

## Industrial Planning In China: A Case Study

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We recently completed a comprehensive study of China's electric vehicle industry which, we believe, presents a vivid example of what "industrial planning" means in that country. China's economy is often a hard-to-define mixture of pure private enterprise and comprehensive central planning, as evidenced by the well-known Five-Year Plans begun under Mao and still central to economic development. Today, as the country increasingly moves toward a market-driven economy, the Five-Year Plans are less important in many industries than they used to be. But in strategic industries like energy, automotive, heavy equipment and communication, they are still authoritative. The development of China's electric vehicle industry is a case in point.

In 2009, China became the largest producer and consumer of cars in the world, surpassing Japan and the United States and rising from basically nothing just 25 years ago. But this dramatic growth has exacerbated two major problems for China – oil shortages and air pollution. Just about the time pollution from coal fired power plants was becoming more manageable by adopting cleaner burning technology, auto emissions rose to replace coal as the number one source of air pollution. Thus at the end of 2009, just before the Copenhagen Climate Summit, China announced that it would reduce its carbon density by 40-45% by 2020 compared with 2005 levels. To reach this goal, according to the "12<sup>th</sup> Five Year Development Plan", Chinese planners said the country would develop technologies to reduce consumption in such key industries as power generation and automotive manufacturing.

This gave impetus to China's development of electric vehicles, including pure E-vehicles, hybrids and fuel cells. In fact, however, China began research in what it calls "new energy vehicles" as far back as the 1980's - mostly in Tsinghua and Tianjin Universities. And as early as 1999, Dongfang Auto Group developed China's first electric vehicle in collaboration with these two research centers. But the real departure point for the industry didn't come until the 2008 Beijing Olympics. The Olympics became an occasion to test e-vehicles in real time. The Beijing municipal government took the risk of purchasing 492 new energy vehicles, including electric and fuel cell buses and hybrid cars, to serve the international Olympic crowds. This was the first time that such vehicles were deployed in any sizable scale in China.

Fast forward 5 years to today and we find 31 OEMs producing in fairly large scale (and dozens smaller manufacturers as well), with some 173 models under regular production (mostly buses and light commercial vehicles). Production increased five-fold between 2008 and 2011 to reach 12,784 units.

Still quite small, but production targets for the 12<sup>th</sup> Five Year Plan call for total cumulative production of at least 500,000 by 2015, and at least 5 million units cumulatively from 2012 through 2020, with annual capacity reaching 2 million vehicles by 2020.

So far the country is well behind its goals, but in reality the whole industry is just getting off the ground. Government plans have been revised again and again and are just now settling in. In fact, this is a common approach in Chinese planning – start with ambitious goals, learn from experience, then modify goals and supporting policy, and so on. This kind of planning is really reminiscent of Deng Xiao Pings’ famous saying about “crossing the river by feeling the stones.” It means - take one step at a time and learn as you go.

To reach the latest, downward-revised goal of 500,000, new production targets call for 1% of total vehicle production to be “new energy vehicles.” Significant obstacles clutter the road, especially technology and adequate standards. Yet *all* of the OEMs and industrial experts we interviewed in China agree that, despite the problems, the goals will very likely be achieved, or nearly so. They point out that these problems were common in a lot of fields in China – wind power for example. Ten years ago China lacked standards and core technologies in this field as well, but today China is the largest producer and consumer of wind power turbines in the world.

The force behind this development is comprehensive industrial development policies at all levels of government which support *both the supply and demand sides* of the market equation. In March 2012, the national Development & Reform Commission (NDRC) and the Ministry of Science the Technology (MOST) issued the *Exclusive Plan on EV of the 12<sup>th</sup> Five Year Plan*. In this document, China clearly decided that it would focus on developing new energy vehicles going forward. Then in April, the State Council approved an authoritative plan which integrates all the earlier policies and initiatives and provides guidance to the industry. It is a kind of “master policy” in this field.

On the supply side, OEMs can obtain financial support to develop technology, provided they commit to the 1% production target for new energy vehicles. All of them have basically done so. FAW (First Auto Works) is an example. It plans to produce 2 million vehicles in 2015 in its wholly-owned plants, and 20,000, or 1%, will be new energy vehicles. In return, FAW recently obtained RMB 720 million (US\$114 million) from MOST to develop certain new models, and there will likely be more to come. At the same time, the leading research institutes in the field can team up with the OEMs and also apply for advanced R&D funding. Billions of Yuan will be invested in this manner.

Further, when an OEM plans to expand production capacity for traditional vehicles, it must include investment in new energy vehicle capacity as well. Otherwise, the expansion plan may not be approved

by the NDRC. In addition, starting in 2016, the government will set annual fuel consumption goals for the OEMs. If the average consumption of new vehicles (including both new energy and traditional vehicles) does not meet the goal, the OEM will be fined. Last, the government will provide subsidies to the OEMs for EV and HEV sales ranging from RMB 50,000 to RMB 500,000 for an EV bus.

In general, the government requires companies to invest in new projects according to the Plan and abide by certain standards. In return, those that do will enjoy favorable policies such as low tax rates, cheap money from policy banks, and R&D grants, and those that don't will be punished either directly or indirectly.

On the demand side, policies reach deep into local governments. The *Exclusive Plan* calls for the creation of 25 “demonstration cities” where purchase of E-vehicles by the public sector would be especially supported. This program started in 2009 with 10 cities. In subsequent years new cities were added such that there are now three “tiers” of demonstration cities, 25 cities in all. Under this program, it is expected that some 60,000 E-vehicles will be sold in 2012. For example, Hangzhou alone announced it would purchase 18,000, Hefei plans to purchase another 22,500, and Beijing plans to purchase another 1,500, all in 2012 alone. Most of these cities will buy from their own OEMs. For example, almost all of Beijing's vehicles will be supplied by Beijing Auto Group and Beijing Futian.

Each city gets central government support, and each local government, in turn, develops subsidies for buyers, generally about 20% of the sale price. Local governments also provide certain subsidies to OEMs. Plus, some major cities are investing heavily to develop infrastructure to support the increasing use of E-vehicles. For example, the Beijing and Shanghai local governments invested in battery leasing. By October 2011 there were 13,085 vehicles in the 25 cities. Three-quarters of this total were accounted for by just six large demonstration cities.

Interestingly, China's total investment in its E-vehicle program is unclear. Estimates are that it will be in the neighborhood of RMB100 billion, or some US\$18 billion, but details of allocation and administration are not yet fixed. In part this is because the Plan is brand new, and in part it is deliberate so that flexibility can be maintained – “feeling the stones in the river”.

These are just a few highlights of China's E-vehicle program. We cannot yet know whether it will succeed, or if money will be invested prudently, or if tens of billions will be squandered. But we do know that when China commits to a program like this, it is an “all in” affair. We could “feel” the commitment at every level – central government, local governments, and OEM management – during our nationwide research. Whether we in the West think it is good or bad, fair or unfair, coercive or expansive, smart or stupid, is basically irrelevant. When China's planning system finally commits to a

specific task, it seems able to get over a billion people looking in the same direction, and that presents a formidable challenge.

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