Airbus contribution to EC consultation of June 17th 2009

"A sustainable future for transport:
Towards an integrated, technology-led and user friendly system"

1. Air Transport benefits

a. Air transport is an engine to socio-economic growth

In Europe, the aviation industry supports around 4.5 million jobs (direct, indirect and induced) and contributes more than US$380 billion to GDP. European airlines transported approximately 700 million passengers and carried ca. 10 million tones of freight (2007). At a world level, if you take into account the additional industries that depend on air transport, such as tourism, these figures grow to over 33 million jobs and US$ 1.5 trillion of GDP. As a country, this would rank aviation's position as eighth in the world between Italy and Spain.

Beyond the economic benefits, air transport has radically changed how economies and societies operate and interact. The continued growth of the industry:

- Makes travel accessible to more of the Earth's population than at any time in history
- Diffuses the knowledge gained from investment in Research and Development, and multiplies the effects of innovation across economies
- Helps maintain social networks for the increasing numbers of migrants in modern, globalises economies

b. Air transport drives efficiency and leads in innovation and R&T

Aviation enhances efficiencies through economies of scale, increased competition, intensified innovation and access to wider pools of employees. In particular, the benefits to society of R&D spent by the aerospace industry are estimated to be much higher than in manufacturing as a whole – every US$100 million of R&D eventually generating additional GDP of US$70 million year-after-year.

c. Air transport ensures vital mobility and connectivity for Europe and beyond

With the growing need to connect people and goods within an enlarged Europe and its geographical constraints, air travel is often the only available means of transport. Already 75% of intra-European air traffic is performed on distances above 750 kilometers, the point at which fastest ground transportation starts to lose its attractiveness. Fast and optimized connectivity between ports and ground transport are key for Europe's socio-economic development and global competitiveness. Airports are increasingly developing as multi-modal interchange nodes and their network positioning creates strategic advantages which enable them to act as magnets of a broad range of economic activity and to match a demand for a widening network of global air services. Synergies may arise between the role of an airport and other modes of transport, such as ports (example: Amsterdam Schiphol Airport and the Port of Rotterdam).

d. Air transport has a long track record of environmental performance improvements

Aviation can only improve its environmental impact: this is the law of competition.
The balance between weight and drag is essential with regards to the mission of the aircraft (short, long range and trajectory analysis). Aircraft operational costs and performances being directly linked to the compromise of its weight and drag, AIRBUS has historically focussed R&T on aerodynamic designs and consumption reduction, simply because the most eco efficient aircraft will win the market.
For an Aircraft Operator the fuel consumption has always been a major selection criterion. Consequently, since the beginning of jet-powered civil air transport in the 1960s, the aeronautical industry has achieved an impressive environmental track record, i.e. -70% of used fuel per passenger and kilometre (directly proportional to the reduction in CO2), and -75% of noise (representing -20dB). To even further reduce the environmental impact of the aircraft industry, the ACARE environmental goals are set to highly challenging values such as -50% CO2 emissions, -80% NOx emissions and -50% noise. Through those research targets the aircraft industry will be able to limit its environmental impact despite continuous high traffic growth.

2. Vision / Future of Air Transport

a. Safe, secure, "hassle-free" and seamless travel

The secure and seamless travel of passengers and freight for Europe is a vision that will require the development of safe, sustainable, innovative and interoperable transport infrastructures, networks and systems. All modes of transport are necessary to achieve this objective.

Safety is the basis of travel and a key asset for air transport. A single aviation safety authority, with associated powers**,** drawing-up common safety and environment protection standards and rules, overseeing their uniform application across Europe and promoting them at world level for the whole aspects of air operations – including crew licensing, airports and air traffic control – will give citizens the required level of safety. International cooperation and agreements will contribute to reduce efforts spent on specific, local or duplicated requirements. Shared responsibility with the industry will streamline the certification exercises and let the certificators focus on high safety benefit tasks. Independent funding should guarantee the proficiency of the certification.

Air transport has focused on security for many years and can share the experience with the other transportation modes. Attention is required to set up requirements that efficiently protect passengers and develop coordinated, centralised infrastructures to avoid vain multiplication of controls.

An industry wide effort should lead to a seamless travel for each and all passengers, whatever their age, experience, abilities, easing security checks without compromise but also services like luggage handling, comfort during transfer, connectivity.

b. Cost-efficient and affordable for EU citizens

The aviation sector – beyond its direct and immediate contribution to economic growth – enables mobility for Europe's citizens and permits the development of global air links and the intercon-

nection with other modes of transport. The industry has improved the economic efficiency of its products to the point that air transport has become a widely accessible transport service. Aviation is no luxury.

In Europe, the EU's Single European Sky (SES) initiative is a key opportunity to achieve an optimized European airspace in order to increase the overall capacity, economics and environmental efficiency of the air traffic management system. SES and further liberalisation will change the way air transport operations are presently conducted and enhance the affordability of air transport. De-regulating and restructuring airspace as a function of air traffic flows instead of national borders, will be essential at world level as well: the EU should thus play a key role within international organisations to promote a world open sky and the benefits of a liberalised framework.

c. Sustainable mobility and eco-efficient transport

Aviation is not only a safe and fast transport mode; it is also an eco-efficient one that aims at achieving carbon-neutral growth. Our industry continues to provide a safe and eco-efficient transportation system to Europe's citizens and goods. This is essential for the future of transport and a long-term investment in the strategic capability of the EU to remain a competitive economy and fulfil society's increased demands for sustainable mobility.

Air transport is a preferred and most efficient means of transport for long intra-European distances or fast point-to-point connections without intermediate transits and it has a marginal impact on land use. In comparison to the most similar means of ground transport, air transport needs only 3,000 kilometres of runway and 4,200 airliners to produce 482,000 million RPK (Revenue Passenger Kilometre) whereas rail transport requires 197,000 kilometres of railway and 140,000 carriages to produce 352,000 million RPK.

Today, we are at a crossroad: only an industry that is capable of keeping its track record of substantial improvements, integrating society's expectations and pushing forward new developments through its established knowledge and innovation capacity, will be able to compete on a global scale and continue to propel Europe forward in the future. This will require a strong partnership between all key stakeholders in the transport sector: a combination of increased investments and strong public support is essential today for further focussing and strengthening the necessary research efforts that will help fill the technology breakthrough's for tomorrow's sustainability.

d. Integrated in an efficient, complementary inter-modal transport system at European and world level

In Europe, ground transportation networks and dense urban environments have become subject to heavy congestion, resulting in increased pollution, delays and costs. The EU has thus placed an emphasis on modal shift and decongesting transport corridors in transport research and through encouraging new investment in infrastructure (TEN-T: rail in particular, whereas the aviation share only represents ca. 5% of total TEN-T budget). However, intermodal approaches and investments in dedicated, improved infrastructure and intermodal agreements between operators have not been numerous in Europe until today.

In the future, the complementary, non-discriminatory choice of the most eco-efficient transport means will have to be reinforced. Air transport, for example, can contribute to optimise door-to-door transport, as it is an efficient alternative to highly congested ground transport systems. Intermodality can offer ways to limit the isolated use of a transport mode leading to bottlenecks and can provide combined journeys and transfers between different modes through the optimization of infrastructure capacity. Traffic Management is a key element to optimise distance, time, consumption, use of infrastructure, which all translate into environmental impacts. The systems have to be coherent, integrated, everywhere in the world for the best use of ground and air spaces. Especially satellite management could reduce infrastructures investments and maintenance, but the availability and accuracy of their data have to be guaranteed to users.

3. Policy recommendations for future legislative initiatives

a. Promote research & funding on renewable energies (incl. alternative fuels) for air transport

Aircraft based on today's technology use about the same amount of energy per RPK as trains and even less than cars, but contrary to ground transport vehicles, their efficiency depends on high energy density with properties quite specific to air transport. Airbus and the aviation industry thus strongly support research and development towards sustainable drop-in alternative jet fuels, which over time will become part of a sustainable aviation solution.

The air transport sector remains uniquely structured to maximize the benefits of sustainable fuels as an early adopter. Indeed, the comparatively limited number of fuelling stations (at airports) and vehicles (approx. 20,000 aircraft compared to hundreds of million cars, trucks and buses worldwide) make aviation a more manageable market and infrastructure in which to implement and demonstrate the sustainability of alternative fuels. Our current vision is that up to 30% of jet fuel could come from sustainable and commercially viable sources by 2030 (including biofuels). Policy makers should thus develop and implement incentives that support this very proactive and cooperative approach to help address aviation's present and future economic and environmental challenges.

b. Promote research & funding on breakthrough airframe, engines, systems integrated technologies

By the competitive nature of the sector, the aerospace industry drives innovation, integrating economic and environmental objectives in diverse domains such as new materials, advanced aerodynamics, systems, propulsion, and overall integration processes.

However, climate change is a major issue that cannot be tackled either by industry alone, or by one country only, or even through regulation only. A suitable European research and innovation scheme needs to be maintained and improved to ensure the complete innovation chain. This research system needs to cover atmospheric, vehicle-related, modal systems-related and overall transport related research.

Technology development will be a significant part of the solution. Massive investments have to be made to achieve the step changes in technology that are now required. For example, the European aerospace industry is part of "Clean Sky", a 7-year and €1.6 billion programme based on a

50/50 partnership with the European Commission and a significant step towards the objectives set by ACARE (the Advisory Council for Aeronautics Research in Europe). Long product and systems cycles will need strategic approaches, as decisions today will have their impact in the longer future. The only way to ensure this is a continuous debate between all related stakeholders, as done in ACARE, where regulators, manufacturing industry, operators, research, universities etc. are working together to define jointly the strategy for aeronautical research in Europe (both technically and with respect to institutional enablers).

In addition, based on the experience in ACARE in which all stakeholders (public and private) elaborated and agreed jointly a common vision and research strategy, other new and efficient forms of public-private partnerships need to be created, as costs are too great for one sector alone. Private and public organisations need to work hand in hand to prepare a sustainable future of air transport. Europe can take the lead in that new era, if all stakeholders reinforce their partnership and increase their funding for research and technology.

c. Incentives for optimized transport means based on life-cycle cost/benefit approach

Transport policies are needed that allow the identification and development of the best-suited transport mean for different transport scenarios and needs in recognition of the market drivers that will shape the users requirements for transport services (congestion, delays etc.) and preferred transport values (comfort, time, point-to-point).

The continuous improvement of the environmental footprint of all transport means needs to be assessed through a true lifecycle approach at optimum costs and benefits, and needs to take into account land use, transport service performance and operational integration, including an official study concerning aviation's environmental efficiency. To further favour the reduction of emissions, the implementation of global market-based measures will be necessary: such reduction should not arise from a corresponding reduction of transport services with its negative impact on economy, but from additional efforts in R&T and accelerated implementation of its outcome.

Based on the above considerations, a balanced use of incentives and financial instruments for optimised transport means has to be put in place. We support the general legal principle of "polluter pays" if it is applied globally and fairly. An ETS – as a legal way to cope with CO2 emissions based upon the payment by each operator of a right to emit – has to consider the aeronautical sector as a whole and should stand as a global approach with worldwide application.

d. Attribution of generated funds to aviation-related investment

Airbus proposes that funding perceived from sector regulation to be directly re-invested in aviation-related environmental projects of research or concrete actions permitting to implement current technology research, ATM and air transport-related intermodality projects.

e. Financing of air/ground intermodal infrastructure / studies

The importance of inter-modal integration needs to be clearly outlined in the EU's next white-paper. Seamless connections of intermodal connections, such as air to ground, will have to be

based on more effective infrastructure, traffic management systems, coordinated/synchronized processes, as well as shared facilities and information exchanges:

- ð The Collaborative Decision-Making (CDM) concept in the air transport sector, as part of SESAR, could be considered for application on a wider scope across transport modes in order to achieve synchronisation with complementary means of transport.
- ð Investments, for example in dedicated rail links to airports, would allow a decrease in road congestion for airport access, taking into account the relevant benefits and capabilities of the respective transport modes.

The development of such sustainable and interoperable transport infrastructure, networks and systems (ITS etc.) will require the funding of appropriate feasibility studies and the allocation of resources to the development of common standards through cooperation projects amongst the relevant partners across transport modes. Intermodality approaches and investments in dedicated, improved infrastructure and intermodal agreements between operators need to be fostered in Europe in the future.

f. Support of scientific projects enhancing understanding of climate change

Society has to understand how the Earth's environment evolves, for natural or anthropogenic reasons. This is particularly true for aviation due to the global nature of its activities with means of travel in a tri-dimensional space. For several years, air transport has been supporting research projects that contribute to improve the atmospheric knowledge; commercial Airbus aircraft have been used in the framework of European projects such as MOZAIC and CARIBIC to measure atmospheric chemical compounds. Such contribution will continue with research projects like IAGOS. These data are needed to initiate atmospheric research models, and so to provide better climate forecasts.

Air transport also needs to understand its impacts on the environment, in particular the impact on local air quality and on our climate through direct aircraft engine emissions like CO_2 or NO_X, but also through indirect effects like contrails and induced cirrus that occur during the flight under specific atmospheric conditions. The aviation industry and several airlines thus support research activities enhancing the evaluation of aviation's contribution to climate change, in particular concerning the potential effects of non-CO_2 emissions.

Developing a sustainable future air transport requires directions and guidelines on research efforts and on the environmental constraints that society is ready to accept due the strong interdependencies between noise pollution, local air quality, climate change, etc. For many years, the air transport industry has provided strong contributions in several projects to develop technologies and systems reducing aircraft/engine noise and / or emissions. In the framework of European projects like ERAT or OPTIMAL, coordinated by Airbus, the industry cooperates with air traffic services and research centres to propose advanced approaches and landing procedures that increase capacity, safety, and efficiency, while decreasing the environmental impact. Clean Sky and SESAR will integrate these results to prepare a sustainable future air transport system. In addition, further analysis and continued studies of interdependencies and their societal acceptance will be necessary to develop a sustainable air transport system.