

Energy and environmental issues for the aerospace and defense industry in 2030

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In the next decades, world economy will face energetic problems and growing environmental concerns. As oil rarefaction and sustainable development are expected to affect all economic sectors, we suggest, first, a global approach which progressively focuses on transport issues and finally on air transport. Secondly, we put forward possible energy-saving improvements concentrating on each lifecycle stage of an aircraft.

By 2030, we expect environmental and energy issues to be closely linked to a global strategy still to be defined. Efficiency should be the key word while dispatching energy resources among the various economic sectors and especially among transports. In order to reach sustainable development, long-term policies should be promoted as well as choices based upon technical aspects. While performance would remain the foremost target in the defense industry, civil improvements would also benefit to military aircrafts.

Transport organization should be streamlined and new technologies developed, especially for ground transport. However, for aerospace applications, we do not expect a drop of oil consumption by 2030. Instead, transport optimization may lead transport companies to set up multi-modal networks.

Energetic and environmental pressures are likely to carry out new architectures. Concerning commercial aviation, we expect an increasingly segmented market so as to optimize aircrafts. This may include a strong differentiation between, for instance, long and short-haul aircrafts, but also between manufacturers during a technical transition phase which would last from the late 2010s until, at least, 2030.

We adopt a Process Lifecycle Approach and suggest several possible improvements focusing on each lifecycle stage of an airplane, from conception and production to smart dismantling and recycling, and going through operational life.

As regard to the future aircraft design, we stress the importance of so-called “green technologies” which may be adapted to a large number of aircraft configurations, including the current ones. As the present standard configuration seems to reach its top performance, new architectures may appear. We therefore propose several trends for various types of aircrafts. Thus, we introduce the concept of civil aircraft refueling, especially relevant for very long-haul routes. While giving key target figures to fix ideas, we admit that this concept should be assessed more deeply.

Air traffic management requires worldwide efforts which could directly impact air transport efficiency. Although most of the equipments needed to improve air traffic are on the shelves, forecasts predict a low pace of introduction.

Last but not least, we suggest the development of industrial dismantling centers. In effect, smart recycling could generate in the mid-term an important activity which might be strategic in a market driven by energy and environmental pressures.