and what are the characteristics that form it. During the beginning this chapter provides an insight of the obligations and requirements posed on MS by the relatively newly adopted rules and regulations for the Unmanned Aircraft operators. Further on, the chapter provides closer examination into the peculiarities of insurance contracts and the specific aircraft types. The middle of the chapter revises and examines the civil liability matter from both National and EU point of view, when Unmanned Aircraft is considered an irregular threat, whereas the end of the chapter introduces the insurance matter from the perspective of the insurer.

2.1 Unmanned Aircraft insurance in general.

With the rapid evolvement of drone market both internationally and on EU level, the governing authorities with regard to Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency (hereinafter referred to as - (EU) 2018/1139), and previous amending EC and EU regulations, the Commission delegated regulations 2019/945 as well as implementing regulation 2019/947 are the main components alongside national legislation, governing insurance matter as regards to Unmanned Aircrafts.

While (EU) 2018/1139 does not necessarily include specific provisions for the insurance of drones or third parties, it does however point out a strict rule that directly corresponds to the registration requirements - which in turn correlate closely with insurance. The rule states:

Member States shall ensure that information about *registration* of unmanned aircraft and of operators of unmanned aircraft that are subject to a registration requirement (...) *is stored in digital, harmonised, interoperable national registration systems*. Member States shall be able to access and exchange that information through the repository.¹⁷

Following the (EU) 2018/1139 regulation, the further developed regulation (EU) 2019/947, include an annexed provision which describes the “essential requirements for (...) operation of unmanned aircraft”¹⁸, which states, that:

The operator and the remote pilot of an unmanned aircraft must be aware of the applicable *Union and national rules* relating to the intended operations, in particular

¹⁷ Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 552/2004 and (EC) No 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91 (Text with EEA relevance.), *SECTION VII, Unmanned aircraft, Article 56, Compliance of unmanned aircraft*, Clause 7. Available on: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32018R1139>, Accessed on April 3, 2020.

¹⁸ Ibid. Annex IX, 1.

with regard to safety, privacy, data protection, *liability, insurance*, security and environmental protection.¹⁹

What this provision essentially provides is the obligation of the operator to be informed of the applicable rules and the necessity to receive some type of training or registration requirements that would test their ability to perceive and follow the regulation. As towards the general rule of being informed, Latvian legislation also provides companionable provision in the Cabinet of Ministers regulation “Procedures for Unmanned Aircraft and Other Aircraft Flights”²⁰, where Chapter four describes “Requirements for persons involved in the operation of unmanned aircraft”²¹ which lay down more specific grounds as to what the UA remote pilot is obliged to know regarding the responsibilities and safety requirements.

Since it is now established that the operator of RPA before flying conforms with both EU and national legislation, the next important matter is the peculiarities and necessity of insurance, more specifically - third party liability insurance, which is mandatory requirement not only for the specific subjects to the aforementioned regulation, but in all EU Civil aviation industry, without which the aircraft is not authorised to take off (with few exceptions), as opposed to for example the United States, where Federal Aviation Administration does not require to have insurance for either recreational or commercial drone use.

Regarding the general insurance requirements of the RPA, the (EU) 2019/947 does not lay down specific grounds of what should and should not be stated in the insurance policy, as well as the insurance classification by weight and use, but rather mentions the necessity of it as a general measure of safety and precaution matter. However, regulation (EC) No 785/2004²² which serves as a base of insurance requirements for air carriers and aircraft operators, does include more grounds on insurance in respect of liability. Nevertheless, this regulation does not include any provisions specifically for UAS, and only mentions “the minimum insurance cover per accident, for each and every aircraft”²³, which is one of the core elements in any insurance policy regarding third person liability.

As it can be seen, the (EU) 2019/947 regulation does not impose any limitations or obligations, as to what are the limits of insuring drones in any of the predefined categories. The only exception is the third party liability which is mandatory and limited to zero point seventy-five (0, 75) million SDRs (approximately 950 000 EUR), which is short for Special drawing rights and is used as an artificial currency instrument created by IMF. It rather mentions the obligation for the operator to have such an insurance, and have compliance with EU and national rules.

¹⁹ Ibid. Annex IX, para 1.

²⁰ Regulations of the Cabinet of Ministers No. 368, *Procedures for Unmanned Aircraft and Other Aircraft Flights*, Available on: <https://likumi.lv/ta/id/308732-kartiba-kada-veicami-bezpilota-gaisa-kugu-un-cita-veidaidaparatu-lidojumi>, Accessed on April 6, 2020.

²¹ Ibid. Chapter IV.

²² REGULATION (EC) No 785/2004 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 April 2004 *on insurance requirements for air carriers and aircraft operators*, Available on: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32004R0785&rid=1>, Accessed on April 9, 2020.

²³ Ibid. Article 7, Clause 1.

2.2 Specifics of an insurance contract.

As previously laid down in subsection 2.1, insurance is a fundamentally important instrument, for an aircraft to even leave the ground. The purpose for such a contract is essentially the same as to other types of insurance contracts. It provides a financial cover towards occurrence of certain previously set insurable risks, which could affect either persons or property. Such contracts are indemnity contracts and they seek to reimburse the insured person for the suffered detriment.

When speaking of insurance contracts for aircrafts, there exists a core principle in aviation insurance which does not correspond to other areas of insurance. This principle entails the idea that the insurer specifies the operation type and potential usage of the aircraft²⁴, based on forms and other means of communication, before forming an insurance policy depending on the internal policy of each insurer. They are usually retroactive contracts, which mean that the insurer and the insured agree on a specific date that determines whether the specific policy will cover losses that occurred in this agreed timeframe. Most insurers in the UA market set the timeframe for one year starting from the day of commencement, nevertheless, there are insurers who also offer retroactive contracts for a larger time frame, and in that case it usually depends on the risk portfolio of the insurer. Rarely there are situations where insurers use the Continuous type of insurance contract, but since the contract in that case does not have a fixed end date, this option is usually applied in reinsurance situations, and is mostly used for more expensive types of aircraft such as planes and helicopters. When speaking of UA insurance contracts, an important distinction must be made between the essential components that are subject to the contract.

Firstly, there is the Third Party Liability insurance, which in the EU is mandatory to all types of aircraft insurance contracts, regardless of whether the operator is subject to indemnity or not. The second cover is Hull insurance, which is not mandatory though may be found useful when dealing with high risk operations. Hull cover insurance includes provisions for the physical loss of an UA and covers both loss and damage to the UA. However, this part of insurance does not cover any damage dealt to the controlling unit such as remote, where these covers must be specified separately. Similar to other insurance contracts, for UAs loss or damage may be covered only in cases of *accident*, which occurs during the retroactively fixed period of insurance. Here, different judicial interpretations as to what describes and includes an accident arise. In EU law, the term is not strictly defined as regards to insurance contracts, however, in a recent court case, the meaning given to the term *accident* was “an unforeseen, harmful and involuntary event”²⁵, and different unofficial sources refer to the term as unexpected occurrences. Although neither Civil law of Latvia nor the rules of the Cabinet of Ministers specifically define the term accident, it is adopted in accordance with the standards defined by international conventions and European legislation. Taking this into account, it can be well established that intentional acts, if defined as such by the experts of the insurer, will not be taken into account when the question of indemnity in loss or damage cases rises. In general, loss or damage requires an accident or occurrence to take place. Another component typical for aircraft insurance contracts is the deductible part, which is described as

²⁴ *Infra* note 29, *Specificities of aviation insurance*, para 5.52.

²⁵ Judgement in *GN v ZU*, C-532/18, EU: C: 2019:1127, para. 35.

a specified amount in the policy, which insurance does not cover. Sometimes it is also viewed as an amount retained by the insured, and it essentially is used as a tool to discourage small or nuisance claims, which are either costly to the insurer or not grave enough to be covered by the insurance contract.

EU Regulation 785/2004 has established a working framework defining the requirements for Third party liability insurance²⁶, nevertheless, the provisions laid down in these regulations only succeed as far as basing the coverage on the weight of the UA. Taking this into account, Third party liability insurance, as mentioned before, is mandatory, therefore MS with their national regulatory bodies and operators themselves have to be aware of its importance and impact on the insurance of a particular aircraft. This part of insurance contract usually covers all risks for which the insured will become legally accountable for, to pay as damages to the affected party. These include non-pecuniary damages such as bodily injury and other types of violations that the insured party can be held liable for, such as privacy issues, damage imposed by sound and others. Third Party Liability also includes property damage, originating from UA operations, which directly damages any tangible property. Important measure in these type of contracts used by the insurers is that the insured is obliged to prevent or limit to the maximum ability - certain risk degrees and scenarios, which in turn correspond to the EU required²⁷ and national legislation provided receiving of training and registration²⁸. Since at the moment, there is no unified regime for liability for damage²⁹, Third Party Liability damage as a part of mandatory insurance is in the competence of each MS, where limits and insurance requirements are laid down and governed by the domestic law of the MS.³⁰

The effectiveness of these insurance contracts when damages to third parties arise, vary from state to state. Some MS are subject to the strict liability rule of the Rome Convention 1952, which establishes the obligation of the operator of the aircraft to compensate for damages done to the third party, without the ability to establish whether the operator was indeed at fault or not. This option in a way provides more legal certainty, since in most cases it is clear which party is liable for damages done to the other party. However, this rule does not restrict the operator or third party to whom the damage has been done, to make claims against manufacturers. In that case, the matter is further on referred and viewed under the Council Directive 85/374/EEC on the approximation of the laws, regulations and administrative provisions of the Member States concerning liability for *defective* products³¹,

²⁶ *Supra* note 22.

²⁷ Commission Implementing Regulation (EU) 2019/947 of 24 May 2019 on the rules and procedures for the operation of unmanned aircraft, C/2019/3824, Article 8. Available on: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32019R0947&from=EN>, Accessed on April 28, 2020.

²⁸ *Supra* note 20.

²⁹ European Commission, *Study on the Third-Party Liability and Insurance Requirements of Remotely Piloted Aircraft Systems (RPAS) Final Report November 2014*, Available on: <https://ec.europa.eu/docsroom/documents/7661/attachments/1/translations/en/renditions/pdf>, Accessed on April 28, 2020.

³⁰ *Supra*, note 20, Article 11.

³¹ COUNCIL DIRECTIVE of 25 July 1985 on the approximation of the laws, regulations and administrative provisions of the Member States concerning liability for defective products (85/374/EEC), Available on: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:31985L0374&from=EN>, Accessed on April 29, 2020.

which also applies to producers of UAS, and provides grounds for consumers to raise claims against the manufacturer if a malfunctioning UA has caused damage or harm to consumers.

Nevertheless, there is also the fault-based option for assessing claims. Experts state that this regime is much slower, since all of the involved parties will likely try to minimise their responsibility towards damages in a particular case. Although the victim in such a claim situation would only be compensated after a lengthy process of establishing which party is at fault, it is still considered a more favourable option throughout the EU and is also practiced in Latvia. Although it has its faults, approaching this from the operators and insurers point of view, every party should have an opportunity to respond and argue, in case such processing of claims would seem inappropriate or would lack proper establishment of responsibility.

2.3 Aircraft type classification and associated risks.

Already from the early days, regulating authorities when developing the new framework for rules and procedures, recognized the necessity of classification for the differing UAS. The Riga Declaration previously more deeply discussed in Chapter 1.1, was the first in-depth conference for the community, where several core principles were established. As a primary principle, the necessity to treat UAS as a separate aircraft type with rules being proportionate as to what kind of operations are being conducted with the differing risk levels³², this was taken into account and assessed as a crucial measure when classifying UAS and evaluating the risks posed to the community. After lengthy discussions and MS expert opinions, as well as assessment of insurance parties, the classification or rather categorization of UAS was finalized into three possible operation types: open, specific and certified categories, each of them defined and approached separately, from the requirement and risk standpoint.

EU law characterizes the first or open category of UAS as the one that presents the lowest level of risks and is not a “subject to any prior operational authorisation”³³. In EASA’s publication of “Opinion on safe operations for small drones in Europe”³⁴, an established objective defines measures on how the category is formed:

(...) through a combination of limitations, operational rules, requirements for the competency of the remote pilot, as well as technical requirements for UAS (...) ³⁵

Important part when discussing open and specific categories, is the set minimum age in the Article 9 of (EU) 2019/947, which is set at 16 years old³⁶, nevertheless there exists derogations which are more deeply examined below. Further on, the category is more closely examined and requirements are set in (EU) 2019/947, where Article 4 includes more specific provisions such as limiting the maximum take-off mass, rule of keeping the aircraft in VLOS

³² *Supra* note 4.

³³ *Supra* note 27, Article 3 (a).

³⁴ European Aviation Safety Agency, Opinion 01/2018, *unmanned aircraft system (UAS) operations in the ‘open’ and ‘specific’ categories*, Available on: <https://www.easa.europa.eu/sites/default/files/dfu/Opinion%20No%2001-2018.pdf>, Accessed on April 29, 2020.

³⁵ *Id.*, bullet point 1.

³⁶ *Supra* note 27, Article 9, Clause 1.

and others.³⁷ Open category is by far the most popular one throughout the EU UA market, primarily based on the relatively low specifications as well as all the small aircrafts which are not subject to authorisation requirements such as toys and all the sub-category³⁸ aircrafts. Because of these specifications, risks are also mitigated by the previously set relatively low energy capacity for the aircraft as well as limits towards how low and where the drone can operate. A discussion is appropriate here, as to the fact that commercial operations such as filming, taking photographs or infrastructure inspections and others, can theoretically be conducted without any form of pilot certification or licence. Nevertheless, the operator must comply with all the mandatory insurance requirements, where previous non-existence of training automatically increases the risk premium, and limits the risk portfolio based on each insurer's risk assessment methods.

The risk mitigation for open category was assessed more closely throughout the opinions prior to the development of unified rules, where the main challenge was the balance between technical requirements that would be adequate to comply with for the operators of open category, while still complying with EU privacy rules and developing the market of UAS by not restricting the producers excessively. Taking into account all these considerations, EASA alongside experts of the industry, defined general corner-stones which create the base for risk assessment while automatically limiting the open category to reasonable provisions. They are reached and defined in EASA Opinion 01/2018, where the general rule for risk assessment is considered the MTOM of less than 25 kilograms, the allowed height for flights is no more than 120 metres and the strict rule of aircraft being in the VLOS at all times.³⁹ Although this category poses relatively small risks of damages, the safety matter should not be the only discussed component when assessing risks in this category, since most of the UA available in the EU market are equipped with cameras, therefore posing other potential issues such as privacy and security, more extensively examined in Chapter three, when discussing Issues and shortcomings regarding implementation and harmonization of EU Law with national legislation.

General turn point when an operation no longer meets requirements of open category, is considered as soon as more significant aviation risks are considered. This type of category is the *Specific* one, where UAS operating in this category are required to have previous authorisation by the competent authority of MS. For the purpose of conducting safe operations when under this category, operational risk assessment is automatically necessary to be carried out and apply other mitigation measures, to ensure the companionability with the rules and requirements laid down for this category. These types of operations, although posing more serious damages in case of accident, still are considered more reliable in terms of mandatory risk assessment before conducting such operations. For example, the category provides definitions such as *standard scenario* which is a separate type of UAS operation essentially meaning that the operator provides a precise list of mitigating measures, which operators themselves declare to comply with before conducting the operation⁴⁰, and are further on subject to approval of each MS National Aviation Authority. This requirement also

³⁷ *Supra* note 27, Article 4 (d).

³⁸ *Supra* note 36, 2 (a).

³⁹ *Supra* note 4, Chapter 2.3, para 18.

⁴⁰ *Supra* note 27, Article 2, Clause 6.

closely corresponds to the insurance requirements, since as mentioned in chapter 2.2, the insurer specifies by the provided information of the insured, in which scenarios and operations the insurance contract and policy has legal force.⁴¹ An important aspect linking the specific category back to the open one, are the minimum age requirement for a remote pilot, mentioned in the beginning of the chapter.⁴² However, following a risk-based approach, MS takes into account several factors such as the place of operation or previous experience, lowering the age limit by up to four years in the open category, and by up to two years in the specific category.⁴³ Other characteristics defining the specific category include the conducting of operations BVLOS, higher than 120 meters, the MTOM exceeds 25 kilograms, and operations may include the purpose of dropping materials or substances such as water or sand. This now automatically creates the risk assessment procedure more lengthy and specific.

As the risks become more serious in terms of potential damages to third parties or environment, the aviation community proposed a methodology for the purpose of performing risk assessment and identification of mitigation measures, in shorter terms calling it the ‘specific operations risk assessment’ or SORA⁴⁴ developed by JARUS. In accordance with Article 11⁴⁵ of (EU) 2019/947, the operator before conducting operation in specific category, must provide relevant technical, operational and system information, which will then be used to assess the risks before the predetermined operation, where SORA further on contributes into the assessment with a framework recommending “a risk assessment methodology to establish a sufficient level of confidence that a specific operation can be conducted safely”⁴⁶.

Article 6 of (EU) 2019/947 defines the operational margin which separates specific from certified categories of UAS, whereas Article 40 of (EU) 2019/945 defines the boundary of separation, by listing conditions which allow an UA to be considered certified.

Taking into account the aforementioned, the third and final category is considered when aviation risks are similar to those of manned aviation, in which case, the UAS will be classified in the *certified* operations category. The (EU) 2019/947 provides, that:

UAS operations in the ‘certified’ category shall require the certification of the UAS pursuant to Delegated Regulation (EU) 2019/945 and the certification of the operator and, where applicable, the licensing of the remote pilot.⁴⁷

By certification the provision basically requires an UAS to meet specific conditions⁴⁸, which after prior development of regulations, were accepted as unifying requirements that need to be

⁴¹ *Supra* note 22.

⁴² *Supra* note 36.

⁴³ *Supra* note 27, Article 9, Clause 3.

⁴⁴ Joint Authorities for Rulemaking of Unmanned Systems, *JARUS guidelines on Specific Operations Risk Assessment (SORA)*, 2019. Available on: http://jarus-rpas.org/sites/jarus-rpas.org/files/jar_doc_06_jarus_sora_v2.0.pdf, Accessed on April 29, 2020.

⁴⁵ *Supra* note 27, Article 11.

⁴⁶ *Supra* note 44, Abstract.

⁴⁷ *Supra* note 27, Article 3(c).

⁴⁸ Commission Delegated Regulation (EU) 2019/945 of 12 March 2019 on unmanned aircraft systems and on third-country operators of unmanned aircraft systems C/2019/1821, Chapter III, and Article 40(1). Available on:

assessed separately, because of the potential risk factors. In order for an UAS to be classified as certified, the airworthiness and the compliance towards environmental standards shall be assessed, the same way as in manned aviation; after which, multiple certificates are issued that approve the compliance with general aviation requirements as well as some specifically produced certificates for UAS. This is purely based on the risk assessment, when the competent authority in charge of issuing such certificates, considers, that for the purpose of risk mitigation, such and such certificates are necessary to be approved of. Although such an approach of certification may seem progressive and appropriate, the EU up until the relatively new rules and procedures for UAS, were struggling with the compliance of national authorities with regard to certificate issuing, proper risk assessment and negligence issues. Because of this such risk assessment methodologies such as JARUS and EASA safety guidelines were created, for the purpose of creating applicable standards to all MS and mitigate discrepancies arising out of unified rules.

For insurers, risk assessment is a key component before engaging in contractual relations with the insurance seeking client. Undeniably, this is directly related to the pricing of the insurance premiums, which increases after the potential risk of incident is indicated by the insurance seeking person prior to the formation of policy. For insurers, several factors provide the base on which contractual relations are formed in all aforementioned categories of UAS. The report Study of the EC provides a concise list of criteria⁴⁹, that insurers most often consider during the risk assessment procedure:

- The capability of the operator (Up-to-date *loss history* and Number of *flight-hours*);
- The quality of the pilot and his/her qualifications (The *type of aircraft used* and its *airworthiness* and *Characteristics*);
- Value of the aircraft (Any specific *national requirements* (for example any *certification requirements*);
- *Nature of the operation* for which the aircraft is used (*Type of activity*; Whether the operation will overfly populated areas);
- The *manufacturer* and its *expertise*.

Of course, there are insurers conducting more extensive research and risk assessment, in some cases even denying the insurance, because of similar factors as mentioned previously, or purely because of the non-compliance with insurers risk portfolio. Nevertheless, all these factors combined create an assessment procedure and fulfil a decisive role when providing insurance.

One of the primary risks being assessed is the ground damage. It simply entails an aircraft crashing into ground, whether it is a plane or UAS, and is still considered to be one of

<https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32019R0945&from=EN>, Accessed on April 29, 2020.

⁴⁹ *Supra* note 29, Risk assessments, Section 6.26, page 73.

the main and theoretically most probable risk possible. Up until this day, UAS have had higher accident rate than the traditional aviation industry.⁵⁰

Another potentially even more hazardous accident would be the air-to-air collision, in which UAS deals direct damage to other flying aircrafts and crashes into them. The main issue here is that remotely piloted aircrafts such as UAS do not have collision avoidance systems, and simply cannot react to potential threats as fast as aircrafts that have on-board pilots. As it is stated in the Article cited in the previous paragraph:

(...) the small size and radar profile of UAVs create significant risk that such craft would damage civilian aircraft, causing both property loss and human casualties.⁵¹

There are other potentially hazardous risks concerning environmental threats, where UAS “could also produce “spill-over” effects having potential environmental consequences”⁵². Such spill-over effects could include battery leakage, large part detachment and others. There are also experts that include noise effects in the environmental threat linkage, where protected wildlife could potentially suffer from such harm, not to mention urban areas with civilian peace being interfered with. Again, the BTA’s, *Unmanned Aircraft Owner Civil Liability Insurance*, Rules discussed in Chapter three, in Clause 5.1.18 exclude environmental pollution from their insurance coverage⁵³, therefore potentially raising a discussion, whether such risks could influence the further development of national legislation and the acclimatisation of UAS in the eyes of third parties.

2.4 National Civil law specification of civil liability

As mentioned in previous subchapters, Third Party Liability as a component of insurance contracts, is mandatory in all EU territory. However, as it was also mentioned, the enforcement of the rules regulating third party liability as a part of insurance, is a competence of each MS competent authorities. The EC 785/2004 regulation on insurance requirements, only goes so far as to state the aforementioned and set limits for minimum insurance of liability for third parties⁵⁴, therefore leaving the rest of the characterization and definition of civil liability for interpretation by the competent national authorities of each MS. Therefore, it is necessary to understand the base and interpretation methods of national Civil law, to better comprehend the specifics of civil liability and its applicability in insurance contracts.

The Civil law of the Republic of Latvia issued by the Cabinet of Ministers, in Chapter 19, Sub-Chapter 1 which describes Claims Due to Private Delicts in Part 1, Clause 2347 describes the civil liability for non-pecuniary damages, stating, that:

If a person inflicts a bodily injury upon another person through an action for which he or she is at fault (...) the first-mentioned person shall compensate the other person for

⁵⁰ Rapp C. Geoffrey, *Unmanned aerial exposure: civil liability concerns arising from domestic law enforcement employment of unmanned aerial systems* (December 2012), Chapter II, A, para 2. Available on: <https://pdfs.semanticscholar.org/5a10/2c9c6e693bc453625a9c4194eab7cdf4feaa.pdf>, Accessed on May 12, 2020.

⁵¹ *Ibid.*, Chapter II, B, para 1.

⁵² *Ibid.*, F, para 1.

⁵³ *Infra.*, note 86, Section 5 Exclusions, Clause 5.1.18.

⁵⁴ *Supra* note 22, Article 7.

*medical treatment expenses and (...) also for potential lost income, and remuneration (material compensation) for moral injury.*⁵⁵

The Civil law of the Republic of Latvia, indicates here clearly the obligations towards the injured party in the context of the *injuring party being at fault*, which closely corresponds to the Strict liability rule of aviation insurance contracts, however, since Latvia is not a signing party of the convention that enforces the strict liability rule on the injuring party, potential derogations here could rise and shall be subject for revision of case-per-case basis. This however does not overlap the Directive 2009/103/EC, which in Article 11 regarding the Disputes in such cases, states, that MS shall take the appropriate measures so that either the civil liability insurer or the injuring party will be responsible for indemnity towards the victim without delay.⁵⁶

As regards to the pecuniary damage inflicted upon third parties, The Civil law of the Republic of Latvia, in paragraph two states, that:

*A person whose activity is associated with increased risk for other persons (transport (...)) shall compensate for losses caused by the source of increased risk (...).*⁵⁷

The paragraph further includes the provision, that if a source of increased risk causes damage not by a fault of theirs, but as a result of actions by other *person*, and since it is not clarified whether the norm speaks of natural or legal person, it could also be applied to legal entities such as manufacturers, whose provision of damaged goods or products are cause for malfunction. Taking into account the mentioned, EC Directive 85/374/EEC concerning liability for defective products⁵⁸ could be enforced in such cases, that the expert finds the malfunctioning of a product as a cause for damages to the third party.

Since the paragraph two of Clause 2347 of the Civil law of the Republic of Latvia in its provision includes that a person shall be liable if the damage is caused by a *source of increased danger* it is necessary to examine more closely, whether UA constitutes as a transport and moreover - a source of increased risk under the national legislation of Latvia.

2.4.1 Unmanned Aircraft as an increased source of danger in civil liability claims.

UAS are regarded as a type of aircraft under the EU 2019/947, where preamble in Clauses 1 and 2 define UA as an aircraft which “irrespective of their mass, can operate within the same Single European Sky airspace” alongside manned aircrafts and other types of aviation transports. The preamble does not specifically state the UAS as a mean of transport, nevertheless, since common rules and procedures are applied for these type of aircrafts we assume that UAS are also part of aviation transport, therefore subject to the same definitions

⁵⁵ The Civil Law of the Republic of Latvia (1 September 1992), Chapter 19 *Claims on Various Grounds*, Sub-Chapter 1 *Claims Due to Private Delicts*, I. *Compensation for Bodily Injuries*, Clause 2347. Available on: <https://likumi.lv/ta/en/en/id/225418-the-civil-law>, Accessed April 30, 2020.

⁵⁶ Directive 2009/103/EC of the European Parliament and of the Council of 16 September 2009 relating to insurance against civil liability in respect of the use of motor vehicles, and the enforcement of the obligation to insure against such liability, Article 11, Disputes, para 1. Available on <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32009L0103&from=EN>, Accessed April 30, 2020.

⁵⁷ *Supra* note 55, para 2.

⁵⁸ *Supra* note 31, Article 1.

of aviation transport, such as any other aircraft defined in EU law. Moreover, the Cabinet of Ministers regulation provides rules for Procedures for Unmanned Aircraft and *Other* Aircraft Flights, therefore also here, we assume that UA (taking into account the specific classification) are defined in the same class of transport, as any other aircraft defined in Latvian national legislation. Here, raises an issue that UA as well as other aircraft types are not clearly defined as an increased source of danger, therefore a closer look into Latvian court practice had to be examined.

The Constitutional Court of the Republic of Latvia in its decision of July 26, 2013, concerning an administrative offense of speeding in a residential area, stated, that “ vehicle is considered to be a source of increased danger”⁵⁹, although the specific judgement was applied in the context of road traffic and administrative offenses, taking into account the described in the first paragraph of this subchapter, aircrafts, specifically UA, as a means of transport, shall also be considered as an increased source of danger.

The conditions for Civil liability towards third persons are regulated in Insurance Contract Law of the Republic of Latvia⁶⁰, where the norms prescribe the victim party with rights of compensation out of a wrongful conduct of the insured, and the aforementioned Clause 2347 also included provisions for claims due to private delicts.⁶¹ The only exception, where disputes could rise is described in the same norm, where it provides that instant compensation may be revoked, if the damages arise out of *force majeure*. This however, again is a matter of expertise regarding risk assessment and analysis of the cause of damage to third parties. Although *force majeure* concept includes also conditions not prescribed throughout the concept, Procedures for Unmanned Aircraft and Other Aircraft Flights as a domestic law norm of Latvia, include a provisions and responsibilities for remote pilots, stating that the pilot has a responsibility [obligation]:

*Before performing the flights of an unmanned aircraft, to get acquainted with the aeronautical information (...), including to evaluate the specifics of the surroundings, geographical location, as well as meteorological conditions;*⁶²

Knowing this, a third party may also raise claims against the insured, in such situation, that the damages either pecuniary or non-pecuniary are inflicted based on a negligence of the remote pilot, by not acquainting himself with the aforementioned provisions, which in turn would change the prescribed liability level, and inflict more serious contractual relations in terms of increased reimbursement.

A student of Latvian University - Janis Kubilis, in his doctoral thesis, includes and describes such cases, where it is not as easy to prove the damages regarding civil liability towards the victim, however, in such cases, it does not automatically provide grounds that the damages do not exist. Moreover, there are several legal remedies that the victim could enforce, in order to prove the infringement of rights, such as presumption of injury,

⁵⁹ Judgement of the Constitutional Court of the Republic of Latvia, in case No. 2012-15-01, Operative part, Section 3.2, para 2. Available on: http://www.satv.tiesa.gov.lv/wp-content/uploads/2016/02/2012-15-01_Spriedums.pdf, Accessed April 30, 2020.

⁶⁰ Insurance Contract Law of the Republic of Latvia, Chapter VIII Civil Liability Insurance. Available on: <https://likumi.lv/ta/en/en/id/299053-insurance-contract-law>, Accessed April 30, 2020.

⁶¹ *Supra* note 55.

⁶² *Supra* note 20, Chapter IV *Requirements for persons involved in the operation of unmanned aircraft*, Clause 39.1.

determination of the amount of damages at the discretion of the court, lowering the standard for the necessary provision of proof, and others.⁶³ Such an approach should provide for a principle of precondition for civil liability. Further on, there is described a principle mentioned in Section 2:103 of the European Principles of Tort Law, which basically includes a provision, that no indemnity can be claimed by the victim, if the damages are inflicted by carrying out illegal activities by the victim himself.⁶⁴ A theoretical example here would be taking down or damaging the UA by means and methods which violate the rights of the remote pilot, in a case where his operations are fully authorised and certified by competent authorities. This situation would directly correspond to the mentioned EU Tort Law principles, and change the expertise procedure, where the injured party would actually be subject to violations of EU law principles, therefore the injuring party would be subject to fault based approach, rather than be obliged to pay indemnity such as in a similar case of strict liability.

To summarize the above mentioned in the subchapter, we can say that the identification of the liable party in civil liability claim cases, raises issues mostly because of the fault based approach of examining and establishing responsibility of a certain party. Although mentioned provisions in Civil Law and Cabinet of Ministers regulations as well as EU law, has a similarly common position as to how to treat cases of Third Party Liability claims raised by the injured party, the circumstances and situations are not always the same, such as the operator of the UA may not always be at fault. The provisions also stumble upon the fact that the owner of the UAS is not always the operator, where in this case even with more legal certainty the strict liability rule would not provide harmonized grounds for treating all cases in the same manner and applying the same measures to examine claims and responsibilities, would not provide as profound and democratic processing of legal disputes related to Third party liability.¹⁰³

2.5 Insurer's approach towards the applicable law

The chapter has so far provided an insight into most of the specifics of the insurance for Unmanned Aircrafts. It has been established, that under EU law, for UAS heavier than 250 grams, Insurance at least to an extent of Third party liability, is mandatory, however, the last matter that should be examined in this chapter, is the position of Insurer, when engaging in contractual relations with the potential policy holder, more specifically, the applicable law in case of provision of Insurance contracts.

Although contractual matters may seem as a competence of the MS in which the operator registers his UA and operates it, the Insurance Contract Law of the Republic of Latvia, in Article 3, Clause 1 states, that:

⁶³ Kubilis Janis, *Latvijas deliktu tiesību modernizācijas galvenie virzieni*, Latvian University Faculty of Law, Department of Civil Law Sciences (Riga, 2016) Available on: https://dspace.lu.lv/dspace/bitstream/handle/7/34956/298-57104-Kubilis_Janis_jk07041.pdf?sequence=1&isAllowed=y, Accessed on April 30, 2020.

⁶⁴ Id., para 2.

The law applicable for governing the contractual relations arising from the insurance contract shall be determined in accordance with the provisions on insurance contracts of Regulation (EC) No 593/2008 (...) (Rome I).⁶⁵

Even though this constitutes as a standard practice in EU MS to have harmonized domestic legislation with the regulations of EU, no specifications as to the extent of the regulation are expressed further on, except the next provision, stating, that:

In the cases indicated in Article 7(3) (a) (b) and (c) of Regulation No 593/2008 the parties to the insurance contract may choose also the law of the country of domicile (registration) of the insurer.⁶⁶

This provision basically provides the insurance seeking entity with the opportunity to choose the applicable law of the MS - “where the risk is situated at the time of conclusion of the contract”⁶⁷ or “where the policy holder has his habitual residence”⁶⁸. Such provision in national legislation provides uncertainty for insurers, since in a case where the aforementioned provisions are met, the parties may agree upon and choose the governing law of a different MS other than that in which the insurance contract was signed. Of course, in case when parties have not expressed their choice of law, the law of the MS in which the insurer has his habitual residence shall be applied to the insurance contract. Further on, the Rome I Article 7 mentions additional rules for insurance contracts that cover risks for which the MS requests obligation to insure. Part four, Clause a) includes a provision, that:

The insurance contract does not fulfil the obligation to take out insurance if it does not comply with the special provisions relating to such insurance laid down by the Member State which imposes that obligation. In the event of a conflict between the legislation of the Member State in which the risk is situated and that of the Member State which imposes the obligation to take out insurance, the legislation of the latter Member State shall prevail;⁶⁹

What this provision essentially entails, is that in the event of dispute, where the parties have not agreed upon the applicable law, the legislation of the MS in which the obligation to insure was at place, shall govern the insurance contract. The same clause also mentions that when a MS imposes compulsory insurance for specific risks, the same MS can enforce the right for its law to govern the specific insurance contract.⁷⁰ The second aspect, which an insurer should approach, is regarding the non-contractual relations in civil and commercial matters, which in this case is important when speaking of damages caused in civil liability claims.

Firstly, the regulation clearly indicates, that for non-contractual obligations, “damage shall cover any consequence arising out of tort/delict (...)”⁷¹, and further it states, that non-

⁶⁵ *Supra* note 55.

⁶⁶ *Supra* note 55, Article 2(2).

⁶⁷ Regulation (EC) No 593/2008 of the European Parliament and of the Council of 17 June 2008 on the law applicable to contractual obligations (Rome I), *OV L 177, 4.7.2008., 6. /16. Lpp*, Available on: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32008R0593&from=LV>, Accessed April 30, 2020.

⁶⁸ *Id.*

⁶⁹ *Ibid.*, Article 7, Clause 4 (a).

⁷⁰ *Id.*, (b).

⁷¹ REGULATION (EC) No 864/2007 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 July 2007 on the law applicable to non-contractual obligations (Rome II), Article 2, Clause 1. Available on:

contractual obligations that are likely to arise, are also included under this regulation, which includes risks which could potentially create damage from UA in Civil liability claims. The general rule for torts/delicts in Article 4 further states, that:

(...) the law applicable to a non-contractual obligation arising out of a tort/delict shall be *the law of the country in which the damage occurs* irrespective of the country in which the event giving rise to the damage occurred (...).⁷²

The Article further provides, that in a case where the liable person and the victim are both habitants of the same MS, the law of the common habitual residence state shall apply.⁷³ These provisions provide grounds for non-contractual obligations, irrespective of whether or not the parties have agreed upon applicable law. The only exception provided, in case the damage is more connected to the MS indicated in aforementioned Clauses, is when the damage is based on the pre-existing relationship between the parties, such as an insurance contract in our case.

To summarize the mentioned provisions in this chapter, it is safe to say that the party towards whom civil liability damage has occurred, may raise the claim in the national court of the MS, where the risk took place, irrespective of the law applicable to the contract of the insurer and insured. Therefore, the insurers' approach towards the law applicable in case of civil liability claims, is much dependent on the place where the risk took place and not on the state where the contract was signed, as provided in regulation Rome II for non-contractual obligations.

3. ISSUES AND SHORTCOMINGS IN NATIONAL LEGISLATION THAT ARE NECESSARY TO BE REVISED IN THE FRAMEWORK OF EU LAW.

The process of amending and submitting opinions for the development of regulations in the EU requires the participation of all MS and their representatives, therefore even theoretically there could not be an issue, where a regulation is not passed because of a certain MS (there have been situations where the passing has been sided). And taking into account the aforementioned in Chapter 2, a significant amount of time was used in order for MS to revise their national legislation and submit their opinions, nevertheless, the harmonization process takes a lot of effort from the governing institutions and imposes serious challenges.

The EASA alongside EC has worked hard to develop most comprehensive and narrowed rules for UA operators, and although there are three main categories which require registration and some even previous authorization, as mentioned in Subchapter 2.3, there is a “harmless sub-category” mentioned in the EASA technical opinion⁷⁴, where a small aircraft with weight under 250 grams can be flown without having a minimum knowledge of aviation

<https://eur-lex.europa.eu/legal-content/LV-EN/TXT/?uri=CELEX:32007R0864&fromTab=ALL&from=en>, Accessed May 1, 2020.

⁷² Ibid. Article 4, Clause 1.

⁷³ Ibid. Clause 2.

⁷⁴ European Aviation Safety Agency, Technical opinion, Introduction of a regulatory framework for the operation of unmanned aircraft, 2015. Available on: <https://www.easa.europa.eu/sites/default/files/dfu/Introduction%20of%20a%20regulatory%20framework%20for%20the%20operation%20of%20unmanned%20aircraft.pdf>, Accessed on April 10, 2020.

regulations⁷⁵. This sub-category was introduced because of requested commentaries stating, that:

(...) a harmless category for very small unmanned aircraft, e.g. toy aircraft or Nano drones *that cannot cause serious injuries or significant damage* is envisaged.⁷⁶

The policy makers took this into account, and made this sub-category, and since operators with RPAS that are in compliance with sub-category provisions are not required to have knowledge of flying, or are not obliged to register their aircraft, the sub-category is not included in regulation (EU) 2019/947. However, there have been opinions and experts raising doubts towards whether such a provision is unprejudiced. Indeed, it can be argued that from the safety point of view, the weight of 250 grams as being harmless is very arguable, since there are many factors that could influence or increase the weight or intended speed and kinetic energy. What also raised awareness, were not only the safety aspect, but rather the security, privacy and data protection rights. Therefore the question of registration should have still been assessed, since even small aircrafts could pose security and safety issues. Taking into account the mentioned, the Regulations of the Cabinet of Ministers No. 368, for example, have no further provisions related for UAs that weight less than 250 grams, other than a small Clause in Chapter II, which mentions, that for aircrafts whose total take-off mass does not exceed 250 grams and 19 meters per second of flight speed, the remote pilot is obliged to “assess the risks and determine the safe distance to third parties”⁷⁷. So essentially, no safety or privacy requirements are imposed for such UAS in the national legislation, moreover, no mention of the aforementioned sub-category and its potential damages are included in the regulations and requirements for UAS in Latvia. Nevertheless, ICAO has previously expressed its interest towards the requirement that all the “harmless” category UAS are left for the supervision and regulation by the national authorities, while the rest of the classification is assessed with the same methods and regulatory requirements as the general civil aviation provides.⁷⁸

Moving forward, one of the most essential new changes for rules and procedures for UAS in the EU, has not been thoroughly revised and currently, no requirements are imposed for the matter discussed below. As mentioned and cited in the previous chapter, each MS is responsible for registration requirements regarding UAS operators and their aircrafts. (EU) 2019/947 regulation in Article 14, clearly states the necessity and obligation of each MS individually to provide a registration opportunity for UAS operators. The article affirms:

Member States shall establish and maintain accurate registration systems for UAS whose design is subject to certification and for UAS operators whose operation may present a risk to safety, security, privacy, and protection of personal data or environment.⁷⁹

⁷⁵ Ibid. Section 2.3.1. Applicability, para 3.

⁷⁶ Ibid. Section 3.5.2. ‘Harmless’ subcategory, para 1.

⁷⁷ *Supra* note 20, Chapter II Basic requirements for operations with unmanned aircraft and aircraft, Clause 16.1.

⁷⁸ *Supra* note 17.

⁷⁹ Commission Implementing Regulation (EU) 2019/947 of 24 May 2019 on the rules and procedures for the operation of unmanned aircraft (Text with EEA relevance.) C/2019/3824, Article 14, Clause 1. Available on: https://eur-lex.europa.eu/eli/reg_impl/2019/947/oj, Accessed on April 15, 2020.

What is more, the same article includes a list of requirements⁸⁰ that should be met and included in the MS national registration system. However, here we face the problem of Latvian national legislation, since there are currently no registration requirements established for operators of UAS. As of now, there has not even been established UAS registry itself, in turn, there is even no information as to whether there will be one, since neither CAA of Latvia, nor legislators have provided any information, and there are also no mentions of such registry in the previously mentioned Regulations of the Cabinet of Ministers of Latvia.

As previously cited in note 3, as of July 2020, the Registration of UAS operators will become mandatory and there are currently visible issues that could cause serious problems towards fully complying and harmonizing these applicable rules in Latvian aviation. Another interesting aspect is that the Regulation of the Cabinet of Ministers of Latvia in Chapter 4, Article 39.4 requires that the operator presents an “insurance certificate, permit or approval”⁸¹ for their operation at the request of governing authorities, while not having established a national registry as obliged by the (EU) 2019/947 regulation, which would automatically provide substantial and unbiased proof of authorised operation.

Having this said, it is clearly visible that there are still essential elements missing in the development and implementation of (EU) 2019/947 regulation in the Latvian national legislative system towards providing accurate provisions and requirements that would directly correspond to the uniform rules. This could also raise issues for the UA operators, that wish to use their drone in other MS, since they are not informed as to whether such registration should be in place, not to mention the subcategory of which there is no information whatsoever, regarding the safety, privacy and data protection provisions. These issues could also potentially cause misunderstandings in Civil liability cases, since theoretically, a third member state national could conduct operation in the mentioned sub-category, and while no requirements are mentioned in the national legislation, no certain framework for assessing risks and damages caused to third parties by such UA are a clear example of shortcomings for the current domestic legislation.

Another shortcoming that the national legislation has created, is the absence of exercising the option in Rome I regulation. Since insurance contracts are included in the category of services, the current legislation of Latvia has not exercised its option posed in the Article 4 (b) of the Rome I regulation, which states, that:

A contract for the provision of services shall be governed by the law of the country where the service provider has his habitual residence;⁸²

In this case, the MS could clearly indicate that for a contract of provision of services, in this case insurance contracts, the state could exercise the mentioned norm in terms of applicable law for insurance contracts. However, the current legislation of Latvia has used a formal and general description as to what applicable law shall govern the contracts, expressed in Article 3 of the Law on Insurance Contracts. The norm purely mentions that Rome I regulation will

⁸⁰ Ibid. Clause 2.

⁸¹ *Supra* note 20, Section 39.4.

⁸² *Supra* note 67, Article 4, Clause b).

govern contractual obligations⁸³, and does not mention the option of exercising its rights in accordance with the aforementioned norm of Rome I regulation.

The national legislation also raises suspicion that the legislator has not fully extended their wording at some points, regarding insurance requirements for operators on a MS level. One of the key issues which could potentially raise disputes regarding civil liability claims, would be the wording expressed in the current law, governing procedures for UA, where the Clause 11 in first chapter states, that:

The owner of an unmanned aircraft shall insure his general civil liability against *damage* that the unmanned aircraft could cause to the health, life or property of a third party (...)⁸⁴

The issue here is the interpretation of the word *damage*, where such term is usually used when speaking of pecuniary damages caused to the third party. Moreover, the Civil law of the Republic of Latvia, in Clause 1770 uses the term *loss*, which in our case implies the same meaning as the term *damage*, stating that “A *loss* shall be understood to mean *any deprivation which can be assessed financially*”⁸⁵. However, when speaking of non-pecuniary matters such as moral pain, the term *loss* or *damages* should be replaced by the term *harm*, which would also include the non-pecuniary damages and would provide more comprehensive understanding of the meaning behind the wording used in the aforementioned norm.

A clear example for this shortcoming could be displayed if we briefly looked at insurance terms for UA Civil liability insurance offered by the local insurer *BTA* which is part of the *Vienna Insurance Group*. These rules however, only describe the insurance for Third party liability.

The interesting aspect we should look at in these insurance rules is the Section 5 which describes exceptions which shall not be covered by the Third party liability insurance contract. Under this section, Clause 5.1.13 outlines the term *Non-pecuniary harm* which includes “damage caused to third parties non-pecuniary rights or as a result of infringement of a non-pecuniary benefit”⁸⁶ and continues with damages such as insult to honour and dignity, different types of moral damage as well as invasion of privacy. The issue here is clearly the wording described in the national legislation when speaking of terms *damage* and *harm*. In Latvia, the specific rules governing Procedures for Unmanned Aircraft and Other Aircraft Flights, as mentioned before, uses the term *damage* therefore indirectly indicating necessity to insure against pecuniary damage and therefore excluding also non-pecuniary *harm* thereby narrowing the insurer’s understanding of what type of damage and harm should be covered by the third party liability insurance in their contracts.

Also the aforementioned legislative norm lacks another vital provision, namely, the right of the Third Party to Bring Action to Court, where Article 53 of the Insurance Contract Law states, that:

⁸³ *Supra* note 55, Section 3.

⁸⁴ *Supra* note 20, Chapter I, Clause 11.

⁸⁵ *Supra* note 55, Chapter 8, Sub-chapter 1, Clause 1770.

⁸⁶ BTA, *Unmanned Aircraft Owner Civil Liability Insurance*, Rules No.AV-05-1, Section 5 Exceptions, Clause 5.1.13 Non-pecuniary damage. Available on: <https://www.bta.lv/userfiles/files/Bezpilota-gaisa-kugu-ipasnieku-CTA-noteikumi-Nr-AV-05-1-LV.pdf>, Accessed on May 12, 2020.

The third party has the right to bring an action directly against an insurer only when the laws and regulations specifically provide such rights for the person.⁸⁷

As the aforementioned norm mentions, third party can only bring an action directly against the insurer only if the specified law, which in this case is the Regulations of the Cabinet of Ministers No. 368, mentions it. Nevertheless, the national legislation for UAs and other aircrafts does not mention such norm, therefore denying third parties the opportunity to bring an action directly against the insurer.

As can be seen throughout this sub-chapter, there are mentioned several shortcomings regarding the national legal acts that are lacking legal force when it comes to either specific insurance provisions or harmonization and compliance measures towards the current EU law. Therefore, although Latvia in particular with the Riga Declaration mentioned in Chapter I has provided increased input with regard to the current EU law provisions for UAS, it can be seen that the national legislation still lacks legal certainty and should still be subject to future provisions and amendments that would clarify some of the scenarios and issues that are yet not covered by the current legal norms.

⁸⁷ *Supra* note 60, Section 53.

4. POTENTIAL MARKET TRENDS, OPPORTUNITIES AND ECONOMIC INFLUENCE TOWARDS THE UA MARKET AND TRADING OF PRODUCTS

The Unmanned Aircraft segment could be considered relatively new throughout the aviation sector, therefore the already developed markets in EU MS produce different numbers as to the new producers, complying operators and the overall development of such specific segment under the particular MS legislation. There are still new amendments being made to understand how to better define and implement the new rules, as well as to shape a more non-categorical view towards Unmanned Aircrafts from the MS citizen's point of view. This chapter focuses on few of the most successful MS [players], which have been able to safely and so far favourably develop their market according to the latest technologies and aviation market developing progress. The chapter also discusses the importance of how UA technologies have so far impacted the insurance sector, and the possible direction for development of this market segment. The emphasis is also on the influence of production of UAS, from both internal market perspective and influence on the trade between MS.

The community of UA has already expressed that the EASA alongside EU authorities should invest more into the development of the UA market, and although over the last years huge amendments have been made, there still lacks a comprehensive and harmonized environment for UA, so that the single market across the EU would operate in a more organized way than before. Even though efforts have been made, the current technique for operational authorisation in MS separately, has not provided efficient results where these national authorisation techniques benefit in any way or are mutually recognizable across the EU territory. Although the current regulation provides, that there should be a uniform implementation of and compliance with rules and that procedures should apply to operators and remote pilots uniformly across all MS, these efforts are still at development stage, since all MS cannot achieve the effectiveness of successful implementation into domestic markets with the differing resources and portfolios for budget allocation.

Since currently the biggest issue is the successful addressing of UAS in a similar way to that of manned aviation, EC alongside SESAR has expressed its views on how to enable the progressive development of the commercial UAS market while safeguarding the public interest in the meantime, allowing producers to conform to the new production and marking requirements as well as limits applicable to UAS. The emphasis towards successful implementation of UAS in the current EU Aviation market is expressed by stating that UAS are likely to provide a massive number of opportunities for new services and employment opportunities.

The regulating bodies have expressed an opinion that “Mastering RPAS technology will become a key to the future competitiveness of the European aeronautics industry.”⁸⁸ Since currently EU market for UAS manufacturing sector is stationed far behind US and China, where the field of military UAS have been a substantial component of aviation

⁸⁸ COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL *A new era for aviation Opening the aviation market to the civil use of remotely piloted aircraft systems in a safe and sustainable manner* /* COM/2014/0207 final */ , Chapter 2, para 1. Available on: <https://eur-lex.europa.eu/legal-content/EN-LV/TXT/?uri=CELEX:52014DC0207&from=EN>, Accessed May 1, 2020.

industry, EU bodies believe that by enhancing and promoting comprehensive legal framework would allow EU to progress and grow outside of the military sector, by focusing also on the commercial and civil applications such as media, crop fertilizing and others, allowing the internal market producers to gain experience and develop their business sector more extensively. It is also mentioned that because of the relatively difficult integration of legal framework and technological requirements, it is currently hard to predict the potential for the UAS market, although it possesses huge potential. The report however mentions approximate development area:

According to an industry source, the global budget forecast in terms of R&D and procurement, including military and governmental, is expected to grow from currently \$5.2 billion to about \$11.6 billion per year in 2023.⁸⁹

Further on, an example of France is used, where by enforcing regulation on a state level for UAS that weigh less than 25 kilograms, France was able to increase the number of approved operators, with seeing similar trends for market growth and job creation also in Sweden and UK.⁹⁰ By comparing US industry forecasts, it is further argued that during the integration period of UAS in US aviation, economic impact could be estimated at 13.6 billion US dollars, as for the EU, additional 150 000 thousand new jobs are forecasted by 2050.⁹¹ Since at the time of report, no rules or procedures had been implemented, the economic impact still provides speculative information as to the economic impact of successful integration of UAS in the internal market.

Another huge leap towards development of the UAS market is the creation of the U-Space traffic management system⁹², with new services and specific procedures designed to support safe, efficient and secure access to airspace for large numbers of UAS. The body of SESAR states that in a case of successful application of current rules and procedures, such a system as U-space would provide an enabling framework to support routine drone operations and help the remote operators to register and conduct their operations in a more coherent and easy manner than before. Although this project is currently in the development stage, EASA and SESAR are actively processing the approach to integrate the system across all EU.

Regarding the economic impact on producers and on the insurance sector, the full development and integration of UAS rules and procedures in MS, would benefit greatly towards the Insurers and their provided services, as well as the UA producers. Most of the Commission reports and opinions repeatedly emphasize the need for uniform rules and the development of regulatory framework across EU, because the rules not only would create better understanding and conformity for the operators, but also allow the producers as well as Insurers to conduct their business in an approved manner, where further manufacturing and service providing would be regulated in a harmonized nature, without derogations in requirements and risk assessment procedures.

⁸⁹ Ibid. para 2.

⁹⁰ Ibid. para 4.

⁹¹ Ibid. para 5.

⁹² SESAR, *U-Space Blueprint* 2017. Available on: <https://www.sesarju.eu/sites/default/files/documents/reports/U-space%20Blueprint%20brochure%20final.PDF>, Accessed May 1, 2020.

Although currently there is not enough valuable data and analysis done to truly assess the impact of the new EU rules and procedures towards the impact on the production and manufacturing of UAs, the economic influence is forecasted in SESAR European Drones Outlook Study, where Chapter 2 examines and provides information on the possible market unfold in a timeframe until 2050.⁹³ The report has used data of a variety of industry sectors, with the purpose to estimate benefits and potential towards providing new jobs and delivering both economic and environmental benefits for the EU citizens and internal market development. Sectors such as Agriculture, Energy, Public safety and security, E-commerce and delivery, Mobility and transport as well as insurance are believed to be impacted positively and benefit greatly from UA operations.⁹⁴ Below is provided a table from the mentioned report, indicating sectors that are likely to be influenced and in what way:

Mission types	Sectors profiled in-depth					Other growth sectors included in study			
	Agriculture	Energy	Public safety & security	Delivery & e-commerce	Mobility & transport	Mining & construction	Telecom	Insurance	Others
Localized Surveying (primarily VLOS)		Infrastructure sites	Police & fire, in-vehicle units			Bridge, crane & buildings	Cell tower inspection	Roof & site inspections	Real estate, private security, media, indoor
Long range Surveying (primarily BVLOS)	Crop & livestock monitoring	Pipeline & power lines	Police & fire, disasters, wildlife		Railway inspection	Site surveying	Cell tower inspection	Disaster impact	University & research, especially wildlife
Light load movement (primarily BVLOS)	Crop spraying / pellet application			Parcel, medical supply, delivery		Transport light critical material			Ports, indoor light goods movement
Long endurance Surveying (primarily ≥ 150m)	Large land monitoring	Pipeline & power lines	Border control, maritime, environment surveillance						University & research, especially wildlife
Unmanned aviation				Cargo planes, air freight	Passenger planes & rotorcraft				
Others		Tethered wind energy prod.					Connectivity provision		

Public safety also includes prison surveillance and examples for environment include poaching prevention; University and research examples include animal breeding monitoring, geological studies

Table No.1, SESAR, Framework to assess Government & Commercial demand⁹⁵

The insurance sector particularly is believed to benefit in a positive way from the developing legislative norms. The successful implementation and integration of rules and regulations into the national airspaces and general EU airspace, would provide better applicability of risk assessment measures, even in MS where fault-based system is taken into account, when analysing and examining the Civil liability claims, since more comprehensive and uniform rules will increase the reliability and acclimatization in terms of aforementioned risk assessment procedures as well as create more concise understanding for MS citizens of the

⁹³ SESAR, *European Drones Outlook Study Unlocking the value for Europe*, 2016, Chapter 2. Available on: https://www.sesarju.eu/sites/default/files/documents/reports/European_Drones_Outlook_Study_2016.pdf, Accessed May 2, 2020.

⁹⁴ Ibid. para 2 and 3.

⁹⁵ Ibid. Figure 3: *Framework to assess Government & Commercial demand*

ongoing processes and measures taken into account, when examining the claims. To somehow capture these indications in figures, the SESAR report estimates that “insurance of drones are estimated to be around EUR 1.5 billion and EUR 2.3 billion respectively in 2035 and 2050, resulting in 10 000 to 15 000 jobs.”⁹⁶

An important measure to take into account regarding the insurance of UA, is the pricing of insurance, particularly – Third party liability insurance, since it is mandatory in EU territory. In case when the third party liability insurance is not affordable, this would increase the number of uninsured therefore illegal operations, which would in turn potentially slow down the development of UAS market. For now, there is no information publicly available as to the registration of the UAS operations, since the national registers are still in a development stage, therefore currently insured UAS are purely a competence of Insurers individually.

4.1 Author’s view of Insurance for UAs, and possible solutions and scenarios as regards to the matters discussed in the thesis.

A good understanding of the position of the author could come from his background. For a few years now, the author has been working as an assistant for a brokerage, and has had some experience in dealing with clients who seek insurance for different kinds of aircrafts, including UAS. Based on this experience and supported by the research and analysis done in this thesis, the author has connected some core elements of when speaking of practical approach for insurance.

Most of the UA insurance seeking applications received have been for commercial purposes, such as creating video materials, in turn, there also have been applications for higher risk insurance such as firefighting, public monitoring or object inspection. For those clients seeking insurance cover for higher risk operations, usually are informed of what exactly is required and what the costs for such policies are. Nevertheless, here we could highlight the first common trend when seeking insurance for UAS, and it is the lack of knowledge for insurance requirements.

Of course, those submitting applications when seeking insurance cover are already more informed than those regular operators, who have or are currently operating their UAS without any insurance. However, once the client submits an application, it has become a common practice to once again make contact with the client, to fully understand the purposes and risks their potential operations will entail. Some after having communication decide on insuring also the non-mandatory provisions for Hull damage, since it becomes known, that the provided operations will increase the risk and potential damage either to the UA or third parties. Clarification also takes place, when assessing the value of payload attached to the aircraft, since the premium increases in case the client decides to insure it, and it also modifies the MTOM for the aircraft, therefore increasing the possible damage done either to the UA or third parties. All these details and prior identification or requirements to operate in most cases are “unknown waters” for the client, which leads to believe that there is not enough comprehensive information available for the operators, before contacting brokers or insurers.

⁹⁶ Ibid. ANNEX – Details into demand outlook and economic potential, *Overview of economic impact of maintenance & insurance*, para 1.

It has become known, that many of the operators seeking insurance, only find out of these aforementioned provisions when discussing them with either brokers or insurers, therefore the national authorities governing insurance such as CAA should emphasize on developing more informative and comprehensive outlook materials, for the operators to better understand their rights, requirements and mandatory provisions before making a decision to engage in contractual relations with insurers.

Another aspect where national authorities should engage into closer approach is the upcoming mandatory provision for national register of UA operators and their aircraft, which was mentioned in Chapter three. So far, in author's experience, none of the clients have expressed knowledge of such future provision or even mentioned it when seeking insurance, therefore it automatically raises doubts as to whether operators will register themselves in the future or should insurers be obliged to inform their clients of such provision. This again emphasizes the necessity for national authorities to engage in a more informative approach for the upcoming requirements. While the open category is not obliged to authorize themselves before operations, they are still subject to several requirements and rules before engaging in such activities. Regarding the producers, authorities should also approach such manufacturers or UA distributors, to inform and enforce the rules and procedures to ensure that such products meet the necessary requirements prescribed by the EU and national legislation, and make sure that the operator, before accessing such products, is in full understanding of the risks and mandatory provisions applicable before engaging in any operations.

CONCLUSION

Since the technologies of the UAS is relatively new topic and area from whichever point it is looked at, it is hard to truly grasp the impact and importance of clearly structured and regulated rules and procedures as well as market development for this specific field. Although it can be agreed upon that the UAS industry is in a rapidly growing and evolving state, the findings in this thesis clearly represent the areas still lacking legislative activity, particularly in insurance, which can also be explained with the fact, that currently there is relatively little amount or no amount at all, regarding the publicly available information in which insurance contracts are being reviewed and their operators dispute in the EU. Although as mentioned, the market potential is huge and operators are not restricted to engage in commercial or recreational activities, the true impact on society and aviation industry as a whole, will only be seen once the EU Law is fully applied and integrated into national legislative systems, which still lack legal certainty and several important provisions such as registration system and unified claim assessment procedures.

It is also important to note, that the national authorities will be obliged to strike a reasonable balance between the UAS operations not being restricted to the point that would damage the market development, and protecting the rights and interests of civilians and third parties, while maintaining a safe national airspace and limiting the possibilities of unnecessary risks and occurrences as subject to the still ongoing process of integrating these new technologies into airspace. Now, although much of the components for operating UAS are subject to national legislation and MS should provide comprehensive integration and authorisation of the rules and procedures specified in the paper, the regulating bodies such as EU, EASA, ICAO and others, should do everything in their power to continue the amendment and provision procedures to provide an accessible legal framework, which would not collide with current international rules on both safety as well as insurance requirements. However, it must be agreed upon, that the true revision and amendment process could also be starting after the new law is tested in practice and more MS are providing their data, therefore indicating which areas still need improvement and which are working as planned.

The insurance market is expected to grow, since the insurance of relatively less costing aircrafts attract more attention in the eyes of consumers, while the current legislation provides for mandatory civil liability insurance, therefore promising client applications once the regulations are finalized and implemented on a domestic level. Since the industry as mentioned is in a rapid growth state, the variety of applications for commercial and recreational use is expected to rise towards an unseen level, in the meantime drawing a correlation towards the potential claims arising out of these operations on both EU and national level. Insurers are currently in a state where it is hard to assess what future claims are most prominent, although speculations tend to speak of different types of harm, including privacy issues, which are a hot topic in almost all innovating industries in some way relating to data protection. Nevertheless, the positive impact is speculated to be magnificent – creating jobs, growth opportunities for entrepreneurs and changing the aviation industry in a way never experienced before.

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