

MANAGING CLIMATE RESILIENCE FOR THE EUROPEAN AVIATION SECTOR: PROACTIVELY ADAPTING TO A CHANGING WORLD

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1 SUMMARY OF THE PROPOSAL

Background:

The forecast impacts of climate change, such as sea level rise, higher temperatures and greater weather extremes pose an operational and business risk for European aviation (EUROCONTROL, 2013; Thomas et al., 2009). In order to mitigate this risk it is essential for the sector to develop increased resilience to those hazards at both organisational and network level. This will be achieved by: reducing vulnerability to and increasing the capacity to recover from perturbation; and, proactively adapting operational and business practices to manage the impacts of a changing climate (Folke et al., 2010).

In order to achieve this efficiently and cost-effectively, it is essential for the sector to act proactively. In consultation with stakeholders, EUROCONTROL has developed five key recommendations to promote cost-effective climate resilience within the sector. These include local and network-wide risk assessment, better use of MET information and the implementation of 'no-regrets' or 'win-win' measures which also address issues such as capacity. A growing but limited number of stakeholders are already implementing comprehensive resilience measures. Yet, a survey of European aviation organisations shows that although awareness is growing many stakeholders are still not acting, often due to a lack of information and guidance. It is therefore essential to identify and address the barriers which are currently preventing action. Overall, climate change is an issue of risk management and early action is the key to cost-effective mitigation of those risks (EUROCONTROL, 2013).

Proposal:

The proposed paper will address the following subtopics:

- What are the key climate change impacts which the aviation sector can expect to face and what are the operational and business risks from those impacts? What are the timescales in which we can expect to experience them and how will they vary across the sector (e.g which impacts will affect en-route traffic and which will affect airports)?
- What can the sector do to develop resilience to those risks at both individual organisation and network level?
- Why is it necessary to address resilience at multiple scales (Folke et al., 2010)?
- What are the barriers which are currently preventing action within the sector and how can they be addressed (Moser and Ekstrom, 2010; Burbidge, 2014)? How can we develop a culture of resilience thinking within the sector?
- Why is it crucial to take proactive action rather than waiting for impacts to become more severe (EUROCONTROL, 2013)?
- How can we measure the effectiveness of the resilience measures which are implemented? Firstly, we need to quantify the base level of network resilience and the corresponding impact of a disruptive event in order to facilitate the development of mitigation actions. Generic resilience metrics are

currently being developed by a number of organisations. How do these apply to climate change resilience and are there specific metrics which are required?

- Could a resilience key performance indicator (KPI) facilitate more proactive reactions to disruptive weather by identifying an event-specific performance goal which is aligned with ATM capacity management and flight safety requirements?

In particular it is hoped that the sections on breaking down barriers to adaptation and developing metrics can be used to stimulate interactive discussion during the workshop. It is therefore proposed to present a range of possible actions for breaking down barriers and a selection of potential metrics to initiate discussions.

2 RELEVANCE FOR SYMPOSIUM

The paper will discuss the actions which the air transport sector needs to take to develop and manage resilience to the impacts of climate change. It will examine a range of measures including generic measures such as softer actions (training, best practices) and no-regrets or win-win actions. As many of these are applicable to both the wider transport sector and other key sectors as this contributes to developing cross-sectoral knowledge on developing and managing resilience. It will also emphasise the importance of building resilience at organisational level so as to contribute to developing larger scale system resilience and reduce overall system vulnerability (Folke et al., 2010, EUROCONTROL, 2013).

A key part of managing resilience is measuring the effectiveness of resilience measures so that they can be reinforced or redesigned if they are underperforming, not fit for purpose or the risk profile changes. Therefore the paper will highlight the need to develop appropriate metrics and performance indicators to achieve this. Finally the paper will emphasise the need to take proactive action so as to increase cost-effectiveness and reduce damages and risk. It will focus on how to break down barriers to adaptation so as to raise awareness and motivate proactive action.

3 SIGNIFICANCE/TAKEAWAY:

The proposal will advance our ability to create and sustain resilience by:

- Examining a range of measures to create and sustain climate resilience within the aviation sector which are also applicable to the wider transport sector and other key sectors. This also contributes to developing cross-sectoral knowledge.
- It will emphasise the need to act at multiple scales, in particular the importance of building resilience at organisational level as this contributes to developing larger scale system resilience and reducing system vulnerability.
- It will highlight the need to measure the effectiveness of resilience measures so that they can be reinforced or redesigned if they are underperforming, not fit for purpose or the risk profile changes. It will present a selection of possible metrics and performance indicators for discussion.
- It will examine whether a resilience KPI could facilitate more proactive reactions to disruptive weather by identifying an event-specific performance goal which is aligned with ATM capacity management and flight safety requirements?
- It will emphasise the need to take proactive action so as to increase cost-effectiveness and reduce damages and risk.
- It will focus on how to break down barriers to adaptation so as to raise awareness and motivate proactive action.

4 REFERENCES

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