In response to information provided by the competent authority, any factual error noted in the draft report has been corrected; any clarification appears in the form of a footnote.
Executive Summary

This study visit took place in Denmark from 29 November to 2 December 2016 and is the third one from DG Health and Food Safety in the context of the activities aimed at reinforcing the animal health emergency preparedness systems in the European Union. Its main objective was to allow national experts from the Czech Republic, Croatia, Poland and Romania to observe and learn from the strategies adopted in Denmark to ensure that a satisfactory animal health emergency preparedness system is in place, and to identify good practices and consider how these might be incorporated into their country’s strategies in that respect. This study visit focused on provisions and practical arrangements with regard to the development of contingency plans and implementation of an effective response to large-scale animal disease outbreaks.

The national experts had the opportunity to understand the rationale behind the recent improvements in the animal health emergency preparedness system in Denmark that aim to optimise the capability to respond to large-scale disease outbreaks. They highlighted the practical relevance of the information discussed during the study visit and of the lessons learned for the development of their own systems, while emphasising that it could be difficult to replicate certain actions in their countries.

The Danish animal health emergency preparedness system was improved after reaching technical and political agreements on the objectives and steps forward to pursue, in close cooperation with the industry, and with the support of the Danish Emergency Management Agency.

The review process followed by the Danish authorities identified costs and losses associated with the various disease prevention and eradication measures put in place by both the industry and by them. They also used sophisticated decision-support tools based on modelling and analysed the possible results and their impact on the wider economy.

To improve their preparedness, Denmark focused on and reinforced the early detection system for exotic animal diseases and enhanced the capacity to deploy an effective early response to disease outbreaks. The latter was facilitated by the Danish Emergency Management Agency which, in addition to providing training on crisis and incident management, adapted their expertise in those areas to the specific nature of animal health crises.

The experts that attended the study visit found the approach followed by Denmark particularly helpful. The exposure to the details of the review and analytical process that defined the areas to be reinforced in the Danish system drew their attention to the importance of understanding the contribution of each component of the system to its overall functioning, so that informed decisions can be taken to prioritise investments and to target efforts. The experts considered that approach very enlightening and relatively easy to implement.
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# Abbreviations and Definitions Used in This Report

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<tr>
<td>DEMA</td>
<td>Danish Emergency Management Agency</td>
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<td>DVFA</td>
<td>Danish Veterinary and Food Administration</td>
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<td>EU</td>
<td>European Union</td>
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1 INTRODUCTION

The study visit took place in Denmark from 29 November to 2 December 2016 and is the third one from DG Health and Food Safety in the context of the activities aimed at reinforcing the animal health emergency preparedness systems in the European Union (EU).

The study group comprised one member of the Commission services and a national expert from each of the following Member States: the Czech Republic, Croatia, Poland and Romania. The study group was accompanied throughout the visit by representatives of the Danish Veterinary and Food Administration (DVFA), which is the Central Competent Authority in Denmark for the scope of this study visit.

2 OBJECTIVES AND SCOPE

The main objective of the study visit was to allow the national experts to learn from the strategies adopted by, and the practical arrangements in place in Denmark with regard to development of contingency plans and implementation of an effective response to large scale animal disease outbreaks, to identify good practices and to consider how these might be incorporated into their country’s strategies in that respect.

In terms of scope, this study focused on the provisions and practical arrangements that enable the animal health emergency preparedness system in place in Denmark to deploy an early and effective response to large scale outbreaks of animal diseases[^1], in particular of foot-and-mouth disease and classical and African swine fever.

The study visit took place in agreement with the Danish competent authorities. Full legal references are given in Annex 1. Legal acts quoted in this report refer, where applicable, to the last amended version.

In pursuit of the objective the following meetings were held and sites visited:

<table>
<thead>
<tr>
<th>Meetings/Visits</th>
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<tr>
<td>Competent authority</td>
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<td>Central</td>
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<td>Animal Health Division within the DVFA and with staff of other related</td>
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<td>policy Divisions.</td>
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<td>Regional</td>
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<td>development, planning and operation of the animal health emergency</td>
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<td>preparedness system.</td>
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<td>Other authorities/</td>
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<td>Meeting in one of the regional headquarters of the Danish Emergency</td>
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<td>delegated bodies</td>
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<td>Management Agency.</td>
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<td>Laboratories</td>
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<td>Meeting in one of the branches of the National Veterinary Institute, the</td>
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<td></td>
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<td>national reference laboratory for infectious animal diseases.</td>
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[^1]: As indicated, for instance, in Article 72 (point 3) of, and Annex XVII (point 12) to Council Directive 2003/85/EC, on Community measures for the control of foot-and-mouth disease, and often referred to as ‘worst case scenarios’. 
3 BACKGROUND

3.1 RATIONALE BEHIND THE STUDY VISIT

Between 2012 and 2015 DG Health and Food Safety carried out a series of audits in Member States that aimed to evaluate the fitness for purpose of surveillance systems for the early detection of exotic and re-emerging animal diseases, and the suitability of the animal health emergency preparedness systems to respond promptly and effectively to contain outbreaks of those diseases.

One of the main conclusions of those audits was that most Member States have taken important steps forward in recent years to prepare largely adequate contingency plans in accordance with EU guidelines and requirements, and to make arrangements to enable their effective implementation. Nevertheless, the Commission services identified, during those audits, a number of areas where additional efforts had to be made by a number of Member States in order to reinforce some of the operational components of their animal health emergency preparedness systems.

One of the areas singled-out for further improvement was the need to be ready to anticipate the challenges associated with the deployment of an effective early response to large scale animal disease outbreaks in compliance with EU legal requirements. In those cases, competent authorities may be confronted with situations that require a soundly informed decision-making process in order to select the most suitable control and eradication strategies within short deadlines.

For instance, this is particularly important when decisions have to be taken in relation to the use of emergency vaccination for foot-and-mouth disease or classical swine fever, as the complexity of the arrangements to apply that option in practice, and the evaluation of the wide economic impact that its use may involve, need to be carefully weighed up in advance. Therefore, the Commission services considered it appropriate to contribute to increasing the co-operation and communication between the competent authorities of Member States in order to improve their level of preparedness with respect to the area selected for this study.

3.2 SELECTION OF THE PARTICIPATING MEMBER STATES

The hosting Member State for this study visit was selected on the basis of the knowledge acquired in recent years in relation to the activities carried out by the DVFA to streamline the level of animal health emergency preparedness in Denmark. Information in that respect has been published extensively², and it has also been presented to the Commission services and

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² See, for instance:
- Halasa, T.; Willeberg, P.; Christiansen, L. E.; Boklund, A.; AlKhamis, M.; Perez, A; Enøe, C. 2013.
the other Member States during the three Workshops organised by DG Health and Food Safety on that matter between 2013 and 2015.

The other participating Member States were selected on the basis of a number of relevant factors:

- Their animal health emergency preparedness systems have not been audited by DG Health and Food Safety during the series of audits mentioned in the previous section. Therefore, the exposure to potential good practices in Denmark with respect to the areas proposed for this study visit, and those possibly brought in to the discussions by them; were considered worth being shared in this context.

- In addition, a number of potential structural weaknesses had been identified in some of those Member States in the context of other audits carried out in the animal health area by DG Health and Food Safety; e.g. underdeveloped contingency plans and operations manuals, information management systems and decision-support tools and processes, and cooperation arrangements with other emergency preparedness organisations.

- The competent authorities of the four Member States had expressed their interest to the Commission services in participating in this initiative and the general structures of their animal health emergency preparedness systems appeared suitable to try out this type of study visit in Denmark.

### 3.3 Format of the Study Visit

In order to facilitate the familiarisation of the national experts with the DVFA, and with the animal health emergency preparedness system in Denmark, they were provided with a compilation of the key information for Denmark used by DG Health and Food Safety to support its control and monitoring activities, as described in the country profile for that country. The country profile has been last updated in May 2015 and it is publicly available through the following link:

http://ec.europa.eu/food/audits-analysis/country_profiles/details.cfm?co_id=DK

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Further to that, the DVFA introduced during the opening meeting of the study visit the following topics:

- Organisation of the DVFA and update on the general structures of the animal health emergency preparedness system in Denmark.
- Distribution of animal populations in Denmark.
- Relevant legal and administrative issues in relation to the topics covered by the scope of the study visit – the responsibilities of the national and regional levels of the DVFA, specific arrangements at regional level (e.g. cooperation with other authorities and with the industry in the event of an animal health crisis).
- Expertise available and applied research applicable to the topics covered by the scope of the study visit.

In addition to that, the main organisational features of the study visit included:

- The national experts were invited to prepare a short presentation for the opening meeting where they identified those specific areas where they, and the systems in place in their countries, could benefit from participation in this initiative.
- Staff from the Animal Health Division of the DVFA made available to the national experts, comprehensive information on the organisation and operation of their animal health emergency preparedness system, which has been significantly reinforced after an internal review carried out in 2014.
- The study was conducted in a very open and transparent manner which led to constructive discussions where knowledge and experience with the solution to specific problems related to the areas under consideration were extensively shared.
- Short daily de-briefings took place at the end of each day to review the main points discussed and further clarify each national expert’s impressions on the specific aspects considered more relevant for them, and the reasons why that was the case.
- During the closing meeting of the study visit, each national expert provided a brief presentation summarising the issues they found more interesting or useful, in accordance with the programme of the study visit and with what they had highlighted as their main expectations.

4 OUTCOME OF THE STUDY VISIT – TOPICS DISCUSSED AND CONSENSUS REACHED

4.1 GENERAL ORGANISATION OF THE STUDY VISIT

1. The four national experts indicated the benefit of being requested immediate feedback; i.e. before the end of the visit, on the added-value of the areas under discussion. In their view, this encourages them to be more involved in the discussions throughout the study visit and to quickly analyse and select the possible benefits they can extract from them.
2. The Danish authorities and the participating experts indicating that the fact that Commission services would follow up on the outcome of this visit made them more accountable for the translation of the good practices identified into feasible actions that can be applied to reinforce those systems.

3. The study visit increased the mutual knowledge between the participants, including the hosting Member State, on each other’s organisational structures, and strategies and systems in place for animal health emergency preparedness. All participants undertook to keep on exchanging information and details on a number of options and arrangements for the areas studied that each of them identified as most suitable for their own systems.

4. National experts appreciated the opportunity to be exposed to a highly developed animal health emergency preparedness system, and to learn about, and understand the underlying principles that have driven the setting up of the system in Denmark. All of them singled out a number of development options and practical arrangements from the Danish system that could be suitable for the reinforcement of their own systems. Upon reception of the draft of this report, three of the national experts provided an update on the actions planned in their respective countries on the basis of some of those options and arrangements.

4.2 TECHNICAL ASPECTS RELATED TO PREPAREDNESS TO RESPOND TO LARGE ANIMAL DISEASE OUTBREAKS

5. In Denmark, there is close cooperation between the DVFA and the animal production sector. As a large exporting country, the industry considers a priority the early detection and management of any disease outbreak that may disrupt trade. As a result, there is a high level of cooperation with regard to disease surveillance and industry representatives have increased their influence on political decision-makers to emphasise the importance of making adequate resources available to reinforce the animal health emergency preparedness system in place.

6. The national experts pointed out that the level of cooperation with the industry in their respective countries was not so favourable, with significant gaps to overcome in that respect, in particular in relation to the transfer of surveillance responsibilities to the production sectors.

7. They found particularly helpful – and relatively easy to implement – the approach followed by the DVFA to meticulously identify, and highlight the costs and losses associated with the various disease prevention and eradication measures put in place by both the industry and by them.

8. The main areas highlighted in that respect were the high costs associated with cleaning and disinfection of trucks when animals are moved within Denmark or when the trucks return from other countries, official farm inspections carried out by DVFA staff, and the increasing investment in biosecurity measures. They praised the fact that those data have been used to underline the contribution, or otherwise, of both the industry and the
public administrations to the process, and to provide better information on the transparent rationalisation of public expenditure in this area.

9. For the DVFA excellent emergency preparedness in the animal health and food safety areas is one of their main priorities. In order to prioritise efforts in this area, the DVFA has carried out in recent years an evaluation of the cost-effectiveness and the fitness-for-purpose of the animal health emergency preparedness system in place in Denmark.

10. The DVFA carried out a comprehensive analysis of the potential animal health risks for the Danish livestock industry, including identification of possible scenarios for large disease outbreaks. For that, the DVFA used sophisticated decision-support tools based on modelling. Their results describe what may happen in the event of outbreaks of foot-and-mouth disease, classical or African swine fever, and what impact those scenarios could have on the wider economy. Those scenarios were presented to, and discussed in detail with top management within the DVFA and at political level with the Ministry of Environment and Food.

11. The national experts considered the initiative described above as an example of good practice and an ideal option, in particular due to the good quality of the data used. Staff from the DVFA and the associated animal health researchers could use a vast array of sources of data and information that allowed them to improve significantly the accuracy and fitness-for-purpose of the models proposed to anticipate the evolution and consequences of animal disease outbreaks.

12. The stepwise development of the animal health emergency preparedness system in Denmark has a high level of transparency. The national experts underlined the difficulties to extrapolate that model to their countries, as it would be very difficult for them to get the same level of quality data, and that would impair the possible cost-effectiveness of such initiative.

13. As a result of the models developed, DVFA focussed on and reinforced the early detection system for exotic animal diseases. The main components of the system singled out were: a) the need to target awareness campaigns, to ensure that initial signs of the diseases were identified and, mainly, quickly reported to the DVFA, b) a better distribution of active surveillance efforts, so that focus is transferred to areas with a higher risk of introduction of a particular disease, c) to enhance diagnostic capabilities to ensure that a quick diagnosis contributes to speeding up the deployment of further actions, and d) to increase the potential laboratory capacity for cases where surveillance activities consequent to the expected size of the outbreak and to the expected number of samples to be tested could be more demanding.

14. Another area DVFA prioritised in order to limit the impact of an outbreak was the quick elimination of as many sources of infection as possible and the prevention of its spread. The components singled out were: a) the need for an immediate standstill for animal movements nationwide, b) a quick deployment of killing teams, and c) the upscaling of biosecurity practices and disease surveillance activities in protection and surveillance zones.
15. The DVFA concluded that resorting to emergency vaccination for foot-and-mouth disease as a primary strategy did not make sense for Denmark. They based that on the anticipated effects of enhancing the functionality of the components mentioned coupled with the estimated economic impact of trade restrictions resulting from the use of vaccination. According to the analysis carried out, the main contributing factor to make that alternative unsuitable for the anticipated scenarios was the delay expected in getting adequate (e.g. strain matched) and ready-to-use foot-and-mouth disease vaccines, which would most likely take a minimum of 14 days.

16. Two of the national experts had recently experienced a situation where an informed decision had to be taken in relation to vaccination of a susceptible large animal population (for lumpy skin disease). They stressed the importance of the lessons learned from evaluating the options they had to prepare, and in the case of one of them apply, for that vaccination campaign.

17. The national experts conceded that their systems had not gone as far as evaluating the factors that would modulate the decision-making process in the event of an outbreak of foot-and-mouth disease. They indicated that they did not carry out any desk-top analysis or any simulation exercise to anticipate that process. However, their respective countries had made general arrangements to incorporate that option in their contingency plans for foot-and-mouth disease and classical swine fever, and in the event of an outbreak, they would request assistance from the Commission to help taking that decision and to obtain the adequate vaccine.

18. The initiative carried out by the DVFA drew the experts' attention to the complexity of the process and to the importance of anticipating as much as possible their options to tailor the control and eradication alternatives to the possible evolution of an outbreak in their respective epidemiological and disease control environments. The national experts valued the far-reaching analysis made – including the pedagogical dimension of the many details taken into account – and to them, the reliance of Danish authorities on the reinforced early response system put in place looked justified and convincing.

19. Once the analytical process was finished, it was discussed at managerial and political level, and the DVFA agreed internally on the way ahead to implement a stepwise action plan with specific tasks and deadlines. The DVFA began with the process of optimising the resources available and searching for potential synergies with other services to improve their capability to deploy an early response in the event of an outbreak.

20. One of the first decisions taken by the DVFA was to intensify the collaboration with the Danish Emergency Management Agency (DEMA), a long-established national civil protection service that has extensive experience in crisis management and in responding to natural disasters. The DEMA was an ideal partner to assist them technically and with the provision of qualified human resources and appropriate equipment for field operations (e.g. tailored logistics, such as IT and telecommunications, mobile command centres, etc.). That enabled DVFA staff to focus on their technical responsibilities.

21. In parallel to that, the DVFA began to identify the most relevant capacities needed for
their services to adapt to the new requirements of the reinforced emergency preparedness system, and to devise options to fill the gaps in that respect that were present at the time of the review process.

22. The DVFA initiated a process to review and update all disease contingency plans to fit into the new policy. They decided to change the format of the plans to render them more user-friendly. A dedicated team developed a generic part common to the contingency plans for all diseases, and prepared in parallel operations manuals fitted with extensive guidance and instructions on how to perform the various tasks necessary to cope with suspicions, confirmation and eradication of each specific disease.

23. On the practical side, the DVFA initiated in cooperation with the DEMA a training programme for crisis and incident management. That training did not focus on managing specific animal health crises, but put the emphasis on ensuring that a designated group of staff within the DVFA acquired a wide range of generic skills necessary to confront any crisis or disaster situation.

24. The main objective was to get that group of staff fully prepared to assume the overall field commanding responsibilities in the event of animal health crises. Thus, they could manage the diversity of human resources and logistical aspects involved in those situations; i.e. going beyond the exclusive technical issues related to disease eradication. That training programme is underway since 2015 and, in addition to keeping expanding the number of staff who participate in it; it has also incorporated a set of refresher modules for staff already trained.

25. The national experts mentioned the existence in their countries of similar entities to the DEMA, although their cooperation arrangements were not as developed as the one in Denmark.

26. The national experts valued the evidence presented to them that the incorporation of the extensive experience and logistical support that can be provided by these organisations to the Veterinary Services can make a significant difference and speed up the handling of a disease outbreak in the field. They committed to convey that message to their Veterinary Services and further explore the possibilities for similar arrangements in their own countries.

27. The DVFA decided that they needed to find solutions for the upscaling of the information management systems they had in place, so that they could better help them in the event of a disease outbreak to make well-informed decisions quickly and effectively.

28. Amongst other things, that process involved:

   - The modernisation of the databases used to collect official control data.
   - The introduction of new relational capabilities for several databases; e.g. animal identification, animal movements, disease reporting, laboratory information management systems, and geographical information systems.
• As an added value from the improvements mentioned in the previous points, the enhancement of data management and analysis capabilities; e.g. quick epidemiological analysis to better tailor protection and surveillance zones.

• The availability at all times of specialised technical staff who can quickly adapt the existing tools to the needs of a specific situation; e.g. adapt mapping options for a risk-based surveillance initiative, run specific animal, or products of animal origin traceability queries, etc..

29. The DVFA acknowledged that they needed to update a number of previous agreements, or to sign specific new contracts, with a number of service providers. The main areas identified were:

• To better define and frame the services needed from the diagnostic laboratories that will be involved in an outbreak situation; e.g. setting deadlines for differential diagnosis of exotic diseases and developing contingency plans.

• To better outline the implications of an outbreak and the service to be provided by the operators responsible for collection and disposal of animal by-products in Denmark, and clarify the conditions for their cooperation in those cases.

• To set more flexible arrangements with the services responsible for cleaning and disinfection of affected holdings, so that those tasks could be fulfilled without delay.

30. The national experts had the opportunity to discuss on the daily running of the new animal health emergency preparedness system. One example was related to the process to deal with a number of suspect cases of African swine fever.

• They witnessed the added value for staff responsible for handling those situations, of the new instructions and guidance prepared during the review of the generic contingency plan and the specific operations manuals.

• The documenting process is very well organised and includes a detailed technical evaluation of each situation following a pre-set agreed rationale for the exclusion diagnosis pathway.

• An immediate decision could be taken on whether the situation became a suspicion of the disease, or not. In the former case, further instructions described clearly the next steps to follow (e.g. who to immediately notify and how).

• The national experts underlined the added-value of a stepwise process that was fully documented, easy to review, and perfectly possible to transfer to the systems in place in their countries.

31. Another example on a recent confirmed case of highly pathogenic avian influenza, allowed the national experts to review the operation of most of the features of the early detection and early response system. This included details, and records, on the
operation of the national and local disease crisis centres, examples of the support provided by the information management systems, the activities related to animal depopulation, and the organisation of clinical inspections and sampling activities on a daily basis. The national experts agreed that the main lesson learned was that well-tailored preparedness enables the system to operate quickly, effectively and transparently.

32. After the discussions on those examples, the national experts agreed on the high level of knowledge demonstrated by all staff met in relation to the different tasks involved in dealing with a (potential) disease outbreak. They reiterated that the decision to prioritise training activities after the initial identification of the capacities needed was another excellent example of good practice. They considered that approach easy to transfer to the systems in their Veterinary Services.

33. Finally, representatives from the DVFA also underlined the major emphasis that they had put on using real-time exercises to test their level of preparedness and the progress made with their new system. The idea was to complement the standard training programme, and to reinforce the effective coordination with the DEMA.

34. The experts acknowledged the importance of these initiatives but highlighted the difficulties and high costs involved. They conceded that after this study visit they had realised the importance of carrying out a review of the possible strengths and weaknesses of their systems, so that more targeted exercises – usually easier to organise – can be used to challenge those areas whose operation may be more uncertain.

5 CLOSING MEETING

On 2 December 2016 a closing meeting was held where both the Danish competent authorities and the four national experts presented their general impressions and preliminary conclusions on the study visit. They have been reflected in the previous section.

6 OVERALL CONCLUSIONS

The national experts had the opportunity to understand the rationale behind the recent improvements in the animal health emergency preparedness system in Denmark that aim to optimize the capability to respond to large scale disease outbreaks. They highlighted the practical relevance of the information discussed during the study visit and of the lessons learned for the development of their own systems, while emphasizing that it could be difficult to replicate certain actions in their countries.

The Danish animal health emergency preparedness system was improved after reaching technical and political agreements on the objectives and steps forward to pursue, in close cooperation with the industry, and with the support of the DEMA.

The review process followed by the Danish authorities identified costs and losses associated with the various disease prevention and eradication measures put in place by both the
industry and by them. They also used sophisticated decision-support tools based on modelling and analysed the possible results and their impact on the wider economy.

To improve their preparedness, Denmark focussed on and reinforced the early detection system for exotic animal diseases and enhanced the capacity to deploy an effective early response to disease outbreaks. The latter was facilitated by the DEMA which, in addition to provide training on crisis and incident management, adapted their expertise in those areas to the specific nature of animal health crises.

The experts that attended the study visit found the approach followed by Denmark particularly helpful. The exposure to the details of the review and analytical process that defined the areas to be reinforced in the Danish system drew their attention to the importance of understanding the contribution of each component of the system to its overall functioning, so that informed decisions can be taken to prioritise investments and to target efforts. The experts considered that approach very enlightening and relatively easy to implement.
## ANNEX 1 – LEGAL REFERENCES

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