



**ACARE**

**Advisory Council for Aeronautics Research in Europe**

**Second ACARE opinion on the proposal for the Joint  
Technology Initiative CLEAN SKY**

Date 27/02/07



## Opinion from the Advisory Council for Aeronautics Research in Europe (ACARE) on the JTI CLEAN SKY (proposal October 2006 and additional information provided in January 2007).

### Introduction and conclusions

---

In February 2007, the European Commission requested ACARE to provide its opinion on the revised and final Clean Sky JTI proposal submitted by the European aeronautic industry.

The Commission indicated that various JTI proposals will be submitted to the Council based on their readiness and maturity. The JTI proposals will be evaluated by the Commission using four key's to success:

- market failure
- additionality
- governance
- role of Member States

Following an assessment of a draft Clean Sky proposal provided in early 2006 and now based on the revised proposal submitted by industry, ACARE is of the opinion that the Clean Sky proposal fulfills all these key's to success and is fully mature and ready for implementation. The Clean Sky proposal is convincing and will deliver substantial benefits to the whole of Europe.

It is fully in line with the Strategic Research Agenda for Air transport in Europe. It will enable a quantum leap forward in making Air Transport more environmentally friendly.

Clean sky will enable the Air Transport industry to add a logical component to the aeronautics basic and applied research conducted in Europe, in the form of large scale technology demonstrations. Clean sky will thus enable the European industry to facilitate and speed up the application of research results into future products that will benefit the environmental impact of air transport and the competitive position of the European industry.

This will foster an improved and faster process from research to implementation that has been the political concern in Europe for a long time. This concern was the basis for the Lisbon initiative.

The proposed governance structure of the Joint Undertaking will ensure that public funds for the Clean Sky program are well spent for the benefit of all European citizens.

### Background

---

For ACARE the main issue is the question whether the Clean Sky proposal serves the implementation of the ACARE Strategic Research Agenda that has been agreed upon by all Air transport stakeholders including the EU Member States.

ACARE can testify that the Clean Sky project is completely in line with the ACARE SRA and the Vision 2020 on which ACARE is based. Clean Sky facilitates the faster implementation of new technologies that will serve a greener air transport and will also support the competitive position of the European industry as well as the implementation of new Air Traffic Management in Europe which is closely related to SESAR.

ACARE stresses that greening of air transport has in the recent years become more important as political and public concern over the environment and global warming is increasing. As a result, air transport growth may be impacted due to governmental market interventions that may discourage the citizen to travel. This could have a very significant negative impact on mobility, economic growth and the unification in Europe and may also make flying unaffordable to the average citizen.



## Second ACARE opinion on the JTI Clean Sky – 27 Feb 2007

It is essential to introduce new technologies quickly. In addition to the environmental aspect, the Clean Sky proposal also clearly demonstrates the large impact of Air Transport growth on the growth of the European economy and GDP. Furthermore if the ACARE environmental goals are not met in 2020, the environmental effects of air transport will create a severe financial burden for future generations as demonstrated by the Stern report.

Therefore it is of utmost importance that new technology can be introduced as quickly as possible. The demonstration activities planned in Clean Sky are thus an essential element to satisfy the justified public demand to speed up the introduction of greener air transportation.

Following the initial ACARE opinion based on an early draft of the proposal, there were a number of open issues. These issues are resolved in the current proposal.

The European Commission has raised several questions as well to which answers are now available.

ACARE decided to closely follow the questions put forward by the Commission and also looked at the progress made within the Commission, which is a partner in the Joint undertaking (JU). These aspects are addressed below.

### Progress on the side of the Commission related to Clean Sky

The previous ACARE opinion highlighted some issues that were relevant in the relationship between Clean Sky private partners and the European Commission. As time has progressed several issues have become clearer:

#### Funding

- *Total amount available from the Commission.* It is expected by now that an amount of € 800 million is allocated to Clean Sky from the Commission side. This amount is the minimum contribution needed to make Clean Sky a success.

#### Timing

- *Start in 2007.* A decision by the Council is expected during 2007 so that Clean Sky could start at the end of 2007. Only an early start will ensure a quick introduction of technologies into products thus providing a maximum benefit for the greening of Air Transport.

#### Funding support scheme

- *Up to 75% funding for SME's, research organizations and universities.* The Commission has decided that this funding scheme for research by SMEs, Res and universities will be applied in Framework 7. The JU funding schemes are allowed to deviate from the rules set for FP 7. In Clean Sky a flat rate of 50% for all Platform leaders and Associates will be applied. However for other partners that will be involved through the calls for proposals within Clean Sky, the generic rules will be valid. (Arrangements for subcontracts still need to be worked out).

#### Advisory role of ACARE

- *The role of ACARE in Clean Sky.* The commission identifies the role of ACARE as an advisor to the Commission on the following issues:

- JTI alignment with the SRA
- Updating the strategic orientation
- Consistency with the collaborative research in FP7
- Coordination with the SESAR JTI

Furthermore the Commission clarified the mechanisms to allow *Member States to monitor the progress and to intervene* if their interests are perceived to be severely damaged. The Commission proposes to inform the Transport Program Committee on a regular basis on technical, managerial and financial progress.

Also it is envisaged to create a National States Representative Group as an advisor to the Commission, the JU and the Transport Program Committee.

The National States Representative Group will review information and comment on the following topics:



- Program progress
- Compliance with targets
- Updating the strategic orientation
- Links to FP7 collaborative research
- Information on the planning and outcome of calls for proposals, tenders, contracts
- Involvement of SME's and the research community
- Relations and leverage to national research programs and identification of areas of cooperation.

It will provide information on national programs and possible areas of cooperation with these. The Group can also be instrumental in dissemination of Clean Sky results.

The proposed structure will ensure that adequate governance is provided and public funding on Clean Sky is traceable and justified.

#### Questions put forward by the Commission

The European commission has requested ACARE to take notice of seven aspects related to the Clean Sky JTI proposal.

Question 1 deals with the following topics:

- Are the stated objectives of clean Sky *in line with the SRA*: This question was already answered in a **positive way**. The Clean Sky proposal is fully in line with the environmental challenges identified in the SRA of ACARE. Clean Sky represents a logical and necessary step towards greening of Air Transport in the next 20 years.
- Are the *objectives of Clean Sky quantified*: The current proposal identifies the budget split over the different platforms (page 146) and mentions quantitative goals for each platform (page 25). The objectives provided in the proposal are realistic and challenging at the same time.

Question 2 is whether Clean Sky would make a *quantum leap contribution* to the achievement of the vision 2020 and top-level objectives of responding to Society's needs and securing industrial leadership.

ACARE can confirm that the objectives are fully in line with the Air Transport Vision 2020. Already the added value of Clean Sky was identified and supported in the first assessment. Thanks to Clean Sky, a quantum leap in innovation is possible since the substantial technological improvements will reach the market much sooner than would have been the case if no such technology demonstration effort would be undertaken in Europe.

Question 3 is related to *the difference compared to traditional RTD funding schemes of the Framework program*.

It is essential that the difference in terms of focus and technology readiness is well understood so that the proposed research can be assessed relative to the appropriate funding scheme. The aims of Clean Sky cannot be achieved by using traditional instruments as these are focused on different technology readiness levels. The JTI (focus on large scale technology demonstration) and the traditional instruments differ and are complementary rather than overlapping. Using only traditional instruments (the level 1 and 2 projects) would not create the quantum leap the environmental and competitive situation calls for.

Question 4 is related to the *technical approach and the architecture* of Clean Sky platforms (now also referred to as ITDs, Integrated Technology Demonstrators).



Smart fixed wing aircraft:

The approach is sound. The prime focus is on advanced wing design and aircraft configurations to save fuel. On page 47 reference is made to spill over to the regional aircraft platform.

Green regional aircraft:

The approach is sound as well. The platform concentrates on low weight and low noise, including all-electric technologies. Co-ordination with the Smart Fixed Wing platform is assured.

Green rotorcraft:

The approach is sound, focusing on noise, efficient power use and optimal flight operations.

Sustainable and Green engine:

The approach is sound. Major decisions may be needed in the early years of the platform in case the market dictates a re-direction of work.

Systems for Green Operations:

The expected benefits are challenging. It is understood that the Systems platform will deal with the energy systems for large aircraft whilst for business jets, rotorcraft and regional aircraft, the airframers' requirements will be performed in the Eco-Design platform. The JU will establish close links between the platforms.

The development of trajectory management is an important issue in this platform. The important trajectory topic is highly related to SESAR and a close co-ordination between the two JTI's is envisaged.

ECO Design:

The approach is sound. The topic is important for the greening of air transport. The project will also address the consequences of the EU REACH initiative to replace toxic materials.

Technology Evaluator:

The independent role and the function of the technology Evaluator have been clarified. The Technology Evaluator will be an essential element of the Clean Sky proposal as it will verify the achievements against the Clean Sky targets identified. The Technology Evaluator is linked to SESAR as well as to the ACARE observation platform and will therefore also be a valuable tool to monitor the relevant research performed outside the Clean Sky project.

In conclusion ACARE regards the technical content as a highly important and essential step towards the ambitious target of greening the Air transport system. The technological and management approach represents the optimum contribution to the ACARE roadmap for realization of the environmental targets in Vision 2020.

Question 5 deals with the *interface with national, multinational and European RTD-programs, like SESAR.*

The proposed governance structure will ensure the close interface with other major RTD initiatives. The close involvement of Member States will stimulate the alignment of national research with Clean Sky. Furthermore the Technology Evaluator in the project will track important related developments in national, multinational and European RTD programs in an independent way. ACARE -as an advisor to the Commission- and the other advisory bodies to Clean Sky will be informed about any changes in the direction of the Clean Sky research efforts.

The implementation of the SRA takes place through the various EU research funding schemes, i.e. level 1 and level 2 projects (collaborative research) and level 3 projects (SESAR and Clean Sky). ACARE monitors these activities and their coordination, and issues recommendations. In particular, ACARE has already called for the coordination between



## Second ACARE opinion on the JTI Clean Sky – 27 Feb 2007

SESAR and Clean Sky. Such coordination will be formalized once both initiatives have been legally established. The proposed vehicle for co-ordination, whilst ensuring that the respective activities of the JTI and SESAR do not overlap, more importantly will assure the cross fertilization of results and requirements on elements of common interest and the mutual understanding of capabilities and constraints, further increasing the positive effect upon the environment.

Where SESAR is aiming at taking out the inefficiencies of the ATM-system, leading to a potential 10-12 % reduction of the environmental impact, the clean sky initiative could bring about a new vision on optimizing the route-structures beyond what is foreseen within SESAR, leading to further reductions (magnitude to be researched).

Question 6 is related to the *mobilization of European technical and financial resources*.

ACARE is convinced that the proposed structure will mobilize the required European technical and financial resources for such an undertaking of Common European interest in an optimum way.

Private partners will contribute € 800 million out of their own budgets. This money is in addition to the traditional collaborative research for Air Transport which in itself has a larger budget than in FP 5 and 6. Without a dedicated program like Clean Sky it is unlikely that the private sector could have been persuaded to spend an additional 800 million Euro on research.

All major European aeronautics companies are involved in Clean Sky. European cooperation has replaced competition. More than € 200 million of the EU contribution will be used to fund activities via calls for proposals that are open to all European organizations.

The target for the SME participation rate in the project is set at a challenging 12%. This target is 20% higher than the rate achieved in the aeronautical collaborative research program in FP6. Therefore the project will have to mobilize contributions from all over Europe, including those from the smaller and new Member States.

Clean sky will stimulate many companies to participate in EU research for the first time. Up to now these companies had little interest in the Framework program as research was aimed at mid and longer term applications. The nature of the Clean Sky activities is nearer to the market. This will be more attractive to those companies that have a shorter time horizon and are interested in shorter term return on investment.

Experience has already shown that SME's are very interested to participate in Clean Sky, even at a funding level of 50%, because the project enables these companies to qualify themselves as a supplier to the larger European companies. These SME's see Clean Sky as the ideal opportunity to become part of the standard supply chain of the European aeronautics industry.

Research Establishments and Universities are involved right from the start to ensure a seamless technology transfer into the project. Clean Sky will thus mobilize the best technical knowledge available in Europe in order to reach the challenging goals of the project.

The seventh question of the Commission to ACARE was if previous ACARE recommendations have been incorporated in the current proposal.

ACARE can confirm that the recommendations made relative to the previous draft proposal have been fully taken into account and that the activities foreseen in the current proposal as well as the proposed governance structure constitute best value for money.

The role of the EU Member States is fully safeguarded in the current proposal.

ACARE recommends to start the project as soon as possible and offers its assistance to make Clean Sky a big European success.