

What will be the energy and environmental context for the aerospace and defence industry in 2030?

What will be the consequences on our industry's ambitions for innovation and competitiveness?

The 21st century will be one of major transition in the history of humanity. Our civilization is indeed already confronted with the beginnings of two crises, intimately bound: energetic on the one hand and environmental on the other. To answer the double problem proposed to us, we led a study in divided in three parts.

Having targeted the various actors of the aircraft and defense industries, we reminded the current world situation, and then concentrated on the aircraft industry. On the energy side, we showed that the current situation was difficult due to an almost total monopoly of oil. This monopoly, more generally of fossil fuels, entails on the environmental plan, dramatic consequences notably with global warming. Even if the impact of the aircraft and defense industries remains low weak (air traffic representing only 3% of emissions issuing greenhouse gases), the current energy and environmental impact forces evolution.

From this basis it was possible for us to make scenarios for the evolution of these contexts for 2030. Concerning the energy question, we focused on the availability of oil, approaching by scenarios the date at which will arrive a peak in oil production. If this occurs in the short term (scenario 1: in 2010) and takes our two industries by surprise, or if it arrives in 2025 (scenario 2) or even after (in 2040: scenario 3), the energy and environmental situation would not be the same in 2030. Indeed, a heightened barrel price would stimulate the development of alternative fuels (synthetic fuels and biofuels) of which we studied the aeronautical potential and limits.

The environmental issue would also be different. In the case of a peak in production, the priority would be to find an 'energetic' alternative to oil, rather than an environmental solution. Let us note that this would also condition the selection of alternative fuels: the simplest to implement not being necessarily the most ecological. We arrived at the conclusion that GTL (Gas To Liquids) would be the best fuel of transition, before the massive development of second generation biofuels. According to our study, the energy context in the aircraft and defense industries in 2030 (kerosene %, "synthetic fuels" %, biofuels %) would be :

Scenario 1: 40%, 20%, 40%	Scenario 2: 65%, 25%, 10%	Scenario 3: 80%, 10%, 10%
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We also studied the possible evolutions in matters of fuels taxes, airport taxes and emissions licenses in each scenario. Indeed, the creation or maintenance of such taxes or royalties in a sector already hard touched by a barrel at \$400 for example, is difficult to figure.

In our final part, we analyzed the consequences of these changes on the ambitions of innovation and competitiveness of our industry. We demonstrated that research and innovation were the priorities, and that international cooperation could help finding more environmental friendly technological solutions. The consequences of the energy-environmental context could be double: positive if innovation is stimulated, negative if the aircraft and defense industries do not anticipate in time the changes to come.

In term of competitiveness, the consequences of a restrictive environmental policy are most of case positive. To top it all, we focused on the importance of international cooperation, in an ever more competitive world.