



EU Aviation Research Policy on Noise

16-17 January 2018 Place Rogier 16, B-1210 Brussels COV2 25/SDR1 "Auditorium Nowotny" Covent Garden Brussels

Workshop Briefing

The workshop 'EU Aviation Research Policy on Noise' was organised by the European Commission, Clean Sky and INEA and took place in Brussels on 16-17 January 2018. Around 100 stakeholders representing industry, research centres, operators, airports, academia, Air Navigation Service provider, national authorities and NGOs participated in the event. Overall the objectives of the workshop, which were fully met, were:

- Providing on overview of the current aviation noise challenges;
- Presenting an overview of the current EU aviation noise research;
- Identifying gaps and gathering recommendations for the future;
- Bringing together EU aviation noise stakeholders to consider future EU aviation roadmaps.

The workshop was organised over two days, the first being the 'Technology Day' and the second the 'Policy Day'. This short briefing presents the highlights from each day as well as the overall conclusions and recommendations. A more detailed report with the views of main stakeholders will follow in the coming weeks. All presentations are publicly available.

HIGHLIGHTS FROM DAY 1 – TECHNOLOGY DAY

The Commission Services (DG RTD, DG MOVE and DG ENV) set the scene, describing the EU policy on aviation noise. It was emphasised during the workshop that the Directorates needed to continue to work together. The interdependencies between noise, emissions and operations were addressed and it was agreed that more work remains to be done on this issue.

EASA presented the regulatory framework developed under ICAO/CAEP. It was highlighted that this is a global issue and it was demonstrated that considerable progress has been achieved in reducing aviation noise over the last five decades. However, it was emphasised that the large continuous growth in air-traffic may cancel out the technological and operational advancements in the medium term, unless action is taken.

EUROCONTROL stressed the importance of databases of aircraft noise (e.g. certification values) as well as of noise modelling methods for use in forecasting in





the airport environment. Specific areas were listed where modelling needs improvement. It was highlighted that drones and any future urban/personal transport aircraft were not in the scope of current regulations. Both EASA and EUROCONTROL agreed that EU efforts on modelling and databases were significant, however more needs to be done in support of operations and policy.

There was then a series of presentations on **aircraft source noise** reduction, with results obtained from EU funded research projects on more silent propulsion systems, computational aero-acoustics and measurement technologies. These presentations covered the full range of technology activity from highly innovative low TRL projects to high TRL system integration demonstrations. Presenters and audience agreed that these activities should continue.

Coordination of technical activities on aviation noise has been ensured, by a series of X-Noise projects (Coordination and Support Actions), during the period 1998-2015. It was suggested that the EU supported H2020 ANIMA project may potentially take over part of this role, to close the gap until the launch of the post 2020 EU research framework programme. At a higher level, ACARE Strategic Research and Innovation Agenda (SRIA) ensures that the research actions contribute to the EU FlightPath 2050 strategic goals for aviation.

Clean Sky presented, among other demonstration activities, the results obtained from helicopter noise research, showing considerable progress on source noise reduction, particularly through active rotor technology.

The presentation of the EU project RUMBLE on sonic boom levels for supersonic aircraft aroused active discussion over the merits and disadvantages of supersonic flights in Europe. While there is no visibility of European manufacturers working on such supersonic aircraft projects, there is potential for other countries to develop an aircraft which could overfly European countries, hence making supersonic aviation a relevant subject for EU. There was a strong feeling that Europe should consider its stance and policy to protect European citizens.

The importance of research infrastructures (both for numerical simulations and experimental testing) was also emphasised as a key enabler for new technologies.

International collaboration on aviation noise research, in particular on supersonic flights have been discussed. Joint activities with China have been presented. This outreach can be useful in the global context of aviation noise, having this a worldwide footprint and regulation (ICAO).

After the effort on reducing the noise at source, there were also a series of presentations on **noise abatement procedures and operations**. It was evident that this activity has a different character from the previous technology work, focused on the noise reduction at aircraft level. The procedures and operations work is primarily about achieving noise reductions around airports during the take-off and landing flight phases. The project ANIMA project presented methodologies and





recommendations, while questioning the relevance of existing indicators with regard to annoyance.

Cruise noise was mentioned, however its limited impact on specific cases (e.g. flights over some US national parks) was highlighted. Source noise reduction has shown the largest improvement but considerable progress has been made on operations and procedures. Controlled descent approaches and steeper take-offs are becoming much more common.

A key-factor in addressing the noise issue is **community engagement**, where airports can make tools available for communities to do their own "what if" analyses, leading to a much better understanding of the problem and potential ways forward. There is never a solution to solve such problems outright but the compromises can be better understood by all. The operations and procedures area is also one where there is direct implementation of future measures – unlike technology for source noise.

HIGHLIGHTS FROM DAY 2 - POLICY DAY

The second day was the Policy Day with the Commission presenting the short term outlook, a Keynote speech from the industrial co-ordinator of the X-Noise CSA and a number of stakeholder organisations, including an NGO, presenting their view of challenges and opportunities in aviation noise research.

There is a continuing need for all Commission DGs to work together with industry, research establishments, academia, EASA and Eurocontrol towards achieving a significant and balanced research programme. EU regulatory framework considers noise as part of competitiveness, mobility and environmental policies.

The topic of annoyance featured strongly from the NGO, the airport and the Air Navigation Service provider and was recognised by others.

Work was presented on a new metric to represent noise annoyance, which may be better than noise certification values or noise footprint area and covers the growth of air traffic. It is being proposed for use at CAEP.

FINAL STATEMENTS BY THE COMMISSION

DG.RTD recognised the importance of research and innovation reaching the market. In addition, it welcomed the engagement of communities, emphasized the interdependencies between noise and emissions and supported research roadmaps and coordination on noise research between EU and Member States.

DG.ENV recognised that reduction in source noise is very important, however stressed that other issues, including city design were also to be included. A research agenda should be developed out of this and merged into the wider transport scene.





DG.MOVE emphasised that in addition to their own activity, Member States need to implement current regulations and directives. The difficult balance between noise, emissions, business competitiveness and mobility were also to be investigated.

CONCLUSIONS AND RECOMMENDATIONS

Gathering together the main recommendations from the workshop (mainly from the text above), these are:

- The EU Directorates of RTD, MOVE and ENV need to work closely together to investigate how some of the outcomes of this workshop can be jointly integrated to support <u>EU policy tools</u> that were mainly developed from EU funded research efforts. Such tools will give a stronger voice to Europe in ICAO negotiations as well as serve the interests of EU citizens.
- There is a strong need to continue with the volume and scope (from innovative to systems demonstration) of <u>noise research</u>. This may need to broaden to account for social issues affecting annoyance and the perception of noise which is important in the community.
- <u>Coordination</u> of the broad range of research is important, both through Coordination and Support Actions (CSAs) for lower TRL research and also a more formal role for ACARE (which involves all stakeholders) in monitoring overall achievement against goals and targets in the Strategic Research and Innovation Agenda (SRIA) which all accept as providing the overall goals.
- Despite the largest improvement from source noise reduction, operational and procedural measures have a strong and continuing role near airports. <u>Community engagement</u> is crucial with open access to modelling tools. Modelling improvements for better forecasting based on noise certification databases is also needed.
- The Commission, together also with colleagues from EASA and EUROCONTROL, will see which results from the workshop can feed the discussion at international level related to the <u>noise certification standards</u>. Work was presented on a new metric to represent noise annoyance. This metric is being proposed for use at CAEP.
- Europe should consider its stance to overflight of any future <u>supersonic</u> aircraft.
- It was highlighted that drones and any future urban/personal transport aircraft were not in the scope of current regulations.
- It should be considered if incentives could help in the <u>faster introduction</u> to service of new technology or in the phase out/retro-fit of noisy aircraft/engines.

The European Commission gratefully acknowledges Dr. R.C. Kingcombe for his contribution as rapporteur of the workshop.



Agenda: EU Aviation Research Policy on Noise

Day 1 'Technology day'

8:30-9:00	Arrival – Registration (proceed to: 25 th Floor, building SDR1, Auditorium Nowotny)	
9:00-9:15	Welcome Address FUMERO Sebastiano (RTD)	
9:15-9:45	The Environmental Noise Policy BERGER Bernhard (ENV), PAVIOTTI Marco (ENV), LENNE Philippe (MOVE) Q&A (5 min)	Chaired by FUMERO Sebastiano (RTD)
9:45 -10:15	Implementation of the CAEP/10 amendments on climate change, emissions and noise – opinion No 09/2017 FRANKEN Willem (EASA) Q&A (5 min)	
10:15-10:30	Coffee break	
10:30-11:00	Noise research: the point of view of EUROCONTROL CAVADINI Laurent (EUROCONTROL) Q&A (5 min)	
11:00-12:45	Session 1 - Reduction of noise at the source - ARTEM (KNOBLOCH Karsten) - IMAGE (PENG Shia-Hui) - AERIALIST (IEMMA Umberto) - Clean Sky 2 projects (den BOER Rudd) - Q&A (20 min)	Chaired by VIOLATO Daniele (INEA)
12:45-14:00	Lunch and Networking	
14:00-14:40	Session 2 - More silent propulsion systems - TURBONOISE BB (ENGHARDT Lars) - Clean Sky 2 projects (BROUCKAERT Jean-Francois) - Q&A (10 min)	Chaired by PAGNANO Giuseppe (CSJU)
14:40-15:00	Session 3 – Low sonic boom - RUMBLE (PERELGRITZ Jean-Francois) - Q&A (5 min)	Chaired by VIOLATO Daniele (INEA)
15:00-15:30	Coffee break	
15:30-16:15	Session 4 – Noise abatement procedures, operations & land- use planning - ANIMA (LEYLEKIAN Laurent) - Clean Sky 2 projects (PODSADOWSKI Andrzej) - Q&A (10 min)	





INNOVATION AND NETWORKS EXECUTIVE AGENCY

16:15-17:00	Session 5 –Computational Aeroacoustics and Research	Chaired by	
	Infrastructures - TILDA (HIRSCH Charles) - RINGO (HERMANS Christophe) - Clean Sky 2 projects (SELMIN Vittorio) - Q&A (10 min)	KYRIAKOPOULOS Michael (RTD)	
	 presentation by Engine Manufacturer (BROSZAT Dominik, MTU) 		
17:00-17:30	Open Discussion Short statements - Panel discussion with the participants	Chaired by FUMERO Sebastiano (RTD) GENTILI Andrea (RTD)	
Day 2 'Policy day'			
8:30-9:00	Arrival		
9:00-9:15	Welcome Address FUMERO Sebastiano (RTD)		
9:15-09:45	Research for Policy on Aviation Noise Short term outlook – H2020 WP2018-2020 and Clean Sky 2 KYRIAKOPOULOS Michael (RTD) and PAGNANO Giuseppe (CSJU)	Chaired by MÖLLER Uwe, ACARE	
9:45-10:15	Keynote Speech – Coordination of noise related research in Europe (COLLIN Dominique, SAFRAN) Q&A (5 min)		
10:15-10:45	Coffee break		
10:45-11:45	Challenges and opportunities in aviation noise research - presentation by Civil Society (LAZARSKI Dominique, UECNA) - presentation by Airframer (LEMPEREUR Pierre, Airbus) - presentation by an Airport (OH Xavier, Heathrow) - presentation by Civil ANS (WOBORSKY Christian, CANSO) - presentation by EREA (LEYLEKIAN Laurent)	Chaired by FUMERO Sebastiano (RTD) GENTILI Andrea (RTD)	
11:45-12:30	Open Discussion Short statements - Panel discussion with the participants		
12:30-12:45	Wrap-up (KINGCOMBE Ray, Rapporteur)		
12:45-13:00	Final Statements (RTD, MOVE, ENV)		
13:00-14:30	Lunch and Networking		

End of Workshop