



China Carbon Forum | 中国碳论坛

An independent platform to foster trust and cooperation among China's stakeholders for climate action

Car sharing: A Solution to Traffic Bottlenecks in China's Megacities?

Executive Summary

Carsharing aims to complement the existing public transport system by providing on demand and short-term access to public automobiles. Carsharing separates car use from vehicle ownership. It intends to reduce the car population in a city to prevent traffic congestion and reduce pollution. Carsharing solutions have spread in western countries where local governments see them as convenient ways to reduce parking needs in the city centers and improve overall transportation efficiency of the city. However, the concept is still very new in China.

In 2009, China became the world's biggest auto market. By 2012, 14.7 million new cars were hitting China's roads. This has led to a dramatic increase in the congestion and pollution problems in major cities. Municipalities, including Beijing, have adopted specific policies that limit the annual growth of private vehicle ownership and control when they can be used. There is therefore an opportunity for Chinese policy makers and researchers to further explore the potential of carsharing systems as part of the traffic congestion and pollution solution in each of China's cities.

Record of Discussion

The following is an edited synthesis of discussion that took place at the event among panelists (around 1 hour) and open Q&A with participants (45mins). As per convention, individual's comments are not attributed.

The automobiles on Beijing's roads increased rapidly from 2.6 million vehicles in 2005 to 4.6 million in 2010. In response, Beijing's municipality designed an enforceable system that limited the growth of new vehicles on Beijing's roads to 240,000 per year. From 2014, this number will be reduced to 150,000, and a minimum of 20,000 of those will be electric vehicles. The share of electric vehicles will increase to 50,000 by 2016. A separate policy only allows cars to be driven on alternate days of the week and even less during heavy pollution events.

Among the different means of transportation in Beijing, private car usage rose from 23% in 2005 to 32.6% in 2011. This has since flattened out. Public transport usage has risen from 30% in 2005 to 44% in 2012, and the objective of the municipality is to reach 55% by 2020, mostly through the development of more subway lines. The bicycle share, however, dropped from 30% in 2005 to 14% in 2012. The municipality wants to reverse this trend and aims for 15% by 2020. **This creates an imbalance between the demand for driving cars, and the supply of cars allowed to be driven in Beijing.** Carsharing companies could benefit from this demand; however, they still face the same limits on new car entrants as private owners.

There are two carsharing models – the **station-based model**, which requires returning the car to a designated carsharing station; and, the **free-floating model** which allows users to pick the car up and leave it where they wish within the carsharing zone. This model requires a minimum density of available vehicles, but more easily meets the needs of users who usually don't schedule their trips in advance.

An example of successful carsharing implementation came from the city of Bremen in Germany. 200 vehicles are available for carsharing with 50 parking stations throughout the city. The service already has 8,700 users. The city estimates that 2,000 private cars have been replaced by this solution and hopes to reach 20,000 users by 2020, which will remove 6,000 cars from the roads. In addition to the reduction in congestion and emissions, Bremen's carsharing system also **creates more parking places and the possibility to develop specific bus lanes, bike parking areas and other public spaces.**

Carsharing could further drive the use of electric vehicles. While carsharing doesn't require electric vehicles, station-based model of carsharing can help implementing a large number of charging stations in the cities. Most trips using carsharing solutions are short trips that suit the battery life of electric vehicles.

Does carsharing compete with taxis and car rental? Taxis are already one of the great transportation solutions in China. However, the demand for the younger generation to drive by themselves continues to rise. While car rental can be effective in many cases, it is often limited to half-a-day minimum hire and the vehicles need to be booking can be inconvenient. A viable solution for the transportation system requires a combination of different carsharing modes and public transport to fill types of new demand.

Is car-pooling an alternative to carsharing? More and more owners of cars use car-pooling and drive together to work because it's more convenient and cheaper for them, even if the passengers already own a car. Chinese government aims to promote car-pooling in order to reduce traffic jams and improve air quality. However, officials also want to draw a clear line between car-pooling and black taxis.

Will more carsharing companies emerge in China? Companies can start with a reasonably small investment (around 20 vehicles) and the fleet can increase with demand over time. However, the main question is finding an effective parking solution in the city center. This is a sensitive question which can only be resolved with each local government.

How can the local government facilitate the implementation of carsharing solutions in China's cities? According to the panelists, carsharing businesses do not require financial support from the government, but require policy incentives. Carsharing companies require access to park on any available public parking place, and for the company to directly pay for the parking fee directly to the municipality. Carsharing companies want carsharing to be treated as part of the public transportation system like the taxis and receive a specific license plate, and to be allowed to be used every day.

What is the incentive for the local government to promote carsharing? Carsharing can reduce the need for parking spaces in the city center which, therefore, provides space to build cycling lanes and improve the flow for public transport and emergency services.

Which Chinese city is ready to start a carsharing business? It will be difficult for Beijing to commence a carsharing program in the near future, but China has more than 160 cities each with a population of over 1 million inhabitants, each with all very unique features which could lend themselves to carsharing programs. The key is getting agreement with the local government.

While carsharing uses new fuel efficient vehicles, one of the biggest benefits on emissions reductions from carsharing comes from reducing the demand for production of more vehicles. **The embodied energy through manufacturing a car can be more than half of the emissions over the car's lifecycle.**

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Perhaps the most positive outcome of the 19th Conference of the Parties in Warsaw was the agreement by all parties to develop national plans to reduce greenhouse gas emissions by 2015. However, in order to reach a legally binding agreement, parties will need to agree on which target to commit to and how to do it. As with previous COPs, developed countries asked for clearer commitment from developing countries, and developing countries insisted on the need for quick access to finance via the Green Climate Fund facility. Separately, after tough negotiations, an international mechanism to accommodate loss and damages from climate change related disasters was eventually achieved.

China understands that to win the battle over global climate change it must play a significant role. Developed countries are witnessing China's national mitigation plan and its constructive effort to address the impact of climate change through the development of emissions trading schemes. However, at the international level, China has not reached agreement with the USA nor the EU on its contribution to the framework of international negotiations. Nevertheless, all parties agree that long-term emissions reduction strategies need to be found by 2015.

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The Conference of the Parties (COPs) provides an invaluable international platform for information sharing that is transparent and efficient. Through the Kyoto Protocol, and developments that have followed, it has helped bring focus to the measurement of carbon impact and to incentivize low-carbon action. Yet, it continues to be difficult to build real consensus on how to limit global warming to below 2°C. Countries often get stuck discussing the numbers without agreeing on a plan that will work towards the goal. The panelists felt that in order to fulfill common but

differentiated responsibilities (CBDR), developing countries as well as developed countries need to make meaningful efforts to tackle climate change, particularly countries with rapidly growing economies and large populations. The Chinese government, however, was not satisfied with the outcome of COP19. Developing countries are looking for implementation solutions that are still lacking. The EU expects a lot from each COP and feels responsible for moving the negotiation forward in order to reach a satisfying agreement on a post-2020 commitment. **This post 20-20 commitment has to be inclusive from mitigation to adaptation, and from goals to implementation**, especially for countries that need help to implement their strategies. But it also has to be fair, **respecting CBDR**, and account for current emissions and historical records and respect the need for countries to grow. At this stage, **the legally binding nature of COP19 is still ambiguous** and asks parties for “intended” commitment in order to leave space for negotiation before a final agreement. Countries agreed that a text would be ready by the first quarter of 2015 and negotiation will be completed by the end of that year.

NGOs were not happy with the outcome at Warsaw. Many withdrew from the discussion before its end. NGOs consider that the EU and US are able to achieve higher emission reductions than their original mitigation plans, and that China should raise its carbon intensity reduction plan, claiming the recent extreme weather disasters in the Philippines and elsewhere should act as a “wake up call” for the international community on the necessity to limit global warming to under 2°C. NGOs also noted Poland wanted to explore coal until 2016. NGOs walked away from COP19 because it was lacking real pledge. They claim that **historical responsibility must be respected**, including Japan’s. In response to Poland’s criticism, a representative believed its national action set a good example for a country like China. Poland signed the Kyoto Protocol with a 32% emission reduction target, and Poland is outperforming this target. Poland is exploring shale gas on a commercial scale, and is currently building the biggest center for clean technology in EU. **Poland invites China to set a platform of exchange on climate and energy.**

Does the “firewall” of ambition and responsibility between developed and developing countries still exist? For most developing countries, this firewall still exists. China and other developing countries still need CBDR. However, **China and other emerging countries that persist on CBDR do not necessarily mean inaction.** Also, collaborative effort should be considered, and every country should share the responsibility. It was also noted that while there is rapid development in some parts of China, rural areas are not developing quickly and will need assistance for future development.

All involved in the COP process should maintain a degree of hope and optimism - **it is about changing perception and generating momentum.** There will be a broad spectrum of commitments emerging from national conversation on climate change. Panelists agreed that China with its commitments have made far more contribution than other countries. From that perspective, the firewall is gone. Does that mean China at this stage would not still argue that it is still a developing country that it does not bare the same degree of historical responsibilities as other countries began industrialization in 18th century? Probably not. Yet some believe that as a result of this international conversation, developing countries are taking more action. EU represents 40% of global emissions, per capita emission are on par with China, and EU cannot solve it with Annex-I countries alone. To address this problem, this perceived “firewall” needs to be gone by Paris 2015.

Australian ministers did not travel to Warsaw, while Australia and Japan reduced their previous levels of ambition. Did this impact the negotiation? It is unfortunate and disappointing, but the timing was beyond control. Ascertaining the right information at the COP is important. Panelists believed these developments did not affect the COP’s outcome.

Do the national 2015 targets have a standard format for national contributions? is it intensity, or absolute target? What is the base year? At this stage more time is needed to carry out assessment of the commitment. There will be a variety of targets proposed by different nations - some will use Kyoto protocol, and others will choose different base years, and select different kinds of targets based on sector, carbon intensity, or energy efficiency. Rules around transparency and clarity will need to be as robust as possible to adequately comprehend each country’s level of ambition, but the task will be by no means easy. It is important to note, however, that even intensity targets can be sufficient. For instance, if China’s intensity based national targets are met, **absolute emissions reductions will be three times the amount reduced under China’s CDM projects.**

National level discussion is necessary, but eventually companies are the ones making emissions reductions. Would it be good to replace COP process with a sectoral process? Unfortunately politics often gets in the road of logical policy. Over time a sectoral approach is likely to work, but not yet. The new market mechanisms in the EU should help to play a role here, and these mechanisms could better accommodate the different proposals by different countries. Yet some of the panelists believed there were still concerns that the sectoral approach does not respect CBDR.