ABOARD THE AVE — Carlos Martínez and his colleagues were enjoying soda and sandwiches in the bar, having chosen not to watch a film — “Appaloosa,” with Ed Harris — that was playing on overhead screens. They barely seemed to notice the arid landscape whizzing by or the digital display reflecting their speed, which hovered around 186 miles per hour.

Since a high-end, high-speed rail connection between Barcelona and Madrid opened in 2008, a 325-mile journey that takes about 6 hours by car can be completed in just 2 hours and 38 minutes, from city center to city center.

Two years ago, nearly 90 percent of the six million people traveling between Madrid and Barcelona went by air. But early this year the number of train travelers on the route surpassed fliers, and the trajectory is ever upward.

The shift has political and economic benefits for Spain, which like other European Union countries has set out to lower its carbon dioxide emissions by 20 percent over the next 10 years. Emissions per passenger on a high-speed train are about one-fourth of those generated by flying or driving.
But those who board the AVE (for Alta Velocidad Española, or Spanish High Speed) are not necessarily thinking green. Like high-speed railways in France and China, Renfe — Spain’s national train operator — has performed the ultimate green sleight of hand by simply making the low-emissions option more comfortable and convenient.

“Since the day this train opened, I have never, never set foot on the plane again,” said Mr. Martínez, 31, a lawyer who travels between Madrid and Barcelona twice a week. “Why would anyone fly?”

Here, perhaps more than in any other country, the new high-speed train service has consciously set out to turn traditional stereotypes about train travel and plane travel on their head.

Unlike the French, who sought to maintain a low-cost image as their trains gained speed, Renfe decided to go upscale, said Josep Valls, a professor of marketing at the Esade Business School in Barcelona.

The train tickets cost as much as plane tickets — about $200 one way, at the moment — although cheaper advance fares can be found on the Internet. AVE offers assigned reclining seats, computer outlets, movies, headsets, good food and even gloved attendants.

“It is not about the environment, it’s that people are very satisfied by these trains,” Professor Valls said. “This is really changing the paradigm of travel for Europe.” Other AVE lines connect Madrid with Seville and with Málaga.

He predicted that eventually all European routes under 800 miles would be dominated by train travel, with a high-speed train traveling, say, from Barcelona to Paris — 520 miles as the crow flies — in a little over four hours.

Professor Valls said that Spaniards had so decisively opted for the comfort and convenience of trains that traditional airlines might not be able to compete. The number of flights between Madrid and Málaga dropped by half in the two years after the AVE route between those cities opened in 2007.

The main factor allowing planes to keep flying between Barcelona and Madrid was the arrival of extremely low-cost, no-frills cattle-car flights on the route this year, Professor Valls said. Book now on Ryan Air and you can fly for under $10 in April, though the price rises steeply for last-minute purchases.

The United Nations has said repeatedly that transportation emissions must be reined in if the world is to successfully combat climate change. Transport emissions in European Union countries grew 26 percent from 1990 to 2007, according to the European Environment Agency. Aviation emissions have grown particularly rapidly, and nowhere faster than in Spain — a premier destination for low-cost airlines — where they more than doubled in that period.

In the United States, President Obama has set aside $8 billion in federal stimulus money for investments in high-speed rail, but the money will go to a limited number of states, including Florida, California and Illinois. By 2020 half of Spain’s $160 billion transport budget will go to rail travel.

In the meantime, the Acela, Amtrak’s express train running from Boston to New York to Washington, looks like a homely tortoise by comparison with its sleek brethren here, averaging only 71 miles an hour. Spain’s high-speed train sector seems well positioned to expand. All AVE lines currently turn a profit and have easily survived price wars waged by airlines, Professor Valls said. What is more, trains require fewer employees and far less costly infrastructure than do planes.

Adding to rail’s competitive advantage, European environmental policies are likely to force an increase in airline ticket prices over the next few years. Beginning in 2012, the biggest
polluters among the airlines will be required to buy extra credits to “pay” for their carbon
dioxide emissions, and the cost will have to be passed on to travelers.

For many converts to the AVE, there is simply no going back to flying; they particularly do
not miss flight delays and the long lines at airport security checkpoints. The rail tickets
remind passengers to be onboard a mere two minutes before departure, and the only
security procedure involves passing large suitcases through a scanner.

“I can get to the station 10 minutes before it leaves,” said Rafael Fernández, a logistics
manager for Fujitsu who was returning to Madrid on an AVE train one day recently. “This
has changed the way I travel.”