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Impact assessment of new national regulations on unmanned aircraft systems (UAS)

The Swedish Transport Agency's proposal:

The Swedish Transport Agency proposes

- that new regulations on unmanned aircraft systems (UAS) be adopted. According to the proposal, the new regulations are to be divided into three main parts:

1. Regulations for all UAS activities regardless of whether the activity is covered by Regulation (EU) 2018/1139[1] or is nationally regulated.

2. National supplementary provisions for UAS activities covered by Regulation (EU) 2018/1139.

3. Regulations for UAS activities exempted from the EU Regulations pursuant to Article 2(3)(a), of Regulation (EU) 2018/1139 that are nationally regulated.

- That the current regulations and general advice (TSFS 2017:110) for unmanned aircraft be repealed.

L. General

1. What is the problem or the reason for the regulation?

In Sweden, activities involving unmanned aircraft systems (UAS) are regulated by national regulations, including the Swedish Transport Agency's regulations and general advice (TSFS 2017:110) on unmanned aircraft. On 1 July 2019, two EU-wide regulations governing the use of unmanned aircraft systems (UAS) came into force: Commission Delegated Regulation (EU) 2019/945 of 12 March 2019 on unmanned aircraft systems and on third-country operators of unmanned aircraft systems (hereinafter referred to as the Delegated Regulation) and Commission Implementing Regulation (EU) 2019/947 of 24 May 2019 on the rules and procedures for the

[1] 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.

operation of unmanned aircraft (hereinafter referred to as the Implementing Regulation).

As a result of the new EU regulations, national regulations need to be revised. Parts of TSFS 2017:110 are no longer relevant because the requirements are instead contained in the EU regulations. Other parts of TSFS 2017:110 are still relevant as they cover areas that are still regulated nationally. This includes provisions concerning airspace and air traffic management services, as well as provisions for activities exempted from EU regulations pursuant to Article 2(3)(a) of Regulation (EU) 2018/1139. The provisions in these parts need to be updated.

There is also a need for supplementary national provisions to Commission Implementing Regulation (EU) 2019/947. These include clarifications on age requirements for UAS operators and provisions for model aircraft clubs and associations.

The aim has been for these regulations to bring together national prescribing rules for UAS in a single publication.

2. What is to be achieved?

The purpose of the new regulations is to draw up new and updated provisions for UAS activities both for operations covered by the EU regulations and for operations regulated at national level. The regulations will contribute to increased clarity and thereby maintain a high level of safety. The intention behind the regulatory work has been to integrate the regulations as far as possible so that the requirements for UAS are brought together in a single national regulatory framework.

The regulations are divided into three main areas. The first area concerning common provisions for all UAS activities is covered in Chapter 2. The next chapter sets out supplementary provisions for UAS activities regulated by EU regulations. The third area contains provisions for UAS activities that are exempted from the EU regulations by Article 2(3) of Regulation (EU) 2018/1139. These provisions mainly concern activities that constitute other aviation for state purposes pursuant to Chapter 14, Section 1(4) of the Aviation Act (2010:500) and are found in Chapters 4–7. Chapter 8 contains exemption provisions.

Chapter 2 contains provisions that apply regardless of whether the activity is otherwise regulated by EU regulations or national provisions. The provisions concerning airspace and air traffic control services need to be updated and clarified. The chapter on common provisions also contains requirements for operators and remote pilots to be able to prove their competence to use aeronautical radio, if such is used, information provisions

on insurance requirements and incident reporting, and conditions for transponder use.

It also introduces UAS geographical zones allowing flexibility around area-specific conditions as referred to in Article 15 of Regulation (EU) 2019/947. This enables the use of UAS geographical zones to, for example, specify conditions for flying within and outside the 5-kilometre limit around an airport, as well as how flying may take place outside air traffic control opening hours when the control zone has become uncontrolled airspace. In this way, airspace requirements for national and EU regulated UAS activities can be brought together in a common regulation.

In Chapter 2, the previous rules regarding consultation on flights within 1 000 metres of heliports have been clarified. At heliports and other airports, high safety standards must be maintained without unnecessarily blocking large areas of airspace. It has previously emerged that some operators have interpreted the term ‘consultation’ as a possibility to deny UAS activities in the vicinity of a heliport. Heliports do not have, under the current regulatory framework, and will not have under the new regulations, the authority to approve/deny flights in the vicinity of a heliport. This is because it is considered to constitute the exercise of powers conferred by public law.

In the proposal, the term ‘consultation’ is replaced by the term ‘cooperation’. At the same time, the requirement is expanded to also apply at airports that are not surrounded by a control zone (CTR) or flight information zone (FIZ). In a function-based rule, it may be appropriate to use the term ‘cooperation’ instead of ‘consultation’. Consultation essentially means that one party seeks the views of another, but the responsibility for decision-making remains with the party that initiated the process. This risks creating a one-sided relationship and ambiguity around the division of responsibilities and obligations. Cooperation, on the other hand, requires mutual responsibility where both operators actively participate and contribute to the achievement of the objective. By using the concept of cooperation, it becomes clear that both operators have an obligation to work together and take joint responsibility for achieving the purpose of the rule.

Chapter 3 contains additional provisions for aviation operations to be carried out in accordance with EU regulations. The Swedish Transport Agency’s Regulations (TSFS 2020:55) on age requirements for operators of unmanned aircraft systems and the level of competence for remote pilots contain supplementary provisions to Regulation (EU) 2019/947.
TSFS 2020:55 contains provisions on age requirements for operators, disclosure provisions on age requirements for remote pilots and transitional provisions on competence requirements for remote pilots, which apply until 31 December 2023. The provisions on age requirements for operators and

information on age requirements for remote pilots are inserted into the new national regulations so that the provisions on UAS are gathered in a single regulation. The publication of the proposed regulations repeals Regulation TSFS 2020:55.

Chapters 4–7 contain provisions for activities involving UAS that, pursuant to Article 2(3)(a) of Regulation (EU) 2018/1139, are exempt from EU regulations and must instead comply with national rules. This applies, for example, to police activities, air rescue and fire fighting. These activities are currently conducted in accordance with TSFS 2017:110 under special conditions issued by the Swedish Transport Agency. The new national regulations propose that the activities should instead comply with provisions that are as similar as possible to the requirements in the EU regulations. If the air and ground risk is low during flights, it is sufficient to submit only one notification concerning a flight in a national open category before the commencement of the activity. If the risk is higher, an application for a special decision for a national specific or national certified category must be made and approved before the activity commences.

The similarity with the EU regulations allows national operators to use AMC/GM according to the general advice in the draft regulation as guidance and a means to comply with some of the requirements. In this way, there will be similar requirements that apply to UAS flights regardless of whether the activity complies with national regulations or EU regulations. Clear and legally certain rules are necessary for practitioners within the aviation system. With the flight safety conditions currently used for other aviation for government purposes, there is a risk that the requirements will become unnecessarily complicated and unclear. The new regulations make it clearer what requirements can be expected.

Tethered unmanned aircraft

There has been uncertainty regarding the rules applicable to tethered unmanned aircraft. For unmanned tethered aircraft covered by the EU regulatory framework, the provisions of Regulation (EU) 2019/947 apply. However, there are exceptions in the basic regulation for small tethered aircraft (Article 2(3)(d) of Regulation (EU) 2018/1139).

The Swedish Transport Agency’s position is that tethered unmanned aircraft that are not covered by the EU regulatory framework should comply with the national provisions now proposed. However, this shall not apply to small tethered aircraft exempted by Article 2(3)(d) of Regulation (EU) 2018/1139. The Swedish Transport Agency therefore clarifies that such small aircraft that are exempted pursuant to Article 2(3)(d) shall not be covered by the proposed regulations.

Common to all tethered unmanned aircraft is that, when they may pose a danger to aviation, they may need to be marked. An information clause has therefore been added to the regulations, providing information about the provisions of the Swedish Transport Agency's regulations and general advice (TSFS 2020:88) on the marking of objects that may constitute a danger to aviation and on the reporting of flight obstacles. TSFS 2020:88 contains provisions on the marking of tethered balloons, kites and other similar objects.

3. What are the possible solutions?

UAS activities that are not adequately regulated pose security risks by potentially harming third persons or property, or restricting the privacy of persons. Safety risks also increase for those involved in the activity if risks are not adequately managed. Uncertainty about how the rules are to be applied creates room for misinterpretation. Without national regulation, there willl be more uncertainty than if regulation is put in place.

Large parts of TSFS 2017:110 are now out of date because the applicable provisions are instead contained in Commission Implementing Regulation (EU) 2019/947 and Commission Delegated Regulation (EU) 2019/945. There is thus a risk that it will be unclear for UAS operators, remote pilots and the public what rules they should follow, as parts of TSFS 2017:110 still apply, while in other parts the EU regulations apply instead.

The Swedish national provisions in TSFS 2017:110 for UAS activities that are exempted from the EU regulations[2] state that UAS that are not covered by EU regulations shall fly under special conditions specified upon application. The disadvantage of the system of special conditions issued upon application is that operators do not know in advance what conditions will apply to the activity.

Air Traffic Services (ATS)

In TSFS 2017:110 there is currently a grey zone when air traffic services are closed, which means that a UAS operator can then, without prior authorisation, fly in the immediate vicinity of the airport without by definition violating the rules. The grey zone needs to be rectified. According to previous proposals, unless otherwise specified by a geographical UAS zone, remote pilots needed to obtain permission from air traffic service even for flights outside opening hours. Following comments received, the Swedish Transport Agency has reformulated the proposal, taking into account the complex boundaries of responsibility that arise when the air traffic services are closed.

[2] Article 2(3)(a) of Regulation (EU) 2018/1139.

The previous proposal risked leading to the air traffic service not granting permission outside opening hours. Another important aspect highlighted is the need for emergency blue light activities outside the operating hours of the air traffic service organisation. The negative consequences of such a risk have been deemed to be too far-reaching. It is proposed that airports and ATS continue to be given the opportunity to apply to the Swedish Transport Agency to establish condition-specific geographical UAS zones that can be adapted to local conditions. The proposed regulation therefore continues to include the possibility of establishing a geographical UAS zone that can specify specific conditions that apply to flying in the vicinity of airports. In the future, there may be a need to investigate the issue more closely.

UAS geographical zones

If the regulations do not regulate UAS geographical zones, there is a risk that the UAS market will consider the current rules to be too restrictive. This could result in the operators ignoring the rules, which could result in an unmanned aircraft injurying or damaging the surrounding people or property, or in a collision between manned and unmanned aircraft. According to a 2021 report from the Swedish Police Authority, 4 500 UAS flights were detected in the Bromma control zone between May and August 2021. According to new data and statistics from the Swedish Police Authority from 2024, the number of UAS flights has increased.

According to information from Bromma ATS, they routinely reject all requests for permission to fly within the 5-kilometre limit due to traffic intensity and helicopter traffic, and instead refer UAS operators to fly below 50 metres altitude within the control zone (CTR) outside the 5-kilometre limit. This approach has likely contributed to a climate in which UAS operators have actively chosen to violate the regulatory framework as it stands today, which cannot be considered conducive to a sound aviation safety culture among this relatively new type of airspace user.

3.1 Alternatives that do not involve regulation

The assessment of the Swedish Transport Agency is that there are no alternatives to regulation. Safety in the air requires that aviation activities be regulated by legislation.

For those parts that do not require regulation by legislation, work is underway to provide information on the Swedish Transport Agency's website, e.g. FAQs and the preparation of a notice from the Swedish Transport Agency on aviation (MFL). For the other parts, regulation is deemed to be the only possible alternative.

In addition, there are sections in TSFS 2017:110 that must be repealed because they are no longer relevant, and this can only be done through regulation.

3.2 Regulatory alternatives

Option 1

According to Article 2(6) of Regulation (EU) 2018/1139, Member States have the option of opting in, i.e. requiring all national UAS activities to comply with applicable EU regulations. This alternative is not deemed appropriate, since Swedish national activities often have specific needs for which the EU rules are not adapted.

Option 2

Another option is to continue to state that nationally regulated air transport with UAS should follow targeted decisions on ‘aviation safety conditions’ instead of regulations. This is not considered appropriate, as it should be clear and predictable for operators, remote pilots and other citizens what applies. Especially for stakeholders who want to start activities, it must be clear what conditions and requirements the planned activities will be subject to.

Option 3

A third option could be for national regulations to state that provisions of EU regulations also apply, mutatis mutandis, to national aviation. This would mean that the rules are not adapted to the national activities. There are currently activities that cannot meet the requirements laid down in the EU regulations. Another problem with this option is that it becomes unclear which provisions of the regulations are applicable and which requirements apply.

Option 4

A fourth option could be to create separate regulations for different areas. For example, a national regulation that only applies to operational rules, another regulation for airspace provisions and an additional regulation with supplementary provisions to the EU regulation. However, we consider that it is more appropriate to group the provisions relating to activities with UAS in one and the same regulation in order to make it simpler and clearer for all parties involved.

Option 5

A fifth option is to create entirely new national regulations in a ‘umbrella statute’ and, as far as possible, base these on EU regulations and adapt and add provisions to take account of national needs.

We consider option 5 to be the most appropriate and have therefore chosen that option for the proposed regulations.

Description of the design of the regulatory framework based on option 5

Option 5 means that the regulations are compiled in a ‘umbrella statute’ divided into three parts.

- The first part contains common provisions for activities that are regulated nationally and supplementary provisions for activities covered by the EU rules.
- The second part contains supplementary provisions for activities covered by Regulation (EU) 2018/1139.
- The third part contains provisions for activities that are regulated nationally.

We believe that the requirements set out in the EU regulations are largely appropriate for nationally regulated UAS activities as well. It also makes it easier if the national provisions are similar to the EU provisions so that operators have similar requirements to comply with, regardless of whether they comply with national regulations or EU regulations. It must be clear to operators who are to apply national regulations what applies to the activities they will be carrying out. In Chapters 4–7 of the draft regulation, we have specified which rules apply to the activities exempted by Article 2(3)(a). In some cases, such as in Chapter 2, completely new rules on UAS geographical zones also need to be specified. We also believe that it will be easier and clearer for all parties to have provisions related to UAS activities assembled in one single regulation.

The UAS industry is developing rapidly and there may be new forms of activities on the market. In order to enable new forms of activity that do not fit into the proposed regulations, the authority retains the option of granting exemptions from the requirements. There is also the possibility to provide for new requirements if existing provisions are unsuitable.

Summary

Option 1 means that under Regulation (EU) 2018/1139, a Member State may decide to opt-in for activities exempted by Article 2(3). However, this would have the consequence that Sweden would not be able to adapt the rules to the specific needs of the activities in question. The possibility of easily granting exemptions that would apply until further notice for very specific needs would then be reduced. By not making an 'opt-in' for this segment, Sweden will have greater opportunities to adapt requirements for the needs of nationally regulated activities.

Options 2 to 4 above have also been discarded. With those options, there is a risk that the lack of clarity will increase, that the rules will not be fully adapted to the needs, and that the rules will be spread across different regulations.

Compared to options 2–4, we consider option 5 to be the most suitable. This provides an 'umbrella statute' with three main areas. This clarifies the requirements for the user. In addition, Sweden retains the option of tailoring the requirements in certain areas, which would not be possible if any of the other alternative solutions described above were to be implemented.

4. Who will be affected?

In principle, all those present in Sweden are affected by the activities with unmanned aircraft. Even those who do not intend to fly an unmanned aircraft themselves may be affected. This possible impact is described in the 'citizens' paragraph under Section 5.

The regulation concerns professional and non-professional operators and remote pilots flying UAS.

In particular, the following are affected by the intended regulation:

- authorities carrying out UAS activities;
- the Armed Forces[3];
- private individuals using UAS;
- companies and organisations using UAS;
- model aircraft clubs and associations and members of the clubs and associations;
- organisations providing air traffic services;

[3] The Swedish Armed Forces are not directly affected by the Swedish Transport Agency's rules, but are affected as they must relate to, and interact with, civil traffic.

- general aviation, commercial air transport and other airspace users; in particular, operators operating at low altitudes with helicopters or aeroplanes.

5. What are the impacts of the regulation?

5.1 Businesses

(x) The regulation is not deemed to significantly impact the working conditions, competitiveness or other conditions of enterprises. All consequences for companies are therefore described under 5.1.

( ) The regulation is deemed to significantly impact the working conditions, competitiveness or other conditions of companies. Therefore, the impact assessment does not contain a description under 5.1; instead, all consequences for companies are described in Section C.

The common rules in Chapters 1, 2 and 3 are not expected to have a significant impact on businesses, as they involve minor changes in relation to the current provisions of TSFS 2017:110. However, the effects that should be highlighted arise in cases where controlled airports, together with air traffic control, intend to establish UAS geographical zones. By establishing such zones, airspace and capacity can be released. This is to enable certain UAS operational scenarios that are currently not possible due to local conditions. The possibilities offered by UAS geographical zones should also be viewed in light of the fact that the Swedish Transport Agency has reformulated the proposal that a remote pilot must obtain permission from air traffic control organisations during their normal opening hours when a remote pilot intends to carry out activities outside the air traffic service organisation's opening hours. To address the risk environment that arises when an air traffic service closes, airports and air traffic service organisations have the option of establishing UAS geographical zones in control zones.

Such establishment is done by applying to the Swedish Transport Agency and is subject to a fee based on the hourly cost of processing the application. Airports and air traffic service organisations need to familiarize themselves with the disadvantages and advantages of the intended UAS geographical zones, especially in view of the fact that there are still no obstacles to carrying out UAS activities directly adjacent to the airport when air traffic services are closed. Disadvantages include the time and cost involved in both the application and resource allocation processes, as well as any changes to functional systems and associated flight safety assessments. The advantages are that the concept of UAS geographical zones helps to free up the capacity and resources of air traffic services and airports, by managing

and disposing of the risks locally, so that more efficient resource utilisation can be used to promote aviation safety for both manned and unmanned aviation. Locally adapted UAS geographical zones in control zones that address airspace risks are also expected to have positive effects on regulatory compliance for UAS users. It also ensures that control zones are better prepared for the implementation of the U-space concept.

By introducing rules on UAS geographical zones, the regulations for airports and air traffic services allow, taking into account local conditions, topography, urban environments and traffic flows, to define themselves UAS geographical zones within control zones where flights with certain UAS may take place under certain conditions, such as how flights outside the airport's opening hours may take place or to which heights a UAS may be flown in the vicinity of the airport without the need to obtain a permit. The procedure is also assessed for future-proof control zones for the implementation of the U-space concept and the application of dynamic airspace reconfiguration. It is also important to understand that UAS geographical zones are scalable, meaning that they can be shaped to suit a specific user category, scenario or only certain UAS, for example, open category, UAS up to a specific weight and only UAS equipped with certain technical systems such as geospatial awareness and remote identification.

Rules for flying within 1 000 metres of airports that are not surrounded by a control zone (CTR) or flight information zone (FIZ) and ATZ airspace have also been clarified and accompanied by general advice on what is meant. The intention is to cooperate, and the rule does not give the airport the authority to approve or reject a planned drone flight. Airports that are not surrounded by a control zone (CTR) or flight information zone (FIZ) are now also covered by the requirement, which, for example, gives flying clubs the opportunity to collaborate with remote pilots and share information with each other that can promote flight safety. The supplement is deemed to have a positive impact on aviation safety and no additional costs are deemed to be associated with the supplement. However, it should be taken into account that at certain airports that are not surrounded by a control zone (CTR) or a flight information zone (FIZ), there may be limited experience in interacting with remote pilots, which could mean local differences in handling procedures. These differences are likely to be minimised with the help of the general advice to Chapter 2, Section 8.

We assess that competitiveness will remain unchanged for businesses, as the provisions concerning UAS flights near airports have not changed significantly in the proposed regulations.

The provisions in Chapters 4-7 are not considered to be of significance for businesses, since they target activities exempted under Article 2(3)(a) of

Regulation (EU) 2018/1139, primarily public authorities. The impact on public authorities is described in more detail in Section 5.3.

The proposed regulations indirectly affect operators operating at low altitudes with helicopters or aeroplanes, as it will become easier for nationally regulated UAS activities to operate. As a result, there may be more operators operating in the same airspace.

5.2 Individuals

Citizens flying with UAS are primarily affected by Chapters 1, 2 and 3 of the proposed regulations. Chapters 4–7 apply only to activities exempted under Article 2(3)(a) of Regulation (EU) 2018/1139, i.e. primarily authorities engaged in other aviation for State purposes.

With the proposed regulations, it becomes clearer what rules apply to citizens using or flying with UAS. The outdated parts of TSFS 2017:110 are repealed and the national rules that still apply, including airspace regulations, are clarified. Citizens will benefit from more performance-based rules in terms of fairer access to airspace. In practice, this means that the 5 km limit and altitude restrictions currently applicable may be modified to take account of local conditions at controlled airports and for air traffic service units. It will be possible to regulate flight operation conditions with area-specific conditions in terms of distances, altitudes, weight classes, speed, safety systems on board UAS, time restrictions and what applies outside the airport's opening hours. The proposed regulations also mean a simpler transition to the U-space concept in the future.

All citizens are affected by the proposed regulations through the aviation safety enhancing effect that it entails with clear rules and requirements for flying with UAS. These further strengthen and clarify the rules for flying with UAS in Swedish airspace compared to TSFS 2017:110. Since the UAS activities carried out by, among others, the Swedish Police Authority and the Swedish emergency services generally take place in close proximity to people, it is important to have clear boundaries for the activities that can protect personal integrity. However, when it comes to protection of personal integrity, there are other rules and regulatory frameworks that regulate this in more detail.

Model flying clubs and model flying associations

TSFS 2017:110 contains requirements for how model flying clubs and model flying associations can apply for permits for their intended activities. These provisions have been transferred to the proposed regulations. The main rule is that the flight altitude with UAS in club or association activities is limited to a maximum of 120 metres, but after application to the Swedish

Transport Agency, such organisations can be granted a licence to conduct flights at higher altitudes.

The age requirements for operators remain unchanged, as the existing requirements in TSFS 2020:55 are transferred to these regulations, while the statute is repealed.

5.3 The State, regions or municipalities

State authorities, regions and municipalities will be affected by the proposed regulations, in particular those that carry out or will carry out activities with UAS. At present, the Swedish Maritime Administration, the Swedish Police Authority, the Swedish Coast Guard and the regional and municipal emergency services carry out UAS activities. Since, according to TSFS 2017:110, operators are to comply with flight safety conditions, the proposed regulations do not entail any additional work or costs for those who do not carry out UAS activities today. Rather, they simplify matters by clarifying the rules and conditions that must be followed and compiling them in a single regulation. Further down, we have explained and attempted to estimate the costs that an operator may incur as a result of the new regulations.

The new regulations will initially entail increased time and costs for state, regional and municipal operators, as they will need to familiarise themselves with the new rules and adapt their activities and manuals accordingly.

As regards administration, and specifically the processing and issuing of decisions on aviation safety conditions, the application process will be simpler for the activities. If air and ground risk are low on flight, it is sufficient to submit only one national open category notification before commencing activities. If the risk is higher, an application for a special decision for a national specific or national certified category must be made and approved before the activity commences. As far as possible, this application procedure has been simplified and standardised.

In comparison with TSFS 2017:110, the regulations for nationally regulated UAS operators have become more detailed. Clearer and more detailed rules are expected to simplify matters in the long term for organisations conducting UAS activities in accordance with national rules.

With regard to increased or reduced workload, in most cases a need for training is foreseen in the new rules. Training initiatives will likely be needed for, among other things, the preparation of risk analyses, manuals and opportunities with UAS geographical zones as tools for creating area-specific rules that are locally adapted to ground and airspace risks and local conditions.

The need for information for these organisations is expected to increase as our new rules are largely function-based and therefore place higher demands on the target group than before. Since the rules in their design are very similar to the European regulations governing other UAS activities, the guidance material, AMC/GM, published by EASA can often be used as support for the application.

The activities need to be adapted to the new regulations. The changes are not significant, but they still need to be learned and described. The Swedish Police Authority, the Maritime Administration, the Coast Guard, the National Accident Investigation Board and the emergency services comprise approximately 150 organisations. We estimate that around 60 organisations are affected and need to adapt their activities to the new regulations. The working time cost is estimated at SEK 700/h and the alternative cost[4] at SEK 1 400/h. SEK 1 000 is used as the average value for the estimated cost.

According to a rough estimate, the organisations concerned will need to spend an average of 40 hours learning the new rules and adapting their instructions to the proposed regulations. Some organisations may need to spend more time, others less. 60 organisations × 40 hours × SEK 1 000 give an estimated total cost of SEK 2.4 million. Since the organisations involved are very different in their complexity, it is difficult to make a precise assessment of the costs of implementation. After the initial costs of adapting to the new requirements, running costs are deemed to be comparable to the running costs resulting from the previous regulation.

Not all of the approximately 150 organisations mentioned above will conduct UAS activities. We estimate that approximately 60 additional organisations will commence UAS activities in the coming years. For these organisations, we assess that the new regulations will not entail any additional costs in relation to TSFS 2017:110.

We have nevertheless made an estimate of the cost for an operator starting UAS activities. For organisations that do not already have UAS activities, the costs depend on how experienced the personnel are. If staff are employed from organisations that already conduct nationally regulated UAS activities, fewer hours are likely to be required. As the proposed regulations largely replicate EU rules, this is likely to also apply to staff who have previously carried out similar activities. For completely new staff, we estimate that the average time needed to familiarise themselves with the activities, read the rules and describe the activities in the organisation's manuals is four working weeks (160 hours). The estimated cost thus amounts to SEK 60 × 160 × 1 000 = SEK 9.6 million.

[4] Opportunity cost is the income that a business could otherwise generate during the time spent on a matter with the authority.

5.4 Environment

Society is currently seeing explosive growth in services performed with UAS. The increased use of UAS may have both positive and negative effects on aviation safety and the environment. The proposed regulatory framework itself is unlikely to entail any direct change in environmental impact compared to today's TSFS 2017:110. On the other hand, the trending use of drones may have a positive impact on the environment. When drones that are not powered by conventional combustion engines are developed and can replace traditional aircraft, this could have a positive impact on the environment.

The technical development of UAS and the requirements to use newer unmanned aircraft that meet higher technical requirements can also have a positive impact on the environment.

The current regulations TSFS 2017:110 do not address noise issues. Flying UAS near people and animals can generate annoying and disturbing noise. The new regulations introduce clearer requirements concerning distances to both people and buildings even for operators not covered by the EU regulations, which should have a positive impact in terms of noise nuisance. Since there is currently insufficient knowledge on noise annoyance, it is important to follow this development. If necessary, and if existing provisions are not deemed sufficient, it may be necessary to review whether new requirements should be introduced into the appropriate regulatory framework.

There are also provisions requiring remote pilots and operators to minimise the risk of noise.

The national rules provide for the possibility for organisations carrying out essential activities to fly unmanned aircraft closer to crowds where necessary than is possible for operators in the specific category under Regulation (EU) 2019/947. It is then important to set the risk of disturbances in the form of noise, for example, in relation to the societal benefit of being able to monitor or take action. This is done by requiring the operator to carry out an extended risk assessment.

5.5 Externalities

The proposed regulations aim to clarify the rules governing UAS activities, thereby reducing the risk of accidents and minimising disruption to people and the environment by ensuring that all operators work within a regulated system. The currently proposed regulations supplement and clarify the rules already in force in the EU regulations and replace TSFS 2017:110. One consequence of the successful integration of all drone flights in Sweden is that the regulations governing socially beneficial services improve

protection against third parties, both on the ground and in the air. Both the risk of being injured by a malfunctioning drone and the risk of being exposed to unnecessary noise are considered to be reduced. One effect of the regulations is that efforts by the organisations concerned can become more effective. For example, UAS flights over a fire or accident site can be conducted without being disturbed by other traffic.

6. Summary of options considered and why the draft regulation is considered the best option

The options are described in Section 3 above. The following is a description of the consequences of the alternatives under consideration:

Option 1

The consequences for Option 1, to opt in, would be that Sweden would not be able to adapt the rules to the specific needs of the activities in question. This would reduce the possibility of adapting current and future rules to national needs or restrictions. The possibility of easily granting exemptions that would apply until further notice for very specific needs would then also decrease. By not making an opt-in for this segment, Sweden will have greater opportunities to adapt requirements for e.g. the Swedish Police Authority, the Swedish Coast Guard and the needs of emergency services.

Options 2–4

The impact of Option 2 would be to increase regulatory ambiguity. For Option 3, the rules would not be fully tailored to the needs of the activities. For Option 4, the rules would be spread across several regulations.

Option 5, the selected option

Our assessment is that Option 5 is the most appropriate. This provides an ‘umbrella statute’ with three main areas. This clarifies the requirements for the user, who does not have to keep track of several different pieces of legislation. The chosen approach increases clarity for the target groups, while Sweden retains the ability to tailor the requirements in certain areas to national needs.

7. What authorisations form the basis for the authority's decision-making powers?

The authorisations are set out in Chapter 1, Sections 6 and 22; Chapter 6, Sections 10, 11 and 13; and Chapter 14, Section 16 of the Aviation Ordinance (2010:770) and Section 15 of the Ordinance (2006:311) on the transport of dangerous goods.

8. Are the regulations consistent with the obligations arising from EU law or other international regulations, or does it exceed them?

The regulations in question consist of three parts. The first part contains provisions that apply both to activities that are regulated nationally and to activities covered by the EU regulations and which, for EU-regulated aviation, supplement Implementing Regulation (EU) 2019/947. The second part contains supplementary provisions that apply only to EU-regulated activities. The third part contains provisions that apply to activities that are nationally regulated and are largely similar to Regulation (EU) 2019/947.

We consider that the proposed regulations are consistent with applicable EU legislation and other international regulations.

Our assessment is that the regulations need to undergo the notification procedure under Ordinance (1994:2029) on Technical Rules.

9. Does special consideration need to be given regarding the date of entry into force, and is there a need for special communication initiatives?

The regulatory work on new national regulations has been delayed. It is important that supplementary regulations are published as soon as possible. Regulations (EU) 2019/945 and (EU) 2019/947 on UAS activities apply since 31 December 2020. The intention is for the new national regulations to be published in spring 2026 and to enter into force in autumn 2026.

The target group for these national regulations are, on the one hand, professional operators, but also private users of UAS. Since even smaller UAS are covered by the rules, the target group is large. During the final phase of the regulatory work, we have had contact with representatives from the Swedish Police Authority, the Swedish Coast Guard, the Swedish Maritime Administration, the Civil Defence Authority[5], the Swedish Accident Investigation Authority and a selection of municipal emergency services. Information campaigns targeted at businesses and the general

[5] Formerly the Swedish Civil Contingencies Agency

public will also be needed. Information will be dealt with in a separate sub-project.

M. Fulfilment of transport policy objectives

The overall goal of Swedish transport policy is to ensure a socio-economically efficient transport provision that is sustainable in the long term for both citizens and businesses all over the country. The overall goal also includes performance goals and health, environment and safety (HES) goals with a number of prioritised areas.

The performance goal is to create accessibility for people and goods. The design, functioning and use of the transport system shall help to provide everyone with basic accessibility of high quality and usability, as well as contributing to development throughout the country. At the same time, the transport system must be gender-equal, which means it should respond to the transport needs of both men and women in equal measure.

The HES goal concerns health, environment and safety. The design, functioning and use of the transport system shall be adapted to ensure that no one is killed or seriously injured. It shall also contribute to the overall generational goal for the environment and to the attainment of the environmental quality goals, as well as helping to improve health.

10. How does the regulation affect the performance goal?

The regulation may affect the safety and comfort of the general public when travelling. The term ‘security’ also includes safety vis-à-vis other aircraft. The risk of injury to third persons on the ground or in the air by a malfunctioning drone should be reduced with the proposed regulations.

Passenger transport with UAS is outside the scope of the regulation. The development of UAS activities is progressing quickly and the number of drones in the airspace is increasing. Trials of freight transport are already taking place.

It is important to have regulations that enable safe interaction with traditional aviation. Clearer regulations can reduce interference from UAS on other air traffic and thus contribute to the performance objective.

11. How does the regulation affect the HES goal?

By providing public support functions such as the Swedish Police Authority and emergency services with clearer rules and conditions for their activities,

the possibilities for effective and safe operations are improved and the risk of damage and injury is reduced.

As regards the environmental quality objectives, UAS activities in general, where otherwise traditional aviation would be used, are more energy efficient. Regardless of the power source, a smaller and lighter drone is more energy efficient than an equivalent aircraft or helicopter. The proposed regulation is not written with this in mind, although this difference is worth pointing out. At present, it is unclear how the environmental quality objectives for noise are affected, since there is insufficient knowledge of noise annoyance to humans from UAS activities. The future scope of the activities is also unknown at this time.

N. Companies

The regulation is not deemed to significantly impact the working conditions, competitiveness or other conditions for companies. All consequences for companies are therefore described under Section 5.1.

O. Summary of consequences

Affected party	Impacts that cannot be quantified		Quantified impact (SEK thousands)	Comments
	Advantages	**Disadvantages**	**+ / -**	
Companies	Clearer rules for operations near airports and in protected airspace	Changed regulatory framework to learn and adapt to (Chapter 2)	1 000	No significant impact on private companies.
Citizens	Clearer rules for operations near airports and in protected airspace Model flying clubs/model flying associations	Changed regulatory framework to learn and adapt to (Chapter 2) Chapter 7	1 000 0	The changes are not significant, but they still need to be learned. Not new rules, only transferred from TSFS 2017:110
The State, et al.	Clearer rules enable more effective management of air/ground risks during rescue, firefighting, accident, search and investigation operations.	New regulatory framework to learn and adapt to (Chapters 3-6)	12 000	— Clearer and more effective rules compared to TSFS 2017:110 — Activities need to be adapted in accordance with the new regulations. The changes are not significant, but they still need to be learned and described. The background to the estimated cost is described in Section 5.3: 2 400 000 + 9 600 000 equals approximately 12 000 000 Swedish kronor
Externalities	Reinforcements and clarifications compared to the current regulation		0	The externalities of the new regulation are negligible.
Total	-------	---------	SEK 14 000 000	---------

P. Proportionality of the draft

The aim of the new regulations is to maintain a high level of safety in aviation by harmonising as far as possible with existing EU regulations. In addition, clarification of national regulations for unmanned aircraft is sought. The proposed regulations do not mean that more UAS users are covered than before. The regulations impose more detailed requirements on existing and future operators of unmanned aircraft. This contributes to greater clarity but may in some cases lead to increased effort to demonstrate compliance.

The revised provisions are considered necessary to ensure a high level of aviation safety in unmanned aviation. The costs arising from the proposal are necessary to achieve this objective.

Q. Follow-up and evaluation

The Swedish Transport Agency reviews compliance with regulations in connection with licensing and supervision, which means that deviations can be detected. Three years after entry into force, all operators are deemed to have transitioned into compliance with the new regulations and to have carried out operations in accordance with them for at least one year. An evaluation can then be carried out among operators covered by the regulations to follow up on the consequences of the proposal. Individuals and organisations also have the opportunity to submit suggestions for improvement or other proposals.

R. Consultation

Chapter 14, Section 16 of the Aviation Ordinance states that, after consulting with the relevant authorities that conduct other aviation for state purposes and taking into account Chapter 14, Section 7 of the Aviation Act (2010:500), the Swedish Transport Agency may issue regulations on other aviation for state purposes.

During the work on the proposed regulations, informal briefings have been made with representatives of the Swedish Police Authority, the Swedish Maritime Administration, the Swedish Coast Guard, the Swedish Accident Investigation Authority, the Swedish Civil Defence Authority and a selection of municipal emergency services. In connection with external consultations, consultation with the relevant authorities is carried out in accordance with Chapter 14, Section 16 of the Aviation Ordinance. Consultations are also carried out with the armed forces in accordance with Chapter 1, Section 7.

The Airspace and Airports Dept. and the Air Traffic Services Dept. have been involved in the transfer of the common airspace regulations from TSFS 2017:110. Reconciliations have been made on an ongoing basis with other affected departments of the Swedish Transport Agency.

If you have any questions regarding the impact assessment, or any opinions you would like to share, please contact us:

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