

In “Will Government Programs Spur the Next Breakthrough?” (*Issues*, Winter 2006), Vernon W. Ruttan challenges readers to identify technologies that will transform the economy and wonders whether the U.S. government will earn credit for them. My list includes:

Superjumbo aircraft: The Airbus 380 transports 1.6 times the passenger kilometers of a Boeing 747 and will thus flourish. US airframe companies, not the US government, missed the opportunity to shuffle the billions between megacities.

Hypersonic aircraft: After a few decades true spaceplanes will top jumbos in the airfleet and allow business travelers to commute daily in an hour from one side of Earth to the other. Japan and Australia cooperated on successful tests in July 2005. NASA remains in the game.

Magnetically levitated trains. For 3 years China has operated a maglev that travels from downtown Shanghai to its airport in 8 minutes, attaining a speed of 400 kilometers per hour. In 2005, a Japanese maglev attained 500 kilometers per hour. Maglev metros, preferably in low pressure underground tubes, will revolutionize transport, creating metros at a continental scale and jet speeds with minimal energy demand. The U.S. government is missing the train though supporting some relevant work on superconducting cables.

Energy pipes for transporting hydrogen and electricity. Speaking of superconductivity, cool pipes storing and carrying hydrogen wrapped in superconducting cables could become the backbone of an energy distribution supergrid. The U.S. Department of Energy (DOE) listens but invests little. The DOE does work on the high temperature reactors that could produce both the electricity and hydrogen and make Idaho the new Kuwait, and cheaper to defend (http://Phe.rockefeller.edu/PDF_FILES/BigGreen.pdf).

Large zero emission power plants (ZEPPs) operating on methane. To achieve the efficiency gains Ruttan seeks and sequester the carbon dioxide about which he worries, the United States should build power plants at five times the scale of the present largest plants and operating at very high temperatures and pressures. The California company, Clean Energy Systems, has the right idea, and we should be helping them to scale up their 5-megawatt Kimberlina plant 1000-fold to 5 gigawatts. Congress forces public money into dirty laundering of coal (www.cleanenergysystems.com).

Search technologies. We already delight in information search and discovery technologies invented in the 1980s by Brewster Kahle and others with a mix of private and public money. We underestimate the revolutionary market-making and efficiency gains of these technologies that make eBay and all kinds of on-line retail possible. Disintermediation may be the Ruttan revolution of the current Kondratiev cycle, as Kahle’s vision of universal access to all recorded knowledge fast happens (www.archive.org).

Action at a distance. Radio frequency identification (RFID) tags, remote controls (magic wands), voice-activated devices, and machine translation, all heavily subsidized by US military money, will make us credit the U.S. government for having murmured “Open, sesame.”

JESSE AUSUBEL

Director, Program for the Human Environment
The Rockefeller University
New York, New York
ausubel@rockefeller.edu