Session 3 – Impacts of climate change and variability on aviation operations and associated science requirements

Keynote 2 – Regionalised Climate Impact on Aviation: Europe. Rachel Burbidge, EUROCONTROL

Aviation is used to dealing with disruptive weather. 2017 was no exception with a number of high profile disruptive weather events, such as unusual storm activity and a prolonged heatwave, impacting Europe and the European aviation sector, as well as a catastrophic hurricane season in the Caribbean. Although none of these individual events can be directly attributed to climate change, climate change is expected to bring more frequent and more intense adverse weather, and so this is a challenge which the sector needs to prepare to address (EEA 2017, EUROCONTROL, 2013a).

There is now broad agreement on the main impacts of climate change which will be experienced (IPCC, 2014). These impacts translate into a range of risks for aviation, which again will vary with location and type of operation. For example, in areas which experience an increase in convective weather there may be impacts for capacity and delay. In regions which will experience a significant increase in temperatures we may experience a seasonal change in demand according to changing tourism preferences. Whereas in coastal zones there may be risks to infrastructure from sea level rise or storm surges. However, impacts will vary according to the particular local situation so it is important for organisations to understand the specific issues which they may need to address (EUROCONTROL, 2013b; Burbidge, 2016; ACRP, 2012; Puempel and Williams, 2016).

An additional challenge is that traffic is growing. Although rates of growth vary between regions, in Europe a 50% increase on 2005 levels is forecast for 2035 (EUROCONTROL, 2013b). This is relevant to adaptation and resilience in two ways. Firstly, when an airport is operating at or close to capacity the time it takes to recover from a perturbation such as a disruptive weather event is much longer therefore any potential increase in weather-related disruption is likely to be further exacerbated. Secondly, building climate change resilience whilst managing a significant increase in traffic is a double challenge which needs to be considered in tandem (Burbidge, 2016).

Aviation already deals with disruptive weather on a regular basis, however to address the expected challenges of climate change, some actions are required. Risk assessment is required at global, regional, and local level to identify risks and vulnerabilities so that adaption and resilience measures can be identified and implemented. This is a challenge that will require finding a balance between resilience, costs and criticality. Moreover, whilst pre-emptive action can be cost-effective it is important to base decisions
on robust information (Burbidge, forthcoming). Finally, whilst the need for adaptation measures is increasingly recognised, it is essential that the industry continues, and increases, its efforts to reduce its contribution to anthropogenic climate change.

References

Airport Cooperative Research Programme Synthesis (ACRP) (2012) ACRP 33: Airport Climate Adaptation and Resilience, Transportation Research Board of the National Academies, Washington


Burbidge, R. (Forthcoming) Adapting Aviation to a Changing Climate: Key Priorities for Action, Journal of Air Transport Management


European Environment Agency (EEA) (2017) Climate Change Adaptation and Disaster Risk Reduction in Europe
