



Clean Air Initiative
for Asian Cities
亚洲城市清洁空气行动



Guangzhou
Green Truck
Pilot Project

广州绿色卡车试点项目



为2010年广州亚运会改善空气质量 To improve air quality in preparation for 2010 Asian Games in Guangzhou



试点项目的目的是验证项目概念，从而为广东省乃至全国的绿色货运项目奠定基础。试点项目的主要目标有：

- 改善广州及珠江三角洲卡车的燃油经济性
- 削减卡车的炭黑与其他污染物排放
- 减少温室气体(GHGs)排放

The **Goal** of the pilot project was to develop a “**proof of concept**” for a truck program in Guangdong Province, and possibly China, that aims to:

- Enhance the fuel economy of the truck fleet
- Reduce black carbon and other air pollutants from trucks
- Consequently obtain greenhouse gas (GHG) emission savings.



关注卡车：开发货运行业减排潜力 Focus on TRUCKS: looking for emission reduction from freight sector

- 卡车承担了70%以上运输任务，5年间公路运输量曾增长了约67%
- 柴油卡车的排放加剧（影响）了
 - ✓ 空气污染和人体健康
 - ✓ 气候变化
- 在中国，卡车行业的节油减排潜力相当大
- 美国EPA的SmartWay项目及其他项目能为中国和亚洲的相关项目奠定良好基础
- Trucks carry 70% of freight in China and in 5 years time there was a 67% increase in road freight transport
- Emissions from diesel trucks are high and contribute to:
 - ✓ Air pollution and health impacts
 - ✓ Climate change
- High potential to improve fuel efficiency and reduce emissions in China
- SmartWay and other programs can provide a good basis for a program in China and Asia

绿色卡车试点项目组成部分

Components of Green Truck Pilot Project

绿色卡车试点项目的主要组成部分是：

- 行业背景研究
- 广州货运行业调查
- 卡车驾驶员节油培训
- 技术测试

Main Components:

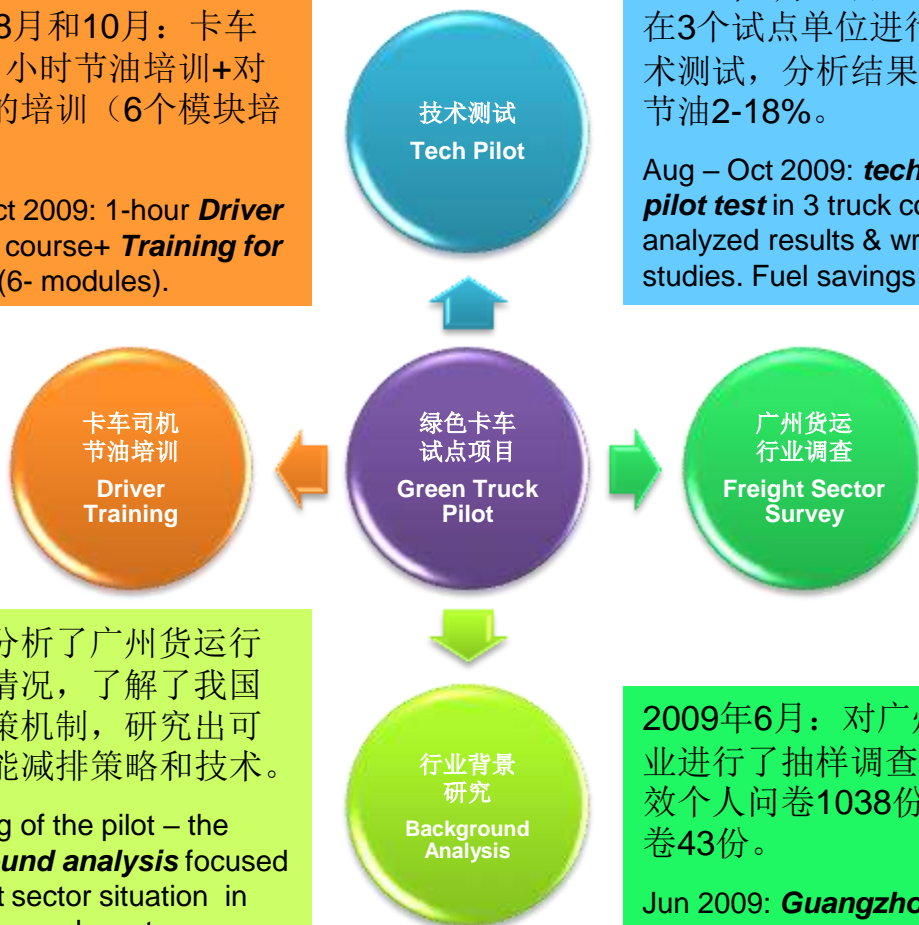
- Background Analysis
- Guangzhou Freight Sector Survey
- Smart Drivers for Trucking in China Training Course
- Technology Pilot

2009年8月和10月：卡车驾驶员1小时节油培训+对培训员的培训（6个模块培训）。

Aug & Oct 2009: 1-hour **Driver Training** course+ **Training for trainers** (6- modules).

2009年8月15日至10月31日：在3个试点单位进行共6项技术测试，分析结果编写报告；节油2-18%。

Aug – Oct 2009: **technology pilot test** in 3 truck companies, analyzed results & wrote case studies. Fuel savings of 2-18%



项目组分析了广州货运行业背景情况，了解了我国相关政策机制，研究出可行的节能减排策略和技术。

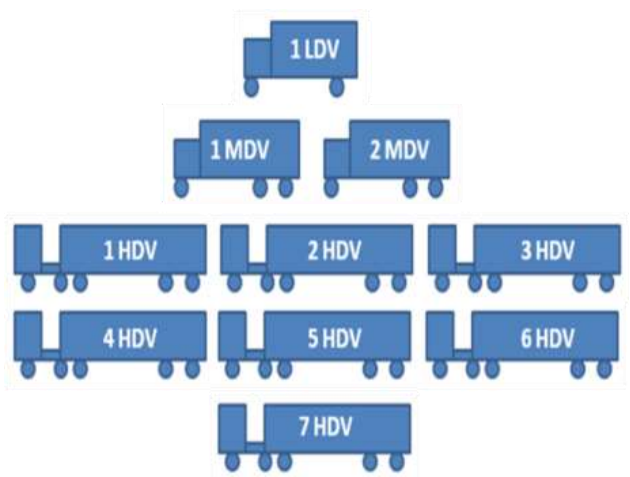
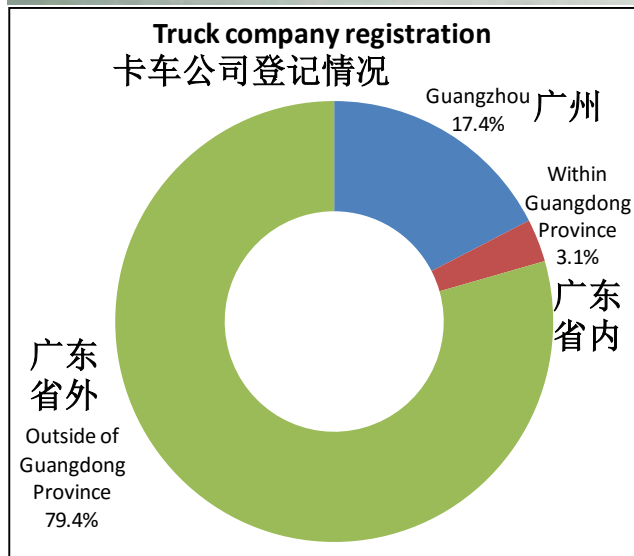
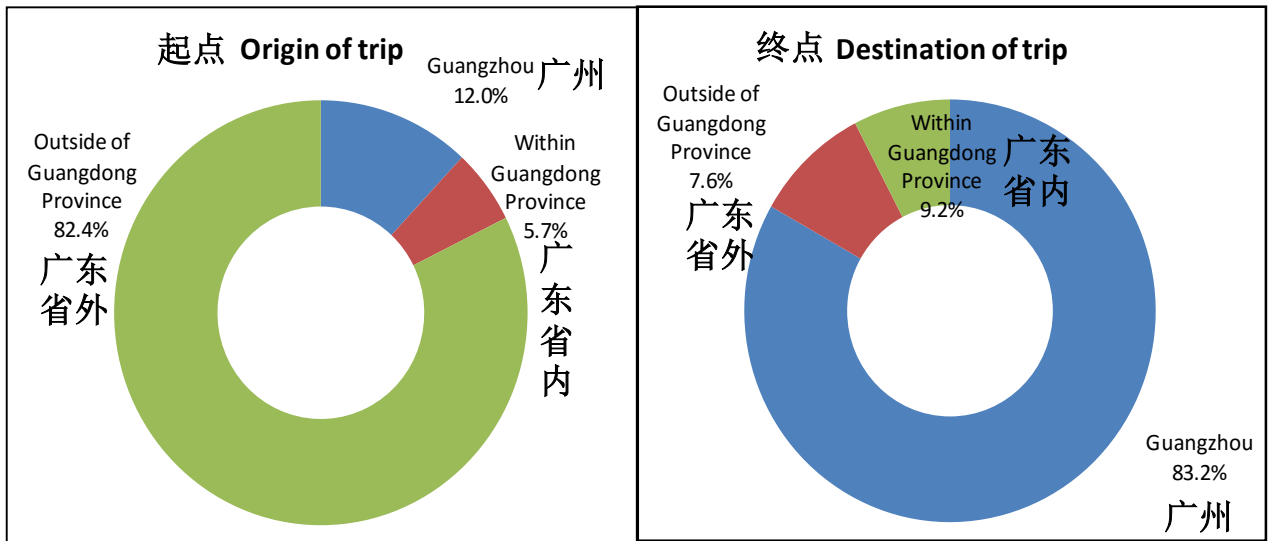
Beginning of the pilot – the **Background analysis** focused on freight sector situation in Guangzhou, relevant institutions and policies in China, and available fuel economy and emissions reduction strategies and technologies.

2009年6月：对广州市货运行业进行了抽样调查，获得有效个人问卷1038份，企业问卷43份。

Jun 2009: **Guangzhou Freight Sector Survey** received feedbacks from: 1038 truck drivers & 43 truck companies

广州货运行业调查主要结论

Summary results of Freight Sector Survey in Guangzhou



技术测试内容

Tested Technologies

试点单位 Pilot co.	测试卡车类型 Truck type	测试卡车: 对照卡车 Pilot truck: control truck	试点技术 Pilot tech	低阻轮胎 Low Rolling Resistance tire	胎压自动监测系统 Tire pressure monitoring system	铝制轮毂 Al rim	挂车侧裙 Skirts	车头后翼 Gap fairing	扰流罩 Cai's nosecone
城市之星 SOCL 	长途 Long haul	2:1	产品 Product	米其林 Michelin XZA2+ Energy	Doran 360HD18	美铝公司 Alcoa	Freight Wing	蔡记 玻璃钢 Cai's	蔡记 玻璃钢 Cai's
			数量 Number	44	2	20	2	2	2
新邦物流 XBWL 	短途 Short haul	3:3	产品 Product	米其林 Michelin XZA2+ Energy	Doran 360HD12	N/A	N/A	N/A	N/A
			数量 Number	24	3				
广州白云 环卫车队 Baiyun Garbage Fleet	短途 Short haul	2:1	产品 Product	米其林 Michelin XZA2+ Energy	Doran 360HD12	N/A	N/A	N/A	N/A
			数量 Number	20	2				



技术测试主要结果

Main result of technology pilot

以城市之星卡车测试结果为例：

- ✓两辆重型柴油车(长途)
- ✓投入：\$16,333
- ✓年节油3557L（6.64%）
- ✓投入回收周期 = 5.1 年
- ✓每年少排放 9.18 吨 CO₂, 33.21 kg NO_x, 1.41 kg PM₁₀

Case: pilot test in SOCL:

- ✓2 long-haul HDTs.
- ✓Investment = \$ 16,333,
- ✓annual savings = 3557 liters (6.64%),
- ✓payback period = 5.1 years
- ✓Emission reduction = 9.18 tons CO₂, 33.21 kg NO_x, and 1.41 kg PM₁₀.



对广东省重型柴油车的节油减排潜力：

Fuel and Emissions Reduction Potential for Heavy Duty Trucks Registered in Guangdong Province

年均节油效果 Savings per year	对每辆重型车 Per HDT	对广东全省重型车 Guangdong HDTs (826,520)
技术包1-轮胎 Package 1 – Tires		
节油 Fuel savings	2,093 L	1,730,000 (公升)hectoliter
燃油成本节约 Fuel cost savings	US\$ 1,883	US\$ 1,560,000,000
CO ₂ 减排 CO ₂ saving	5.4 tons	4,470,000 tons
Nox减排 NO _x savings	19.5 kg	16,156 tons
PM ₁₀ 减排 PM ₁₀ savings	0.6 kg	525 tons
技术包2-空气动力学 Package 2 – Aerodynamics		
节油 Fuel savings	1,590 L	1,310,000 (公升) hectoliter
燃油成本节约 Fuel cost savings	US\$1,431	US\$ 1,800,000,000
CO ₂ 减排 CO ₂ saving	4.1 tons	3,400,000 tons
Nox减排 NO _x savings	14.9 kg	12,279 tons
PM ₁₀ 减排 PM ₁₀ savings	2.0 kg	1,676 tons

挑战与机遇

Challenge and Opportunities

将试点项目扩大为中国绿色货运项目的关键挑战与机遇

- ✓技术
- ✓节油潜力
- ✓融资
- ✓机制与政策
- ✓货运行业
- ✓利益相关方的支持
- ✓借鉴其他成功项目的能力

Key challenges & opportunities for a larger application of the pilot project and establishment of a Green Freight China program

- ✓Technology
- ✓Savings potential
- ✓Financing
- ✓Institutions and policies
- ✓Truck industry
- ✓Stakeholder support
- ✓Ability to build on existing programs

广州绿色卡车试点项目的更多信息:

More info of Guangzhou Green Truck Pilot Project:

- 背景分析报告/ Background analysis report
 - 广州货运企业调研/ Survey of Guangzhou truck sector
 - 培训课程材料/ Training course materials
 - 3家试点企业的案例研究/ Technology pilot case studies for 3 pilot companies
 - 相关图片/ Photos
 - 中文与英文短片/ Video in Mandarin and English
- <http://cleanairinitiative.org/portal/knowledgebase/videos/>

项目主页/CAI-Asia website:

<http://cleanairinitiative.org/portal/GreenTrucksPilot>

广州绿色卡车试点项目已经成功促成了两个大范围的项目:

The Guangzhou Green Truck Pilot Project has leveraged two larger scale projects

➤广东省: 全球环境基金资助的绿色货车示范项目

Guangdong Province: GEF Green Trucks Demonstration Project

www.greenfreight/cleanairinitiative.org

➤全国: 能源基金会资助的中国绿色货运项目设计

China: Green Freight Program

<http://www.cleanairinitiative.org/portal/GreenFreightChinaProgram>



合作机构/Partners:



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