

China's High Speed Railway's Going Global, reducing the global carbon emissions

Sun Zhang

(Professor of Tongji University and Editor-in-Chief of "Urban Mass Transit Research")

2015.11.26 Paris

US president Barack Obama in his first State of the Union Address has ever said: "We have no reason to let Europe and China have the fastest railways in the world." For this, the Obama administration for the United States drew a very ambitious "25-year-plan" blueprint of high-speed rail constructions. However, despite Obama's "High-speed Rail Blueprint" issued for more than 6 years, his high-speed rail dream was frequently frustrated. The reasons for this are mostly related to the situations in the United States.

Firstly, high-speed rail conflicts with the current passenger transportation structure of the United States. The United States of America has the most developed highways system in the world, and very few crossings, bridges and car-parking charge fees. In addition, the price of gasoline is relatively cheap. So, traveling by car is Americans' first choice. If the distance is still farther, taking airplanes would be chosen because the United States of America has the world's most developed civil aviation system (The United States currently has about 15,000 airports.). The results of the market competition make air tickets comparatively cheaper. Therefore, few American people would choose both slow and uneconomic railways to travel. According to statistics, in the United States of America, in the passenger carriage of beyond 80 km, the proportions undertaken by various transport modes are as follows: cars accounted for 56%; air, 41%; buses, 2%; railways, only 1%. Such a passenger transport structure almost makes railways become something dispensable, that is to say, as well without it as with it. However, such a passenger transport structure could not be promoted. The American population only accounts for 5% of the world's population, but they consume 25% of the world's energy sources. If the whole world copies the above American mode, it would need 5 earths to maintain the balance between supply and demand. Even more worryingly, the carbon-emissions pollution caused by automobile exhaust has the accumulation effects. Due to Germany's Volkswagen's resorting to deceit in testing of car exhaust emissions, the United States of America imposed heavy penalties on this car company. This is a must. But, more importantly, facing the increasingly serious pollution caused by car exhaust emissions, the United States should change its irrational structure of passenger transportation.

Secondly, the America's economic structure, natural conditions and population distributions make its high-speed railway plan have difficulty in taking a step. In the United States, 1/7 industries are automobile-related, 1/6 employment population are automobile-related. To develop high-speed railways will be opposed by these enterprises and their employees. Judging from the geographical factors of the United States of America, except the several densely-populated city belts of the east and west coasts, most of its areas are sparsely populated. Thus, the passenger transportation demand for high-speed rail is not very urgent.

Thirdly, all the states of the USA have a high degree of autonomy, which makes the federal government's plans for high-speed rail difficult to achieve. Take the 135 km high-speed rail project of Florida State's connecting with Orlando and Tampa that had included in the Federal Government's plan as an example. The Federal Government expressed its willingness to undertake the 90% construction costs, and therefore gave Florida State the \$2.4 billion federal funding. But after

calculating the economic accounts, the state government returned exactly the number of funding because they thought that there were the possibilities of a potential over-expenditure and losses after operation in this high-speed rail project.

Fourthly, the American electoral politics led to the situation that the Republican Party opposed that the Democratic Party agreed (In fact, not only for high-speed rail, but also for gun control as well.). The Republican Party members of all the state parliaments opposed Obama's high-speed rail plan. This time, it was not easy that the high-speed railway of the American western express line, which was a Sino-American cooperative project, could break the tight encirclement and set its own banner. The reason for this is as follows. The former California Governor Arnold Schwarzenegger, a famous film actor, who has many fans in China, embraced the visit to China. Although Arnold Schwarzenegger is a Republican, he rode the high-speed rail trains in China, which were convenient and comfortable, and which left him a good impression, so that he no longer opposed the high-speed railway construction. Thereafter, Mr. Brown who took over as governor is a democrat. Then, the America's first high-speed rail would naturally make a breakthrough in California. The total investment of the 370 km-full-length high-speed railway project of Western Express Line connecting Los Angeles with Las Vegas is about \$12.7 billion. Currently, the two sides of China and the United States have carried out the related work, including identifying financing plan. The project is expected to start construction at the end of September, 2016.

Although the high-speed rail constructions in the United States encountered above-mentioned all sorts of problems, we are still full of expectations for American high-speed rail constructions. This also has the following four reasons.

Firstly, the United States used to have 412 000 km railways. Up to this day, although 130 000 km railways have been dismantled, the American railways still account for about 35 % of the total length of the world railways, ranking the first in the world. And those demolished railway sub-grades are still retained. The United States of America is a country with the very strong innovation capacity. Once recognizing the advantages of energy-saving and emission-reducing of high-speed railways, the United States of America would catch up with at once. Then the world will trigger a second high tide of high-speed railway constructions. Secondly, the freight transportation structure in America is comparatively reasonable. Railways serve as the first major transport modes. The railways' freight turnover accounts for 41.9% of the total, while highways, 38.7%. Thirdly, in the current urban public transport in the United States, the proportion of rail transit passenger transport has accounted for about half of the total. That is to say, in the American urban public transportation, rail transportation possesses an absolute advantage. Therefore the development of high-speed railway passenger transport would not be unfamiliar to American urban residents. The fourth basis is that more than 100 years ago, the railway constructions in the United States of America had ever set a world record of laying more than 20 000 km railway tracks within a year.

"If we act quickly, we still have a chance to save the world." This is a popular slogan at the World Climate Change Conference. French friends might be interested in the above story of China's high-speed railways' entering the western region of the United States of America. Let us work together to continue to make more contributions for reducing the global carbon emissions.

中国高铁“走出去”，减少全球碳排放

——以中美合建高铁为例

孙章（同济大学教授，《城市轨道交通研究》主编）

2015年11月26日 巴黎

美国总统奥巴马在他的第一篇国情咨文中曾这样说：“我们没有理由让欧洲和中国拥有最快的铁路。”为此，奥巴马政府为美国绘制了十分宏伟的高铁建设“25年计划”蓝图。然而，尽管奥巴马的“高铁蓝图”已经出台6年多，但其高铁梦却屡屡受挫。其中原委大都与美国的国情有关：

首先，高铁与美国当前的客运结构相抵触。美国有世界上最发达的高速公路系统，又极少有收取过路、过桥和停车费的，再加上汽油价格相对便宜，因此开汽车出行是美国人的首选。较远的距离就选择乘飞机出行，因为美国有世界上最发达的民航系统（目前美国大约有1万5千个机场）。市场竞争的结果使机票也比较便宜。所以，美国人出行鲜有人选择又慢又不经济的铁路。据统计，在美国，80 km以远的旅客运输中，各种交通工具所承担的比例是：小汽车占56%，航空占41%，长途汽车占2%，而铁路仅占1%。这样的客运结构使铁路几乎沦落到可有可无的地步。然而，这样的客运结构也是不可推广的。美国人口仅占全世界的5%，却消耗了全世界25%的能源。如果世界各国复制美国的上述模式，那就需要有5个地球的资源才能维持供求平衡。更令人担忧的是汽车尾气等导致的碳排放污染的累积效应。德国大众汽车公司由于在尾气排放的检测上弄虚作假，美国对其施以重罚，这当然是必须的。但更重要的是：面对日趋严重的汽车尾气排放污染，美国应该改变其不合理的客运结构。

第二，美国的经济结构、自然条件及人口分布等使其高铁计划举步维艰。在美国，1/7的产业与汽车有关，1/6的就业人口与汽车有关。要发展高铁，往往会遭到这些企业和员工的反对。从地理因素来看，美国除东、西海岸几个人口比较密集的城市带之外，多数地区地广人稀，因而对高铁的客运需求并不十分迫切。

第三，美国各州拥有很大的自主权，使联邦政府的高铁计划难以实现。以曾列入联邦政府计划的佛罗里达州连接奥兰多与坦帕的135 km高铁项目为例：联邦政府表示愿意承担90%的建设费用，并因此给了佛罗里达州24亿美元的联邦拨款，但州政府在算了经济帐后如数退回了拨款，因为他们认为高铁项目可能存在潜在的超支和运营后的亏损。

第四，美国的选举政治导致民主党赞成的，共和党就反对（其实不仅对高铁，对控枪也是如此）。各州议会中的共和党议员都对奥巴马的高铁计划持反对态度。这次中美合作的西部快线高铁能突破重围、独树一帜实属不易。其原委是：在中国有很多粉丝的著名电影演员、前任加州州长施瓦辛格，欣然接受来中国访问；施瓦辛格虽属共和党籍，但在中国，他乘坐了高铁，对高铁的便捷、舒适留下了好印象，就不再反对建高铁了。此后接任的州长布朗是民主党人，于是，美国高铁就顺理成章地首先在加州有所突破。连接洛杉矶和拉斯维加斯全长370 km的西部快线高铁项目，总投资约127亿美元，目前中美双方已开展包括确定融资计划在内的相关工作，预计工程将于2016年9月底开工建设。

尽管美国的高铁建设遇到了上述种种问题，但我们仍然对其充满期待，这也有如下四方面的理由：

首先，美国曾经拥有41.2万km铁路，时至今日，虽然拆除了13万km，但目前美国铁路仍约占世界铁路总长的35%，居世界第一位，而且那些被拆除铁路的路基仍然保留着；美国是创新能力极强的国家，一旦认识到高铁节能减排的优越性而急起直追，那时世界将掀起第二个高铁建设高潮。其次，美国的货物运输结构是比较合理的，铁路为第一大运输方式，其货运周转量占到总量的41.9%，而公路占38.7%。第三，当前在美国城市公共交通中，轨道交通客运的比例已占一半左右，也即在美国城市公共运输中，轨道交通占有绝对优势，因此发展高速铁路客运对美国城市居民来说并不会感到陌生。根据之四是，100多年前，美国的铁路建设曾创下了年度铺轨2万多km的世界纪录。

“如果我们迅速采取行动,就还有机会拯救世界。”这是世界气候变化大会上流行的口号。以上所谈中国高铁走进美国西部的故事，也许法国朋友会感兴趣。让我们共同为减少全球的碳排放、为交通运输事业的可持续发展，继续多作贡献。