



Clean Air Made in China – A Transport Sector Contribution to Liveable Cities



德国国际合作机构 (GIZ)

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Context

Urban Development

600 million people in China live in cities.

About **1 billion** people will live in China's cities by 2030.

More than **220 Chinese cities** will have at least one million inhabitants.

High density, high car dependency, low accessibility, urban sprawl



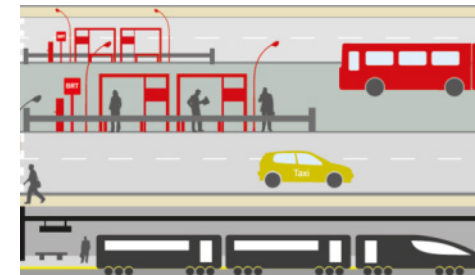
Urban Transport challenge

Every day **35.000 cars** are registered in China. Most of them in cities.

20-30% of urban air pollution can be traced back to road transport.

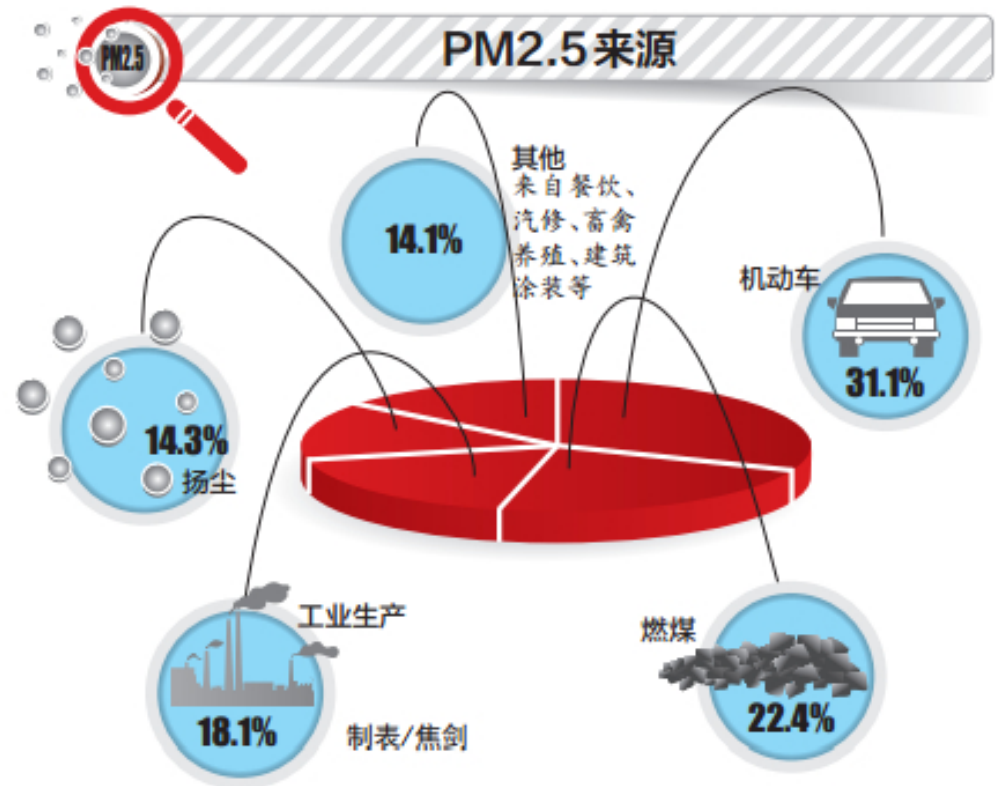
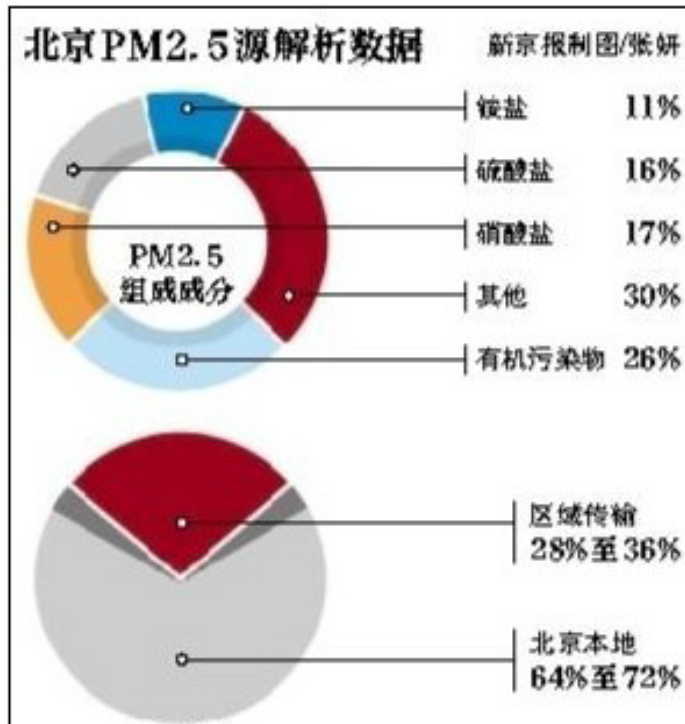
On an average day Beijing's air pollution is **3.5 times higher** than recommended by WHO.

Car ownership rate in Beijing already **280 cars per 1000** residents.





Vehicle become the major source of PM_{2.5} in megacities

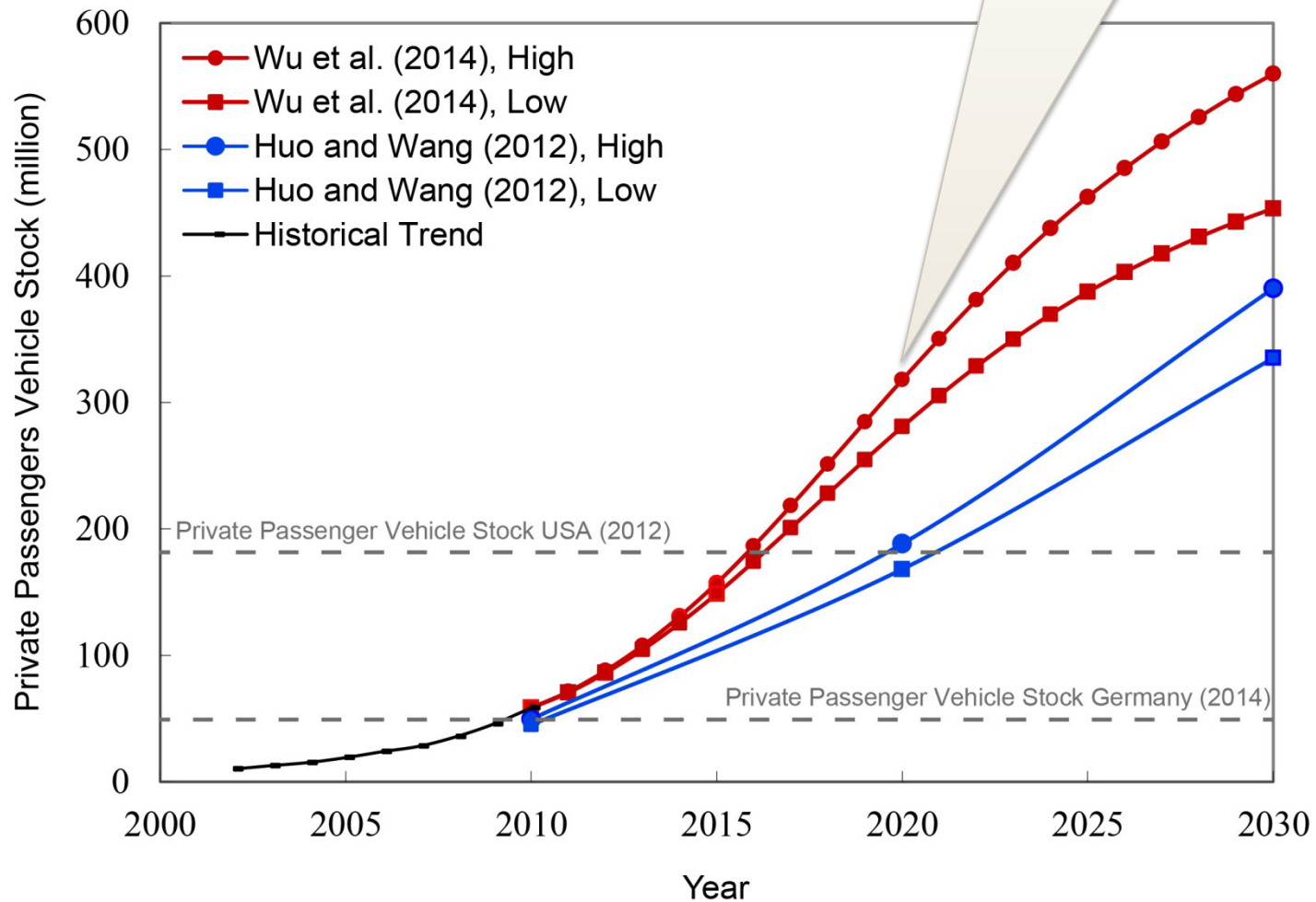


Source: Beijing EPB, 2014



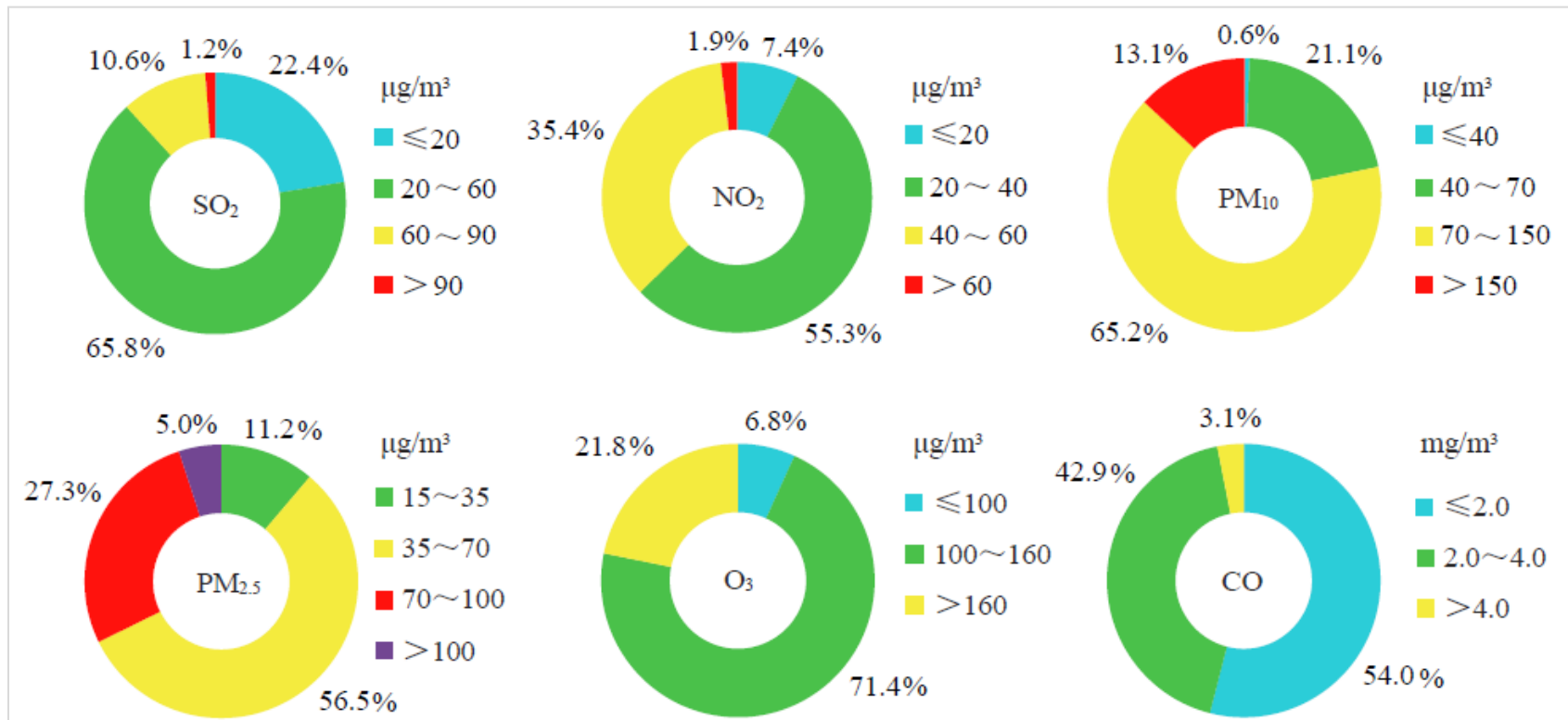
Rapid Motorisation

5 Mio. NEVs in 2020?





Proportion of Cities by Critical Pollutants (Annual Average Concentrations)





So what can we do in the transport sector?

Avoid

Shift

Improve

Fuel Switch

Total emissions

=

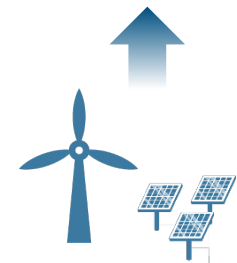
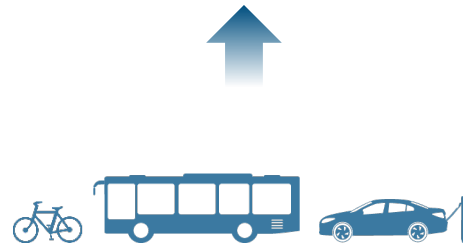
Transport demand

X

Energy intensity

X

Fuel quality



Approaches

- 1) Land-use planning
- 2) Smart urbanisation

- 1) Transport Demand Management
- 2) Non-motorised and Public Transport
- 3) Fuel efficiency and e-mobility

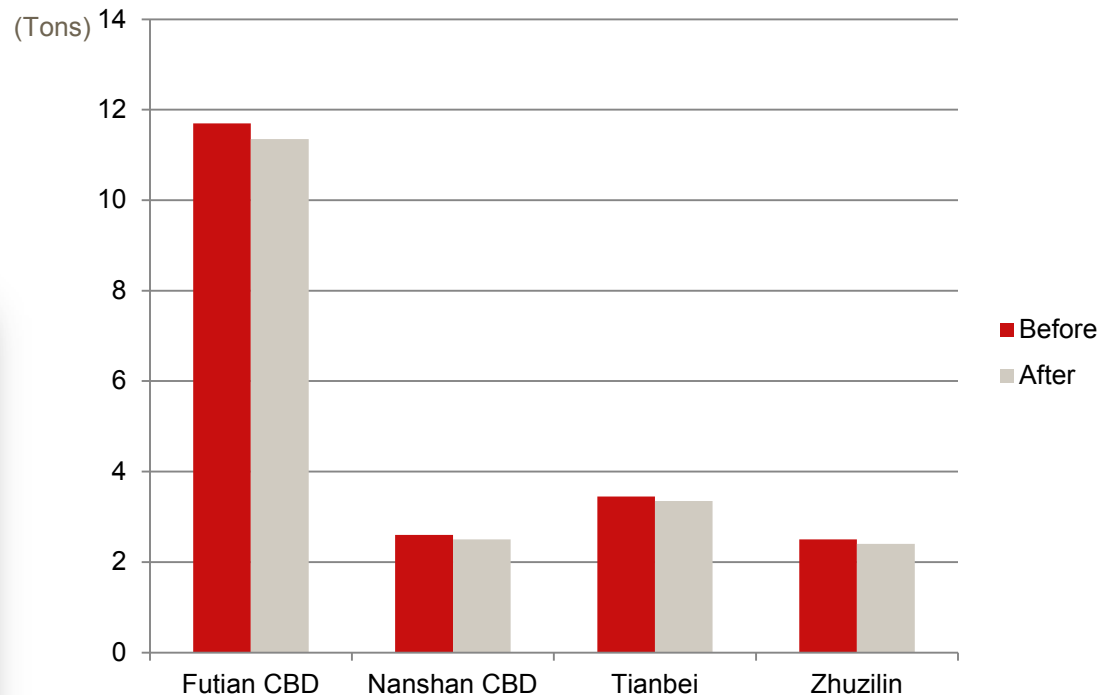
- 1) Clean Fuel
- 2) Synthetic fuels
- 3) Electrical energy



Example 1: Travel Demand Management Measures to Reduce Emissions



Impact of Parking Policy on GHG emission Reductions in Pilot Areas

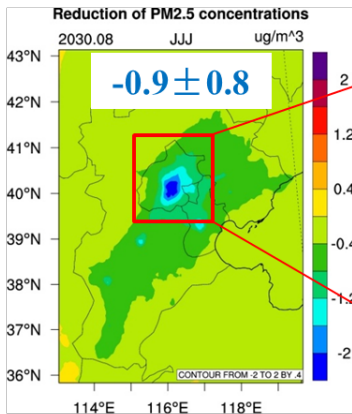




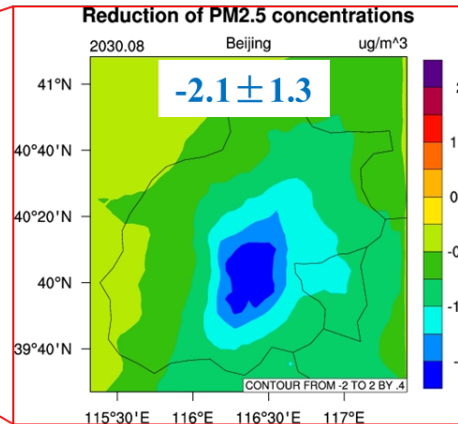
Example 2: Impact on PM2.5 Concentration: regional vs. urban area

Extreme
EV scenario
In August

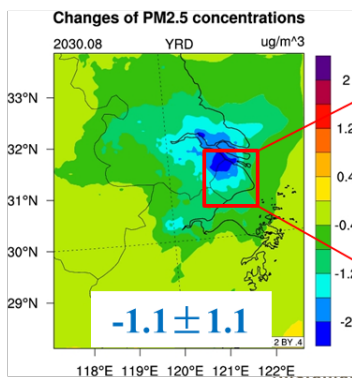
JJJ



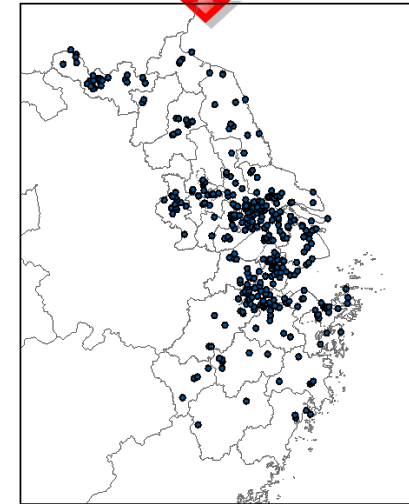
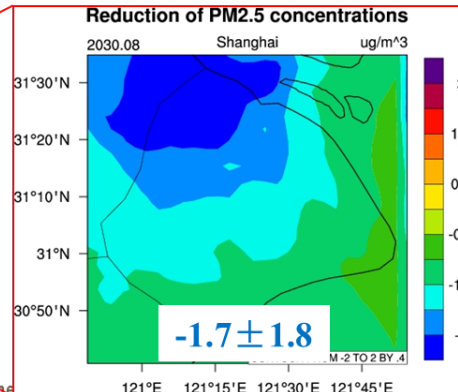
Beijing



YRD



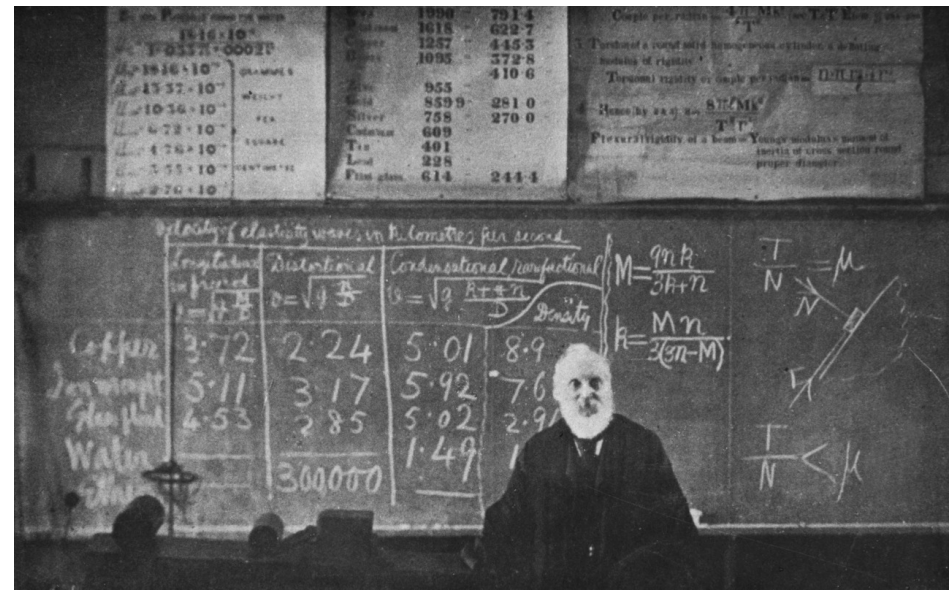
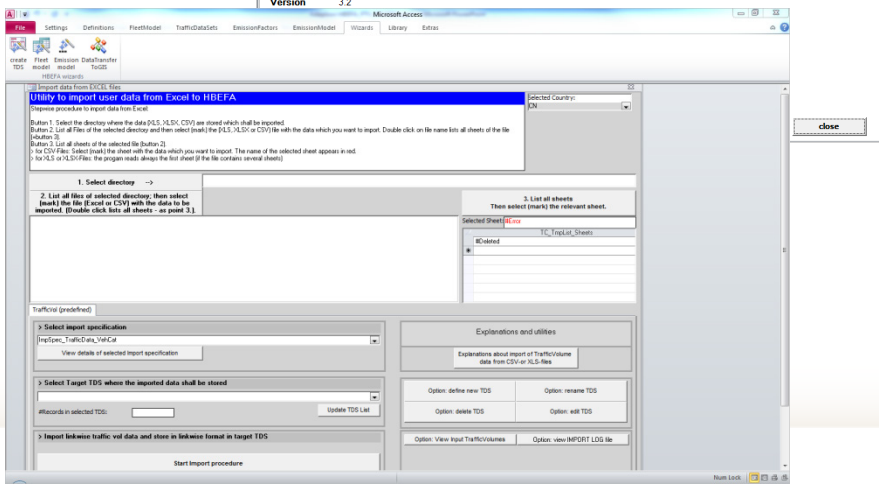
Shanghai





Modelling Support for Policy Development

GIZ promote transport MRV system development in China

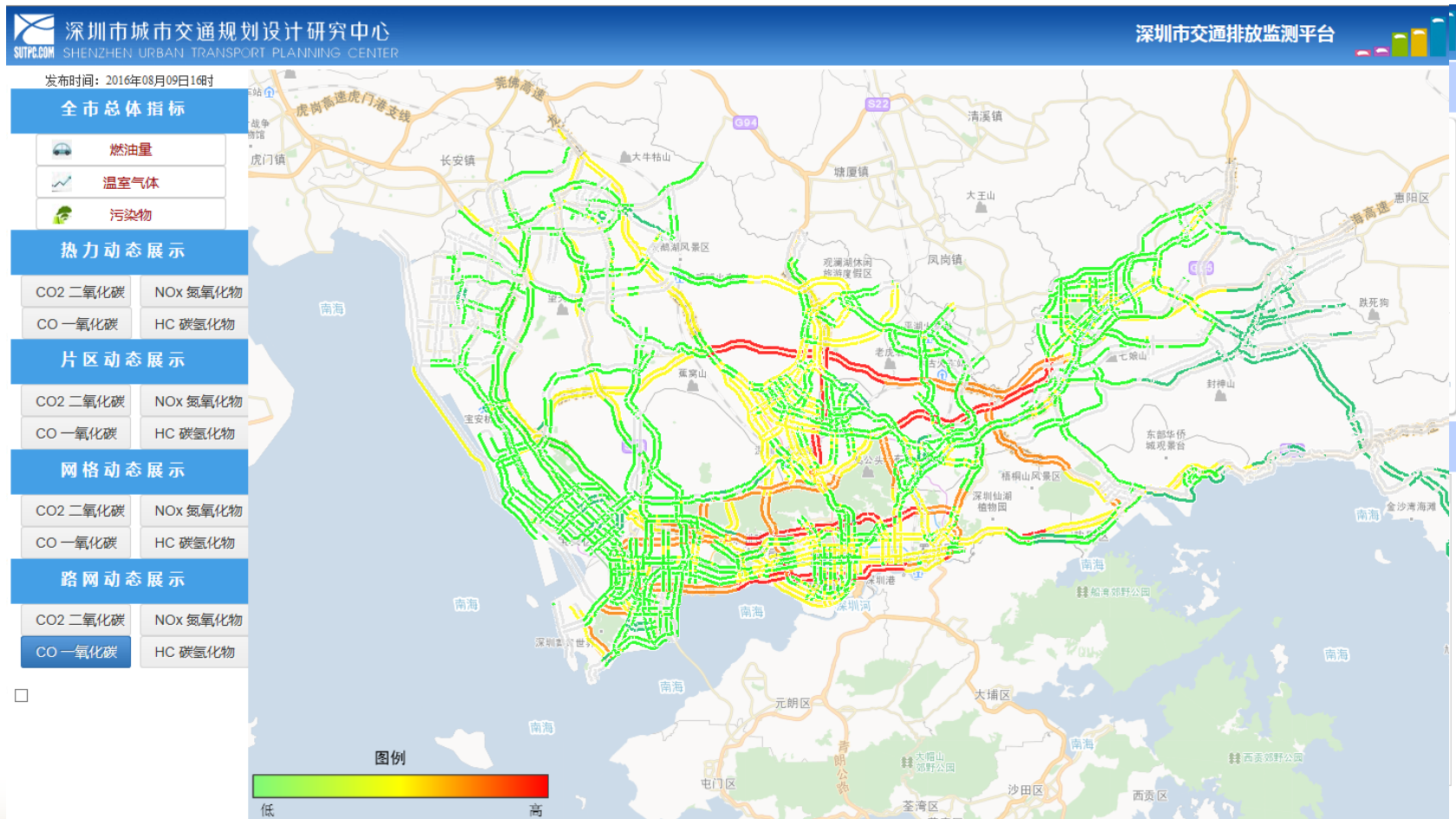


“If you can not measure it, you cannot improve it”

William Thomson, 1st Baron Kelvin (1824-1907),
Physicist



Realtime Transport Emission Monitoring System in Shenzhen





Key conclusion

- Vehicle fleet electrification has positive effects on **reducing PM_{2.5} concentrations in urban areas** of both the JJJ and YRD regions in 2030
- EVs should be promoted **as aggressive as possible** to obtain further air quality improvements
- In 2030, emission mitigation for many other sources than on-road vehicles and power plants should be considered as an essential **complementing measure** to vehicle electrification as their contribution to air pollution grows.
- Electrification is expensive but has substantial benefits
- The transport sector contribution cannot be entirely but needs to be complemented by **transport demand management**
- **Robust models** are required to ensure that measures can be better assessed and evaluated





Thank you for your attention !

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