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## China: “Green Prospects”. Part 2

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### Restructuring of the Economy and Energy

One of the consequences of the above-mentioned industrial breakthrough of China at the beginning of the 21st century was the fact that China finally achieved a qualitative shift in the use of its main energy source (in 2006-2011 coal consumption for generation of 1 kWh of electricity at Chinese TPPs decreased by 10%: from 367 to 326 g). This shift occurred mainly during the eleventh five-year plan (2006-2010), when the regulatory energy intensity of GDP (GRP) was reduced by 19%.

Another breakthrough was made during the energy restructuring that began at that time. These days own coal production (that has already begun declining in many regions of China) is combined with the increased importation of this fuel from abroad - at that, only high-quality grades are imported. In 2013, coal imports exceeded 320 million tons, which fact, among other things, means that the Chinese economy and its population can already afford to buy fuel at free market prices (but the same circumstance can lead to the overconsumption of resources).

However, about 20% of the total coal consumption in China's economic system is still produced by technologically backward enterprises in the country. On this issue, the government is determined to continue its course seeking the reduction of this figure. In autumn of 2013, the PRC government ordered to start gradual closing of coalmines giving less than 90 thousand tons of fuel per year, and licenses for opening [new production facilities](#) will be issued only if the planned production volume will be more than 300 thousand tons.

If you consider the volume of Chinese coal consumption (more than 3.5 billion tons per year), 20% is a very significant figure. At what rate will this primary energy supply be replaced? What will replace it? Will the growth of production and consumption of coal by the power stations continue - through the introduction of new large enterprises and imports? These questions concern not only Chinese economists, but also their foreign counterparts. They concern energy producers around the world and are very important for that part of Chinese manufacturers, which already have gained a reputation as producers of equipment for new power (about 15% of the world production of turbines for wind generators falls on the Chinese manufacturers). These are not only machine builders that manufacture equipment for the use of renewable energy sources (including hydropower), but also nuclear scientists.

We believe that it is absolutely essential to include the gas industry into the new energy in the case with China - as if opposing this whole “clean sector” (relatively, of course) to the coal energy. In our opinion, such an understanding of the new energy, applied to China, is justified by the fact that gas generation (still underdeveloped) is flexible enough to create integrated power systems and smart grids together with RES-generation. Obviously, the share of the latter will be reduced in the energy sector of the country. We should stress that this reduction was provided for by previous plans of the Chinese government - it was planned to reduce the share of coal in the energy consumption by 2% during the twelfth five-year plan (2011-2015).

The statistic data for 2012 were the first swallow twittering about the practicability of these plans, and perhaps of even more ambitious programs to reduce the dependence on coal. For the first time in the history of the Chinese economy, the growth in wind-power generation capacity (the largest sector of the RES-generation in the PRC, except for hydropower) exceeded the similar figure in coal energy. At the same time, the total production of wind energy in the country surpassed the total power production by NPPs. We should not exclude a possibility that the country's new leadership will take a more resolute course on the reduction of coal dependence, including under the pressure of public opinion and growing environmental demands of the population.

It is obvious that such changes were promoted by the third plenum of the Central Committee of the Communist Party

of China, held in November 2013, which outlined a course on the gradual decline in economic growth, stimulation of domestic demand, accelerated development of the service sector, and new energy. According to our Chinese counterparts, energy consumption will grow by about 4% per year in the current decade. Restructuring energy is somewhat easier in this mode of growth. It is possible that the previous plans for the introduction of new capacity at the coal-fired power plants will also be reduced significantly.

It is obvious that China's economy has already passed the peak of industrialization. Having reached 48% at the end of the last decade, the share of industry in the GDP began gradually to decline (although, industrial growth continues in absolute terms), the servicization of economy has begun. As it is known, services are generally less energy consuming. Another structural reserve is closing technologically backward industries, including in the energy sector. Energy economy, "the purest generation type", has grand horizons, because China is a major consumer.

At least two more circumstances improve the prospects for restructuring. First, excess capacity has already formed in many heavy industries in China, including in ferrous and nonferrous metallurgy and cement production, which reduces the demand for coal. Second, the third plenum of the CPC Central Committee confirmed the course on the further pricing reform in the energy sector, which would provide additional market incentives to RES-generation - because of the continued undervaluation of conventional fuels (and electricity) on the one hand, and the continued improvement of price characteristics of equipment for RES-generation on the other hand. Another factor acts in the same vein - tightening of the technical requirements for treatment equipment at coal-fired power plants.

Furthermore, it appears that having faced restrictions on exports of photovoltaic panels (PV, solars) in western countries, China began to introduce them massively in the country. Thus, according to a recent statement by the representative of the State Grid Corporation of China (SGCC), the solar power generation in the [country will increase](#) from the current 6.6 to 35 GW by 2015.

If we add the previously planned total capacity of 100 GW in wind power generation for 2015 (at the end of 2012, they already reached 75 GW, and the planned figure may be surpassed), the amount will be very impressive. It will be twice as much as the figure of RES-generation at the end of 2011.

Adding another 40 GW in nuclear power and about the same figure in gas generation, we obtain a volume of approximately 2/3 of the total capacity of Chinese hydro power stations (300 GWh) planned for 2015.

In other words, the aggregate capacity of RES-generation, NPPs and gas generation (not yet widely spread) may be equal to the capacity of hydropower within the foreseeable (2020) period. As a result, this entire "clean sector" will account for about 27-30% of power production and much more by its installed capacity.

Per capita consumption of energy resources in China (as well as per unit - calculated as per unit of GDP) may stabilize at the level of East Asian examples by this time or closer to the mid-2020s. The practicability of this state itself can be a strong motive for Beijing for further "greening" of its energy policy and investing billions of dollars. All the more so that Chinese tradition of governing provides for a heroic feat for each new leadership: like (but somewhat the other way around) the legendary Shun who burnt excessive vegetation and turned the course of the rivers in the necessary direction, the current team could turn the steering wheel in the direction of the green prospect.

*(To be continued...)*

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