



EconoMag

The Show that demystifies Economics

Megaprojects – Part 5: The Maglev Train ©

by Max Farrington and Michael Hirsch

We started megaprojects looking at transportation in Asia with the Chinese highway, and now we are going to finish with the Japanese Maglev train. The idea behind the Maglev train is that it uses Magnetic Levitation to move along a rail, without actually touching it, separated only by a magnetic field and therefore eliminating friction, allowing for greatly increased speeds. There are several Maglev trains already in existence, as of 2015 there are three lines in operation: One in Shanghai, which is the first high speed rail; one in Japan at Aichi, and a small 1km long line in Daejeon, South Korea. There have also been other lines that worked or were planned, but were abandoned; such as in Birmingham and in Berlin, and also the Swiss metro underground project that was dropped in 2009 for lack of support.

These earlier Maglev versions that were once in operation were all on a relatively small scale. The Megaproject that we are going to talk about today is the JR-Maglev, also now known as the SC or Super Conducting Maglev. The first commercially exploitable line will be ready in 2027, connecting Tokyo to Nagoya, covering a distance of 286 km. The second part of the project will connect Nagoya to Osaka by 2045. The earliest research into this project began back in 1962; and a test track was created in Miyazaki in 1977.

So, Maglev trains already exist but they don't cover such long distances. Several tests have already been made with the MLX01 (X for Experimental), and this train is now the fastest in existence, reaching speeds of up to 581 km/h. The current project will connect Tokyo and Nagoya in 40 minutes and Tokyo with Osaka in 67 minutes, running at a maximum speed of 505 km/h, making it the fastest commercial train in the world and ahead of the Transrapid system in Shanghai. Development of the line was granted government approval on May 27th 2011.

The line is expected to cost a staggering €68 billion, the equivalent of the entire French national budget for Education. JR Central is considering opening a demonstration service between Tokyo and Kofu for the Olympics in 2020. The Japanese Maglev train is designed so that it will have a minimal environmental impact and not scar the countryside, as 90% of the line will be built underground and through tunnels at a depth of up to 40m, which helps to explain the enormous cost of the project. Japan is a series of mountainous islands and constructing such a rail line will be an extremely difficult undertaking. There are planned to be 9 stations along the line.

The economical benefits of the SC Maglev train are substantial, as the reduced travel time between cities will save anywhere between €38 and €131 billion during the first 50 years of operation. There is also the international prestige of having such a train and the eventual export of the system and its technology. Shinzo Abe, the prime minister of Japan, has proposed a Maglev line between Washington and Boston, even offering to finance the first part between Washington and Baltimore. This project would be to encourage Japanese and American cooperation and it would be an enormous deal for Japan.

This was the last project on our list of Megaprojects for the Economag. All of these very expensive infrastructure projects will change the lives of millions of people, whether directly, as with the Japanese Maglev Train, the Chinese Highway System and the Nicaragua Grand Canal, or indirectly as with Masdar City's research center and the ITER nuclear fusion energy Project.