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Aspects that are important to consider in the design phase of the national ETS

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China has decided to establish a carbon market as proposed in its 12th Five Year Plan (FYP, 2011-2015) and a national Emissions Trading Scheme (ETS) is under preparation. The carbon market and market mechanisms are regarded as complementary approach to command-and control mechanisms (Duan 2015). China has turned to more market based approaches such as the carbon market, in line with its deepening of and market reform and economic restructuring as decided at the Party 18th Communist Party Congress in November 2012. Seven pilots were established in 2013 and 2014 to provide experience for the national system. The national ETS is set to begin operation in 2017 during the 13th FYP (2016-2020) as announced by President Xi Jinping during his state visit in the US in November 2015. President Xi's announcement to start the national ETS in 2017 is an important signal for all stakeholders, including ministries, provinces, cities and enterprises in China to actively prepare for the ETS.

China submitted its Intended National Determined Contribution (INDC) to the UNFCCC before COP21 in Paris. China aims to peak CO2 emissions around 2030 (or earlier); to lower carbon dioxide emissions per unit of GDP by 60% to 65% from the 2005 level; non-fossil energy increase to 20 percent by 2013; increase the forest stock volume by around 4.5 billion cubic meters on the 2005 level; and control coal consumption, i.e. set a cap on coal use. The national ETS when operational will contribute to China' efforts to reach emissions reduction objectives in the forthcoming 13th FYP (2016-2020), as well as support the INDC goals.

The recent Paris Agreement from COP21 included a central role for market mechanisms, and provides an additional incentive for China to further cement its ETS. China has already gained important experiences through the pilot phase and through international collaboration, both on the pilot level and on the national ETS.

China's national ETS will be a system with unified rules for all provinces, with two-level system, central and provincial (Duan 2015). All provinces will be included in the system from the beginning. The National Development and Reform Commission (NDRC), responsible for coordinating climate efforts in China including the ETS, issued Interim Management Rules on Emissions Trading, in December 2014 that provide basis for the ETS.

I would like to highlight three aspects that are important to consider in the design phase of the national ETS (pls see Duan 2015 for additional challenges).

Legal foundation: One of the most critical areas for the successful implementation of ETS in China (and elsewhere) is the establishment of a **legal basis**. The government and experts have expressed the need for a strong legal basis for the national ETS for effective implementation and potential punishment of non-compliance. NDRC is well aware of the legal challenges and is working with the Legislative Affairs Office of the State Council to have the Interim measures promoted to State Council regulation (Duan 2015). This may still take some time due to procedures and compulsory hearing. There is positive experience in the pilots, such as in Beijing and Shenzhen, where the local People's Congresses have passed ETS legislation. In the other 5 pilots currently have weaker legal basis; some have decrees issued by the local governments (Tianjin, Shanghai, Guangdong and Hubei); in Chongqing a notice has been issued (Duan 2015). The valuable experience from Beijing and Shenzhen is worthwhile sharing with pilots and others starting to initiate carbon market.

Equity and distribution for allocation to provinces: In the design of the national emissions trading system capacity, equity and distributional aspects are relevant. The different development levels of China's provinces need to be taken into consideration in the design phase. Scholars consider potential allocation schemes in line with equity principles in China (Zhang et al 2014). Development gaps between urban and rural areas and among regions are still large, and so are income disparities. Developing a low-carbon economy is the goal of many provinces and cities in China, yet, sometimes hard to achieve due to varying needs and priorities as well as institutional restrictions, such as lack of staff.
President Xi recently pledged that poverty alleviation will be a major part of China's post-2015 agenda, and the 70 million poor in China will be lifted above the poverty line by 2020 (Xinhua 2015). The pledge may not directly link to the ETS, yet, illustrates existing challenges in China. The varying levels and lack of capacity and knowledge of the ETS is a challenge. Not all provinces have come as far as the pilots. Some provinces are very active, while others will need extensive capacity building and training.

Synergies and policy coherence: It is important to identify synergies between the ETS and other climate and energy policies. China will bring 10,000 enterprises on board when the ETS goes into effect in 2017, covering six sectors and 15 sub-industries (Carbon Pulse 8 December 2015). Linking with other important policy processes such as the mandatory Top 10,000 programme of enterprises in the 12th Five-Year Plan period would be highly relevant.[1] Industrial energy efficiency is regarded as crucial to reduce energy demand and GHGs emissions (Lu et al 2014). It is likely that the Top 10,000 programme will continue under the 13th FYP in some form (though perhaps a different name). The importance of policy coherence between the energy saving programmes and the national ETS cannot be stressed enough as industry is the main contributor to China's emissions. More importantly, for China to reach an emission peak in 2030 (or before), industry will have to peak in 2020 (ERI et

[1] The Top 10,000 Program aims to cover two thirds of China's total energy consumption, or 15,000 industrial enterprises that use more than 10,000 tonnes of coal equivalent (tce) per year (), and around 160 large transportation enterprises (such as large shipping companies), and public buildings that use more than 5,000 tce per year. The total number of enterprises covered by this programme reaches to around 17,000. See LBNL 2015.

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