2050年中国电动汽车环境影响评价和预测

Environmental Impacts of Electric Vehicles in China up to 2050

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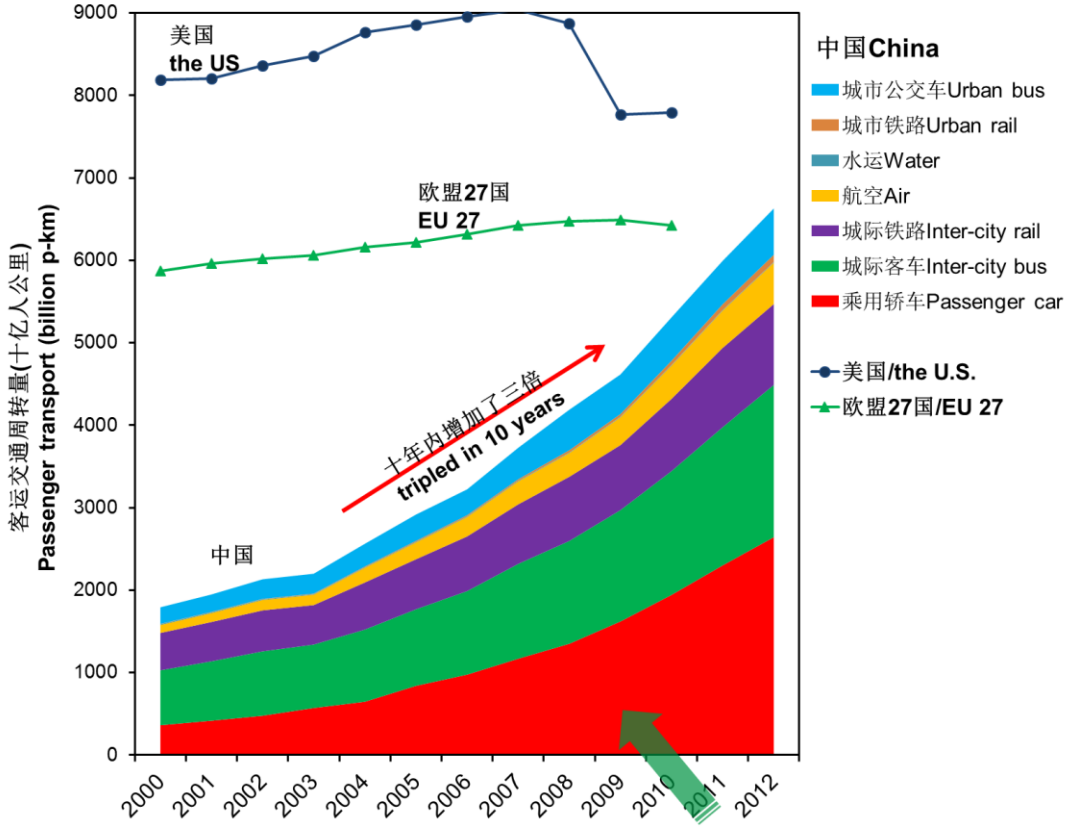
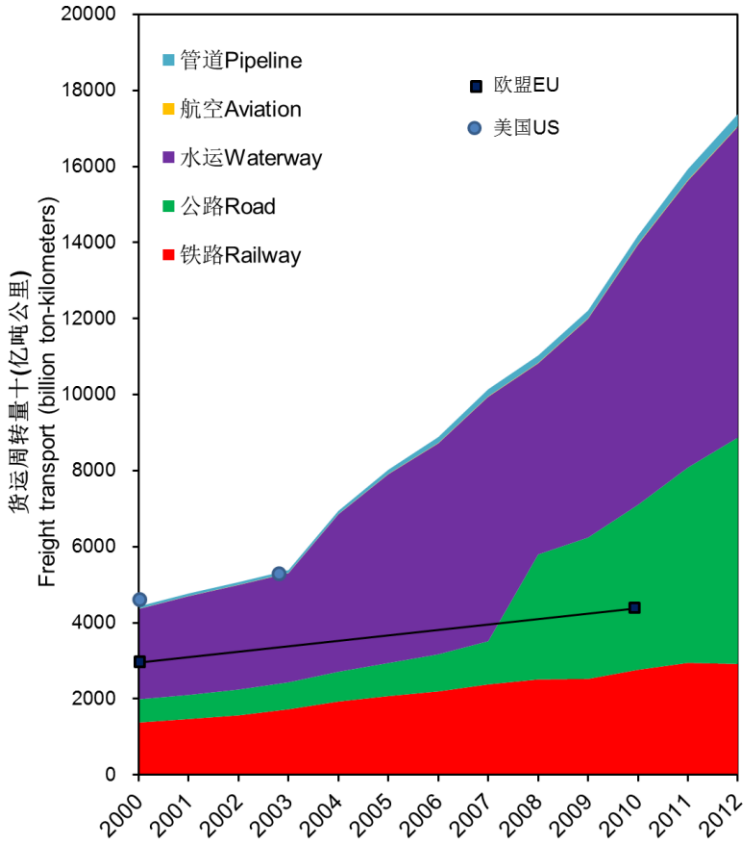
2014.11.21

中国道路交通出行需求增长迅速
Travel Demand Growth in China during the Past Decade



乘用轿车在**2000**和**2012**年间，客运周转量增加了**6**倍

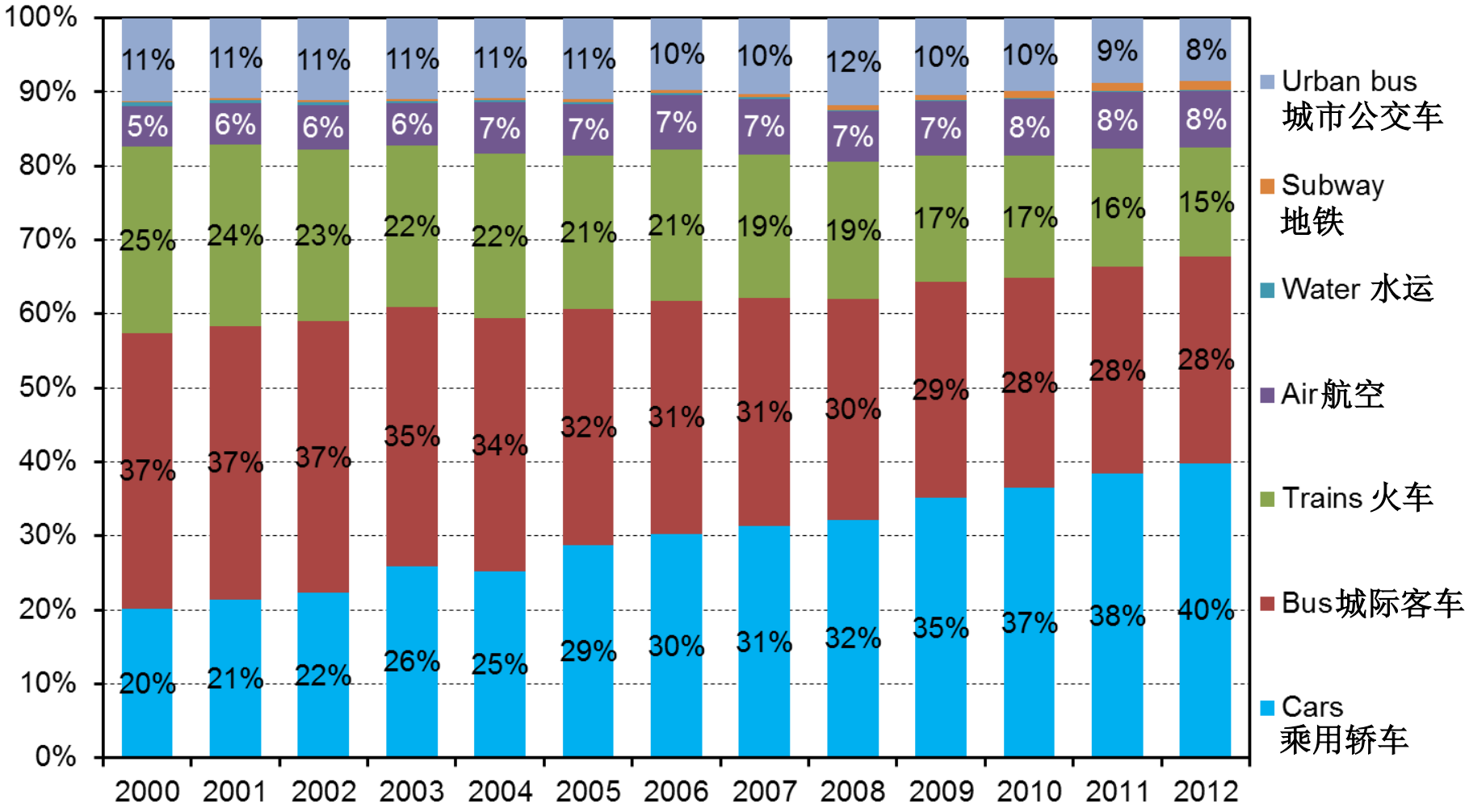
Passenger car pkm was increased by 6 times from 2000 to 2012



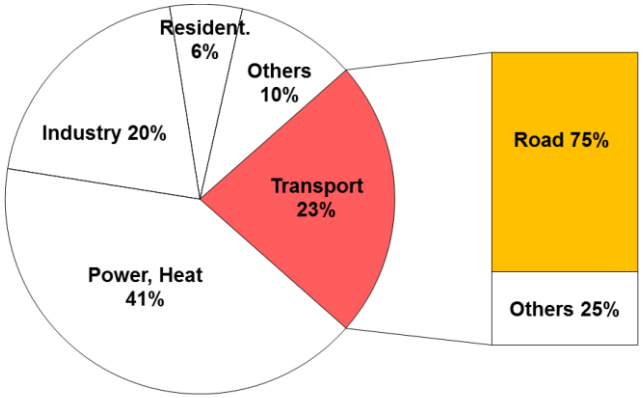
客运周转量
Passenger transport

货运周转量
Freight transport

客运交通模式分解(2000-2012)
Split by Mode (2000-2012)



公路交通在全球气候变化中起着举足轻重的重要作用
Transport Is Playing a Significant Role in Global Climate Change



CO_2 emissions in the world in 2009 (IEA, 2011)

- 与其他发达国家相比，中国公路交通的能耗和GHG排放贡献还很低。
- 但在中国，公路交通的能耗和排放贡献在持续增长。
- 在近期，公路交通将成为中国最大的能耗部门和GHG排放部门之一。

- There is a great gap between China and developed countries in the contribution of road transport to national energy use and GHG emissions.
- This contribution is increasing significantly in China.
- Road-transport will become one of the largest energy consumer and GHG emitter in China in the near term

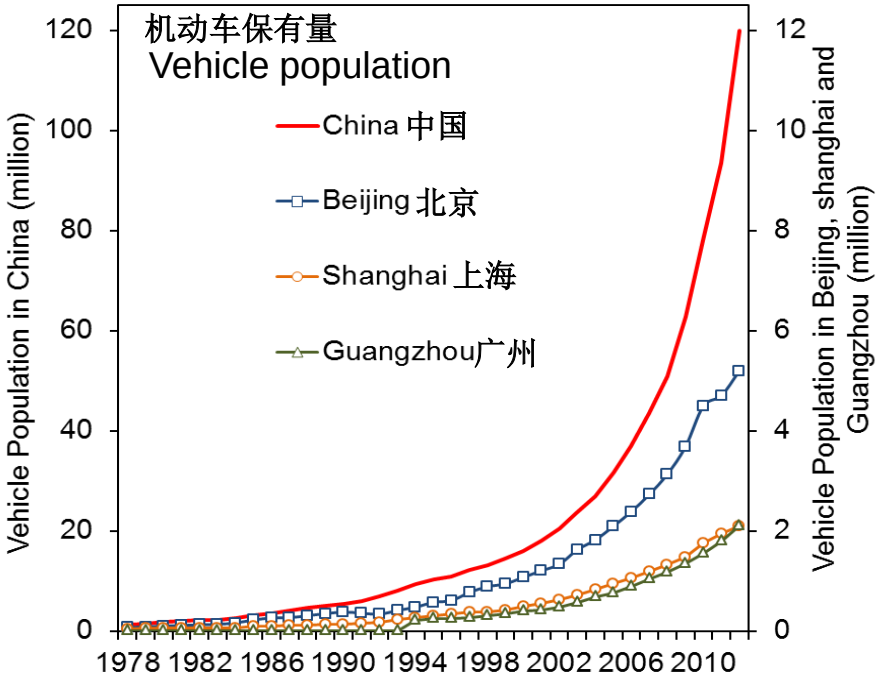
公路道路交通对全国能耗、温室气体和CO2排放的贡献

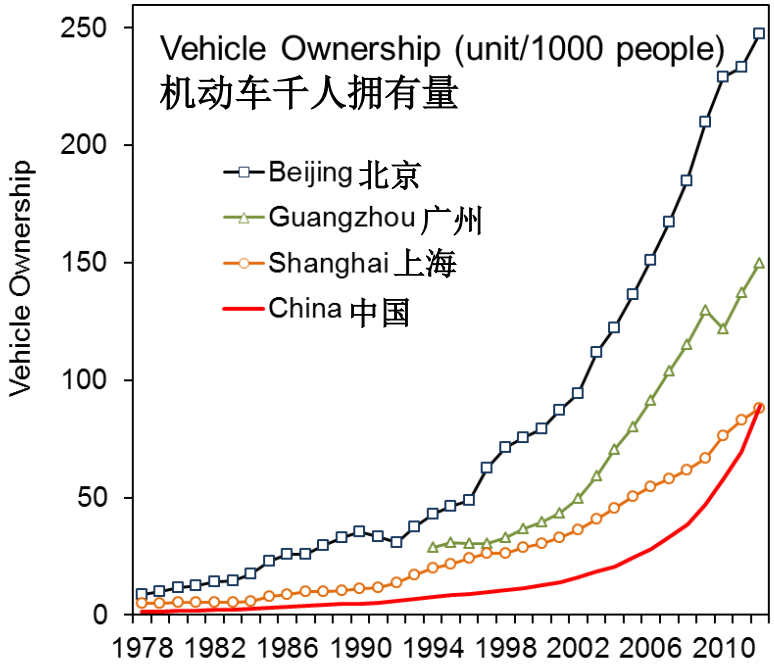
Contribution of on-road transport to national energy use, GHG, and CO_2 emissions

		Energy use	GHG emissions	CO_2 emissions
The world	2005		10.7	17.0%
	2007	13.7%		17.0%
The U.S.	1990			25.3%
	2000	22.1%	21.2%	26.1%
	2010	28.1%	22.9%	26.3%
EU	1990	21%	12%	15%
	2000	26.5%	16%	19%
	2008	26.0%	17%	20%
Canada	1995	24%		
	2000	26%		
	2008	28%	19%	
Australia	1990	20.6%		
	2000	19.7%		
	2010	17.9%	12%	
Japan	1990		16.0%	16.6%
	2000		17.7%	18.6%
	2010		16.4%	17.1%
China	1997	5.1%		4.1%
	2005	6.0%		5.3%
	2010	8.0%		7.0%

Various sources

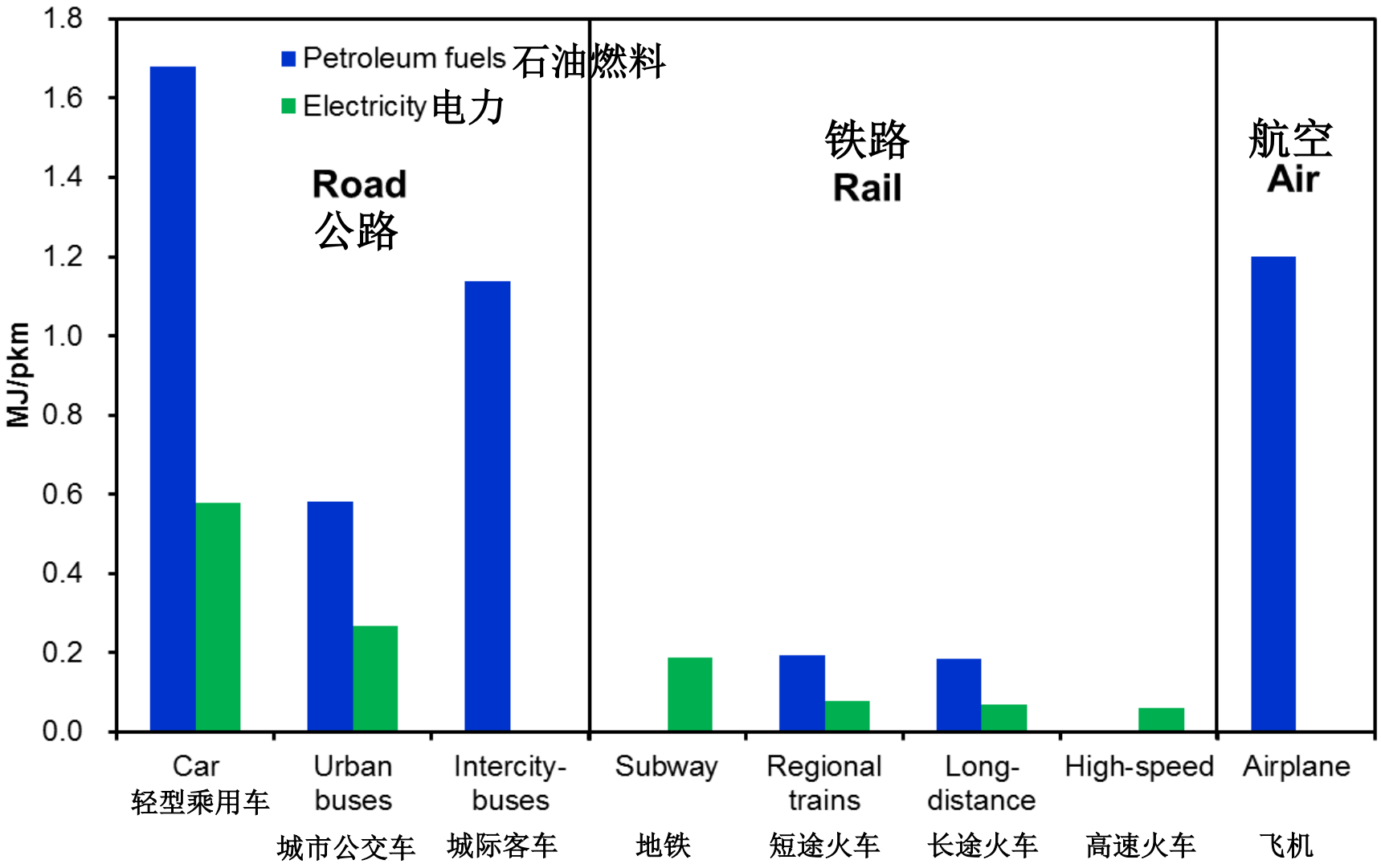
中国机动车保有量飞速增长
Vehicle Population Is Increasing Rapidly in China





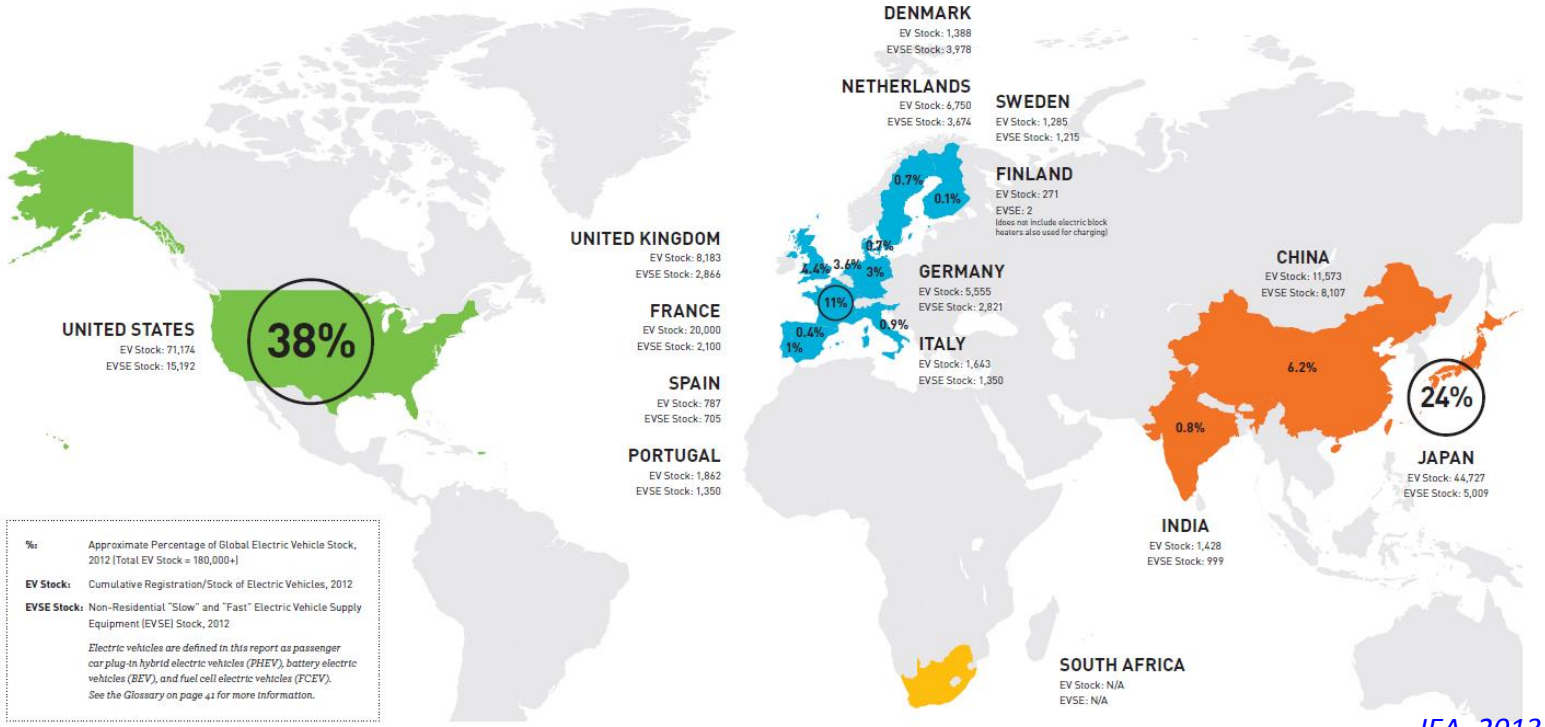
客运交通各模式能耗水平

Energy Consumption Rate of Each Transportation Mode



电动汽车在全球的推广
Electric Vehicles in the World

EV stocks of 15 IEA'S Electric Vehicles Initiative



IEA, 2013

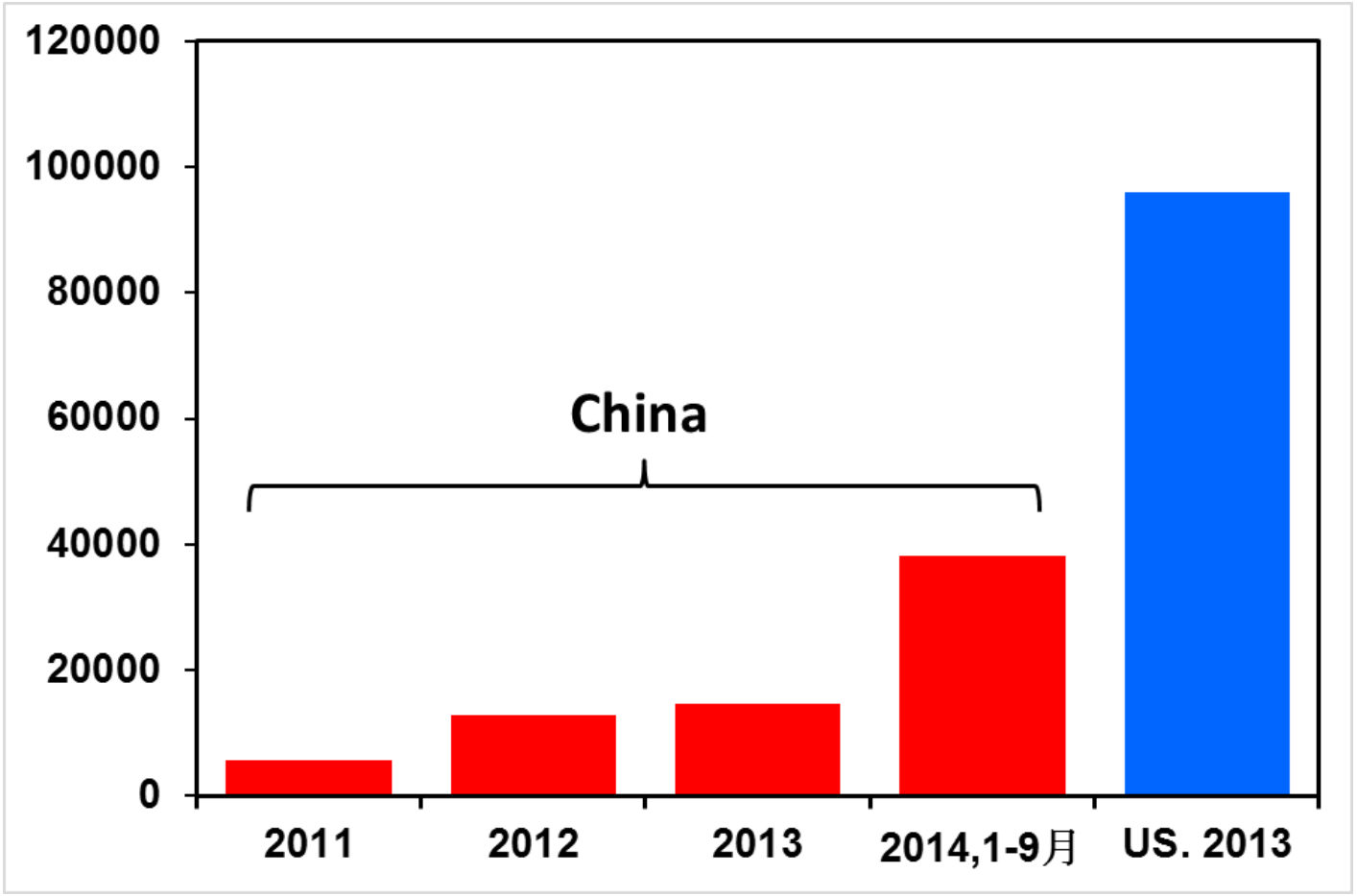
2020年，15国电动车总销售量达到590万辆。

The 15 countries aim to reach combined annual EV sales of 5.9 million by 2020

2012年，国务院提出了电动车累积销量到2015年达到50万辆，到2020年达到500万辆。

In 2012, China's State Council proposed that China should achieve accumulated sales of half a million new-energy vehicles (namely EVs) by 2015, and five million by 2020.

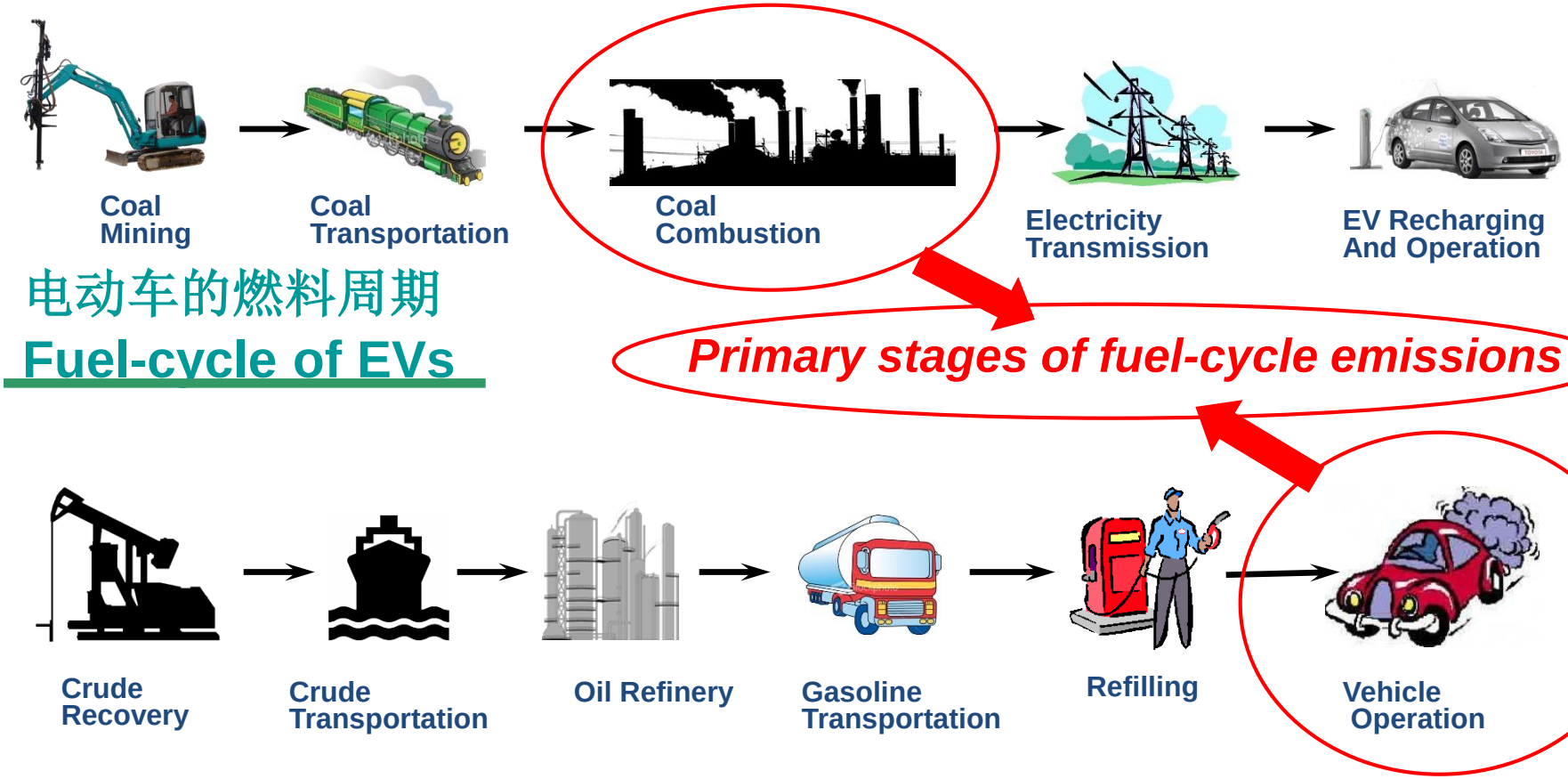
中国EV销量进入快速增长期
EV sales in China is in a rapid growth period



中国EV 销量
EV sales in China

电动车的环境影响需要从生命周期的角度分析

Environmental Impacts of EVs Need to Be Examined from a Life-cycle Perspective



电动车的燃料周期

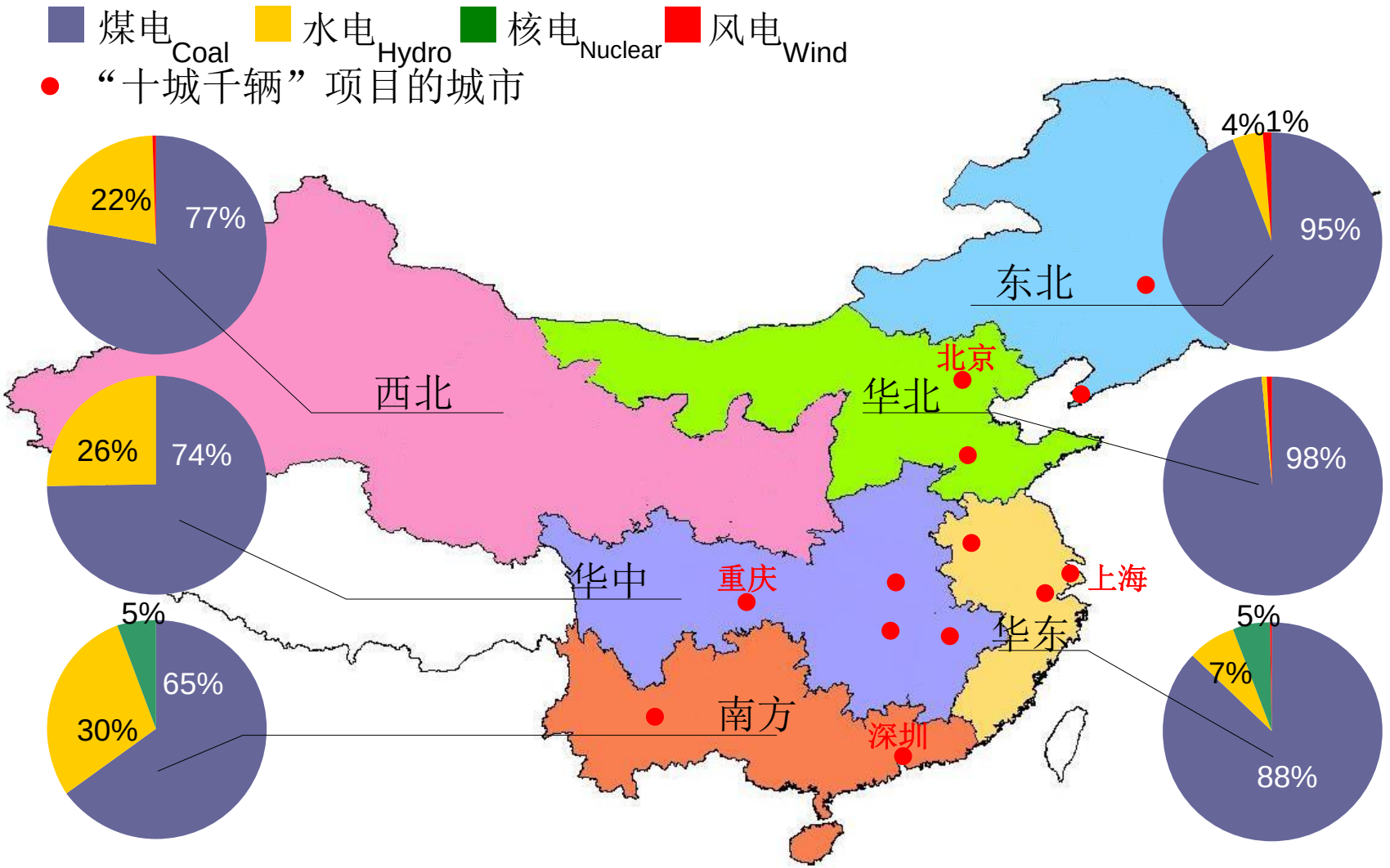
Fuel-cycle of EVs

传统汽油车和汽油混合动力车的燃料周期

Fuel-cycle of gasoline ICEVs and gasoline hybrids

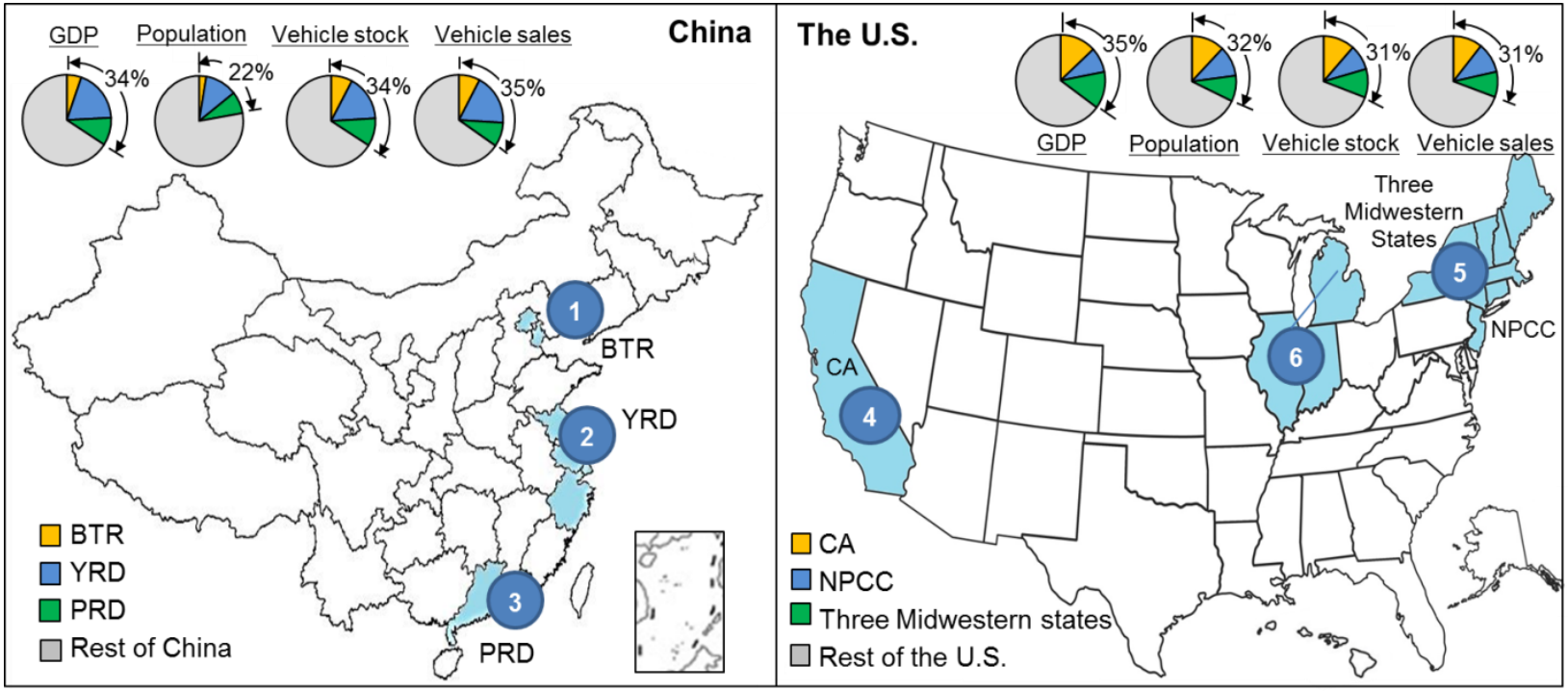
电动车的环境影响取决于上游电力部门的能源和排放强度

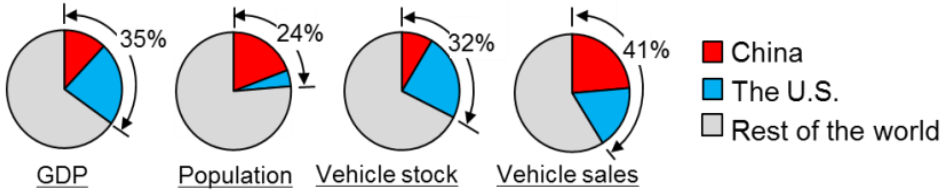
Environmental Impacts of EV Depends Significantly on the Energy and Emission Intensities of Electricity Generation



对中美三个电动车重点推广区域的电动车环境影响进行分析

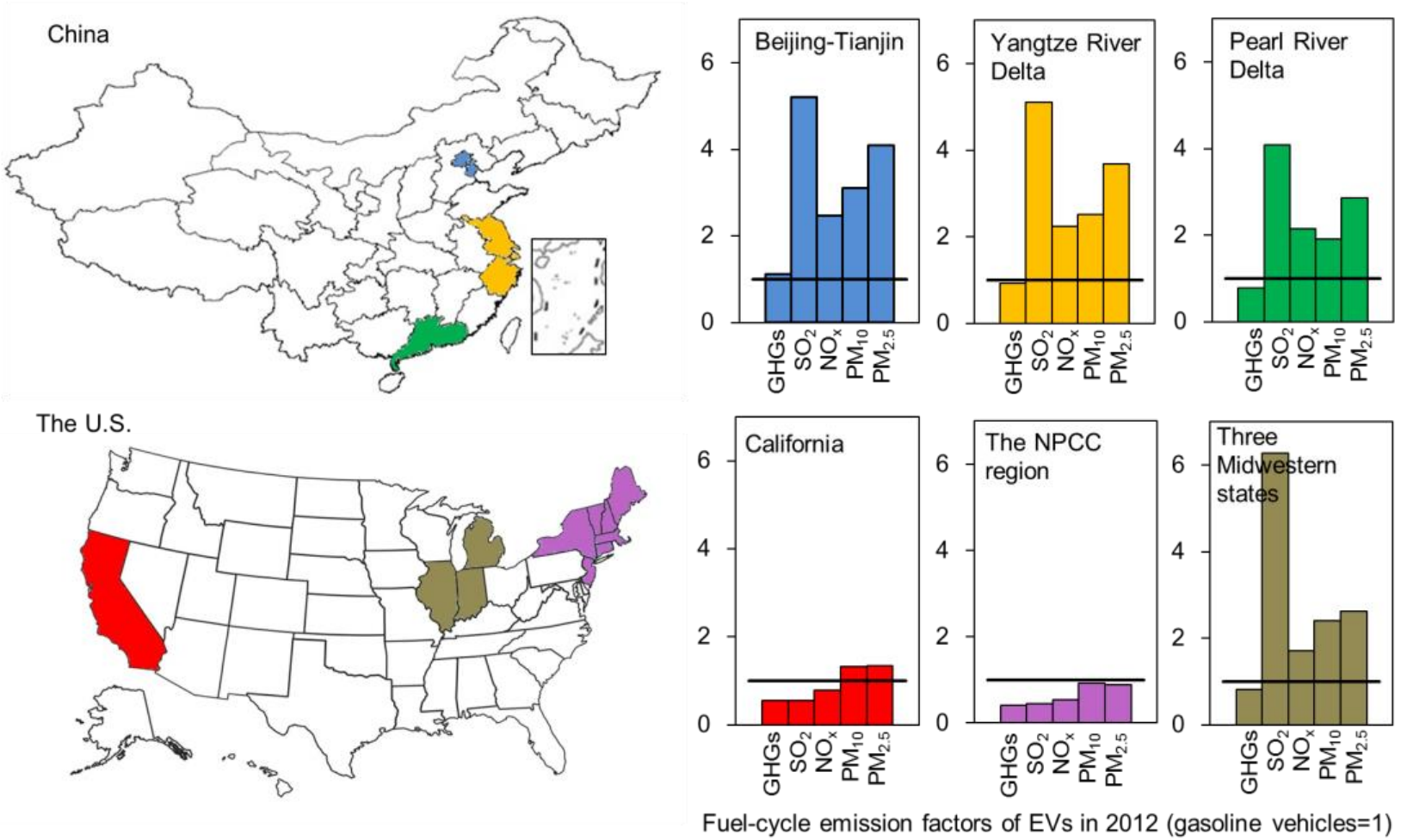
Environmental Impacts of EVs in three key EV promotion regions in China and the U.S. were analyzed





电动车在不同地区会产生不同的环境影响

EVs in Different Regions Generation Different Environmental Impacts



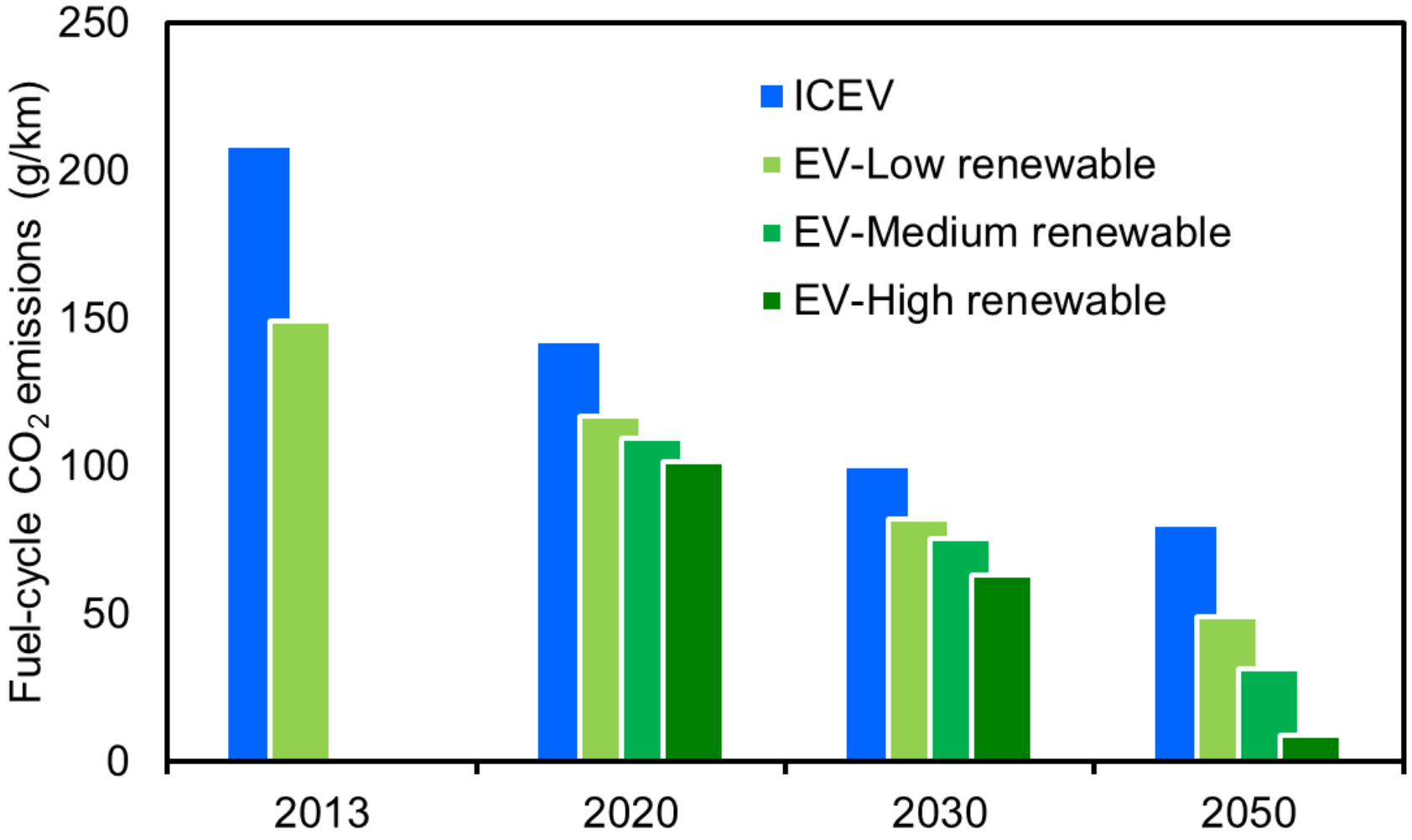
Fuel-cycle emission factors of EVs in 2012 (gasoline vehicles=1)

未来关键参数的变化趋势
Variation Trend in Key Parameters in the Future

	Vehicle fuel economy		Renewable electricity share			Combustion efficiency of coal-fired power plants
	EV kWh/100km	ICE L/100km				
2013	18	7.33	20%			35%
			High	Medium	Low	
2020	16	5	35%	30%	25%	37%
2030	14	3.5	50%	40%	35%	40%
2050	12	2.8	90%	65%	45%	48%

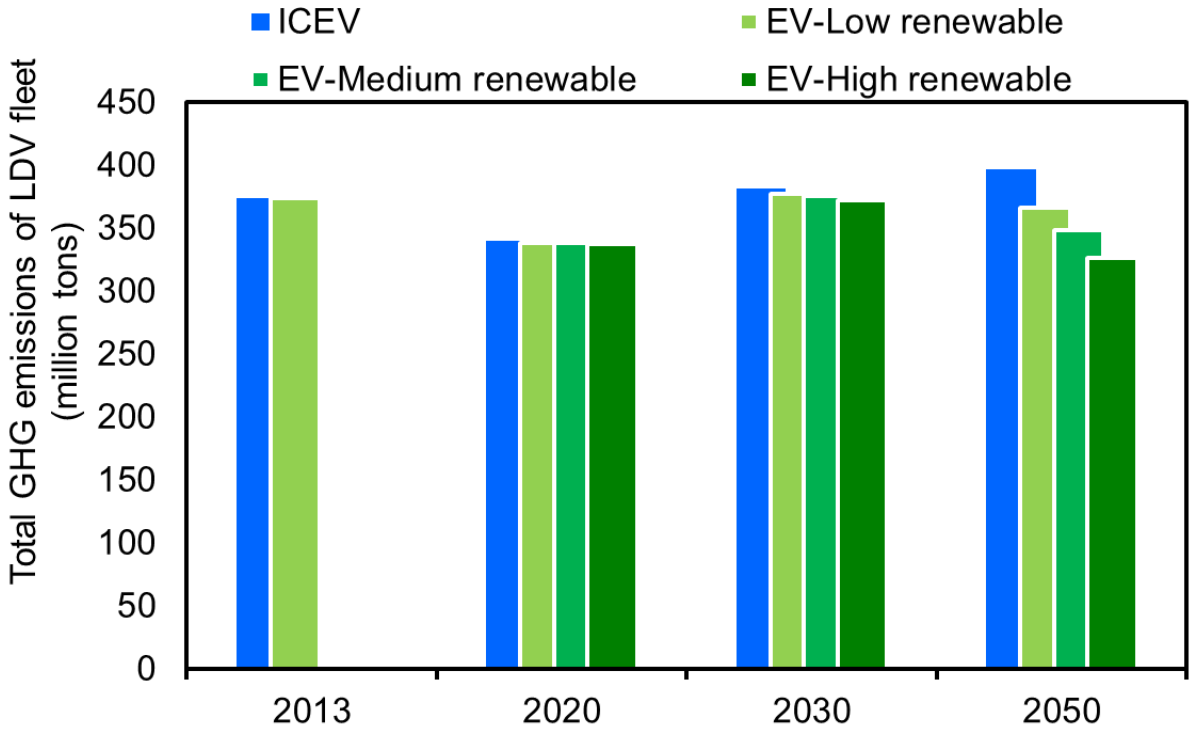
2050年中国电动车的GHG排放

GHG Emissions of EVs in China by 2050



2050年中国电动车的温室气体减排效益
GHG Reduction by EVs in China by 2050

	EV population	Total vehicle population	EV Market	VKT
	million	million	Penetration	km
2013	0.032	120	0.2%	15000
2020	5	200	6%	12000
2030	25	350	10%	11000
2050	100	500	15%	10000



多谢！

Thanks !

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