

For this column ARC invites guest writers to discuss and debate current and burning airport-related matters.



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**Cesar Velarde Catolfi-Salvoni**

## Comparison of CO<sub>2</sub> emissions between different means of transport: A decision-making tool for intermodality

### The transport system: a social need

The world in which we live has in the transport system one of the pillars of its development. To help achieving a sustainable economic and social growth, especially in a geography as complex as Europe, it is necessary an intermodal transport system that requires balanced distributions between their means and the best combination of all of them.

As the ARC paper Intermodality in Airport Regions analyzes, intermodality links the local scale with the global dimension of the transport system, so when analyzing and planning transport networks both dimensions must be taken into account and therefore local, national and European authorities should share information and decision making.

Every mean of transportation -airplane, train, bus, car, etc. - play a role in the system and all of them have the responsibility to improve its efficiency, adapting to a new energy scenario with high environmental requirements. In improving and choosing among them, there are many factors to consider, and flagging at each other on environmental grounds may lead to not optimal solutions in terms of sustainability.

### Comparison between means of transport

Comparative studies between different means of transportation demand reliable data sources and consistency of the findings, since they can be used as influenced attempts to confront one versus other.

When presenting statistics and indicators it is necessary to be clear, systematic and transparent

in showing the methodology and conducting the calculations.

Also a multi-scale approach (the door to door perspective that the ARC mentioned paper refers to) is important when studying transport: Main international nodes (airports, ports, train and bus stations...) are placed in big cities but users arrive from much wider areas using different modes. Consequently, it should be taken into account the local information on any regional and global analysis.

### Train versus aircraft?

It is commonly accepted that train is much cleaner than air transport but there are many factors involved when analyzing this topic and not using the best data, and even the lack of independence in the studies, might lead to wrong figures and as a result to wrong decisions when defining policies.

The different types of technologies considered, the sources of energy used (renewable, nuclear, fossil fuels) and losses in processing and transportation (significant in the case of electricity), distances and load factors are just examples of aspects which can widely vary the calculations. In particular, power is generally assumed as low polluting. However, this consideration is not always fully justified in countries like mine -Spain-, where even though the remarkable increase of renewable energy generation in the last years, still a big part of our electricity comes from fossil sources.

It is important to remark that as well as train technologies have become cleaner, commercial aviation has become 70% more fuel-efficient

over the past 40 years, and further improvements on transport technologies might offer large savings overall to decouple emissions from traffic growth.

In recent times, comparisons of energy efficiency and emissions from high speed train and airplane have been a recurring subject in the media and in various forums. It is common in these comparisons not to provide, with the final figures, a clear explanation of the process of obtaining them or the variables taken into account, let alone considering not measurable indicators such as quality and versatility.

Undoubtedly, the high-speed trains bring great values and improve the quality of life in our regions and the transport system as a whole.

It is also clear that Aviation plays an essential role in peripheral areas such as islands or coastal regions that are not connected by high speed trains, and also plays a certain economic role on intra and extra-European trade and tourism.

Conducting comparison studies requires developing adequate models considering technological to provide real figures, and its objective should not be to promote one transport mean over another, but achieving the most sustainable potential combination.

### **The work of OBSA**

The Observatory of Sustainability in Aviation (OBSA) is working on the development of sustainability indicators to monitor the aviation sector environmental and socio-economic performance, and to provide clear figures to compare different intermodal transport combinations and support decision making of both industry and authorities. To guarantee independency and to contrast the results of this work, the OBSA has promoted the creation of a national Working Group in Spain, with experts from main transport research centers and representing all major means transport (train, land, maritime and air transportation) and other independent organizations. The experience is being extremely positive and we are currently working on a commonly standardized national set of transport-related CO2 emissions indicators. Indicators are a basic decision-making tool and proper decisions must be based on the best available and agreed information.

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