



## 7. 排放标志和相关管理方案

向消费者提供信息和进行宣传是交通排放控制战略中的重要组成部分，车辆排放标志正在成为日趋流行的消费者宣传手段。排放标志会在新车销售前被附加在车上，使消费者了解车辆的排放信息，让消费者能比较类似产品，清楚的做出购买决定。标志推广可以结合经济鼓励，帮助引导消费者选择更清洁更节能的车辆并由此逐步改善整体车的排放和油耗情况。在用车的排放标志通常是为了方便实施各种排放控制措施，比如划定限行（低排放）区。尽管在用车标志没有新车标志提供的信息那么详细，但它能影响车辆的使用，借此向车主进行宣传教育。

车辆排放标志或燃料经济性在世界各地被广泛应用。在美国，从上世纪70年代末期就有了强制性燃料经济性标志。在加州，新车标志上同时标有常规污染物排放评级和温室气体排放等级。欧洲的新车二氧化碳排放标志通常都结合有财税政策来支持欧盟的车辆二氧化碳减排目标。欧洲还在增加在用车标志的使用，以支持众多低排放区的实施。日本从本世纪初开始发给超低排放和超节油的车辆节能减排标志并配合以税收鼓励，这个政策多年来一直延续并不断加严。日本之所以能拥有世界上最清洁的车辆构成群体，这些政策起到了重要的作用。

在中国，车辆排放标志的概念要追溯至1999年，北京对未达到国I排放标准的车辆发放了黄标。接下来，部分省市也实施了机动车环保标志，每个地区都有各自不同的设计方案。在过去的10年中，排放标志主要用于配合高排放车辆的交通限行方案。2009年，环保部发布规定，要求实施统一的全国车辆排放标志，以便于协调管理不同地区的交通限行方案。同时，环保部和其它政府部门实施了补贴政策，鼓励黄标车提前淘汰，目标是到2015年淘汰1800万辆黄标车。这些尝试取得了成功，快速的将污染严重的车辆置换成清洁车辆。以北京为例，截止至2009年10月，已淘汰了9.7万辆黄标车，相当于黄标车总数的27%。

另一方面，从长远看，中国的标志管理方案及交通限制方案还可以从很多方面提高。例如，目前的标志不会影响新车（低排放车）的购买决定，可以改善标志的设计从而更好的适应今后加严的管理方案。本节中将介绍不同类型的排放标志并提供案例研究，对比国际上的实践经验可能会为改善中国方案提供见解。



## 7. Emission labeling and related programs

Consumer information and education is an important component in transportation emission control strategy and vehicle emission label is an increasingly popular tool for consumer education. Emission labels attached on new cars before sales inform consumers about the emission impact of a vehicle and enable them to compare similar products and make an informed purchase decision. The application of such labels can be combined with fiscal incentives, which help direct consumer choices towards cleaner and more efficient vehicles and therefore gradually improve the entire vehicle fleet. Emissions labels applied on in-use vehicles normally facilitate the implementation of various emission control programs such as a low emission zone. Though they provide less detailed information about a vehicle compared with new car labels, they may also educate car owners through influencing the use of the vehicles.

Vehicle emission labels or fuel efficiency labels are widely adopted in the world. In the US, a mandatory fuel economy label dates back to the late 1970s. In California, the new car label shows both emissions ratings of conventional pollutants and GHG emissions. The European new car CO<sub>2</sub> emission labels are often associated with fiscal policies to collectively support EU's fleet CO<sub>2</sub> reduction target. Europe also evidenced increase use of in-use emissions labels in support of numerous low emission zone initiatives. Japan established labels for super low emissions and super efficient vehicles with considerable tax incentives early this century, and has continued to enhance the policies since then. These policies played an important role in maintaining Japan's fleet as one of the world's cleanest.

In China, the concept of vehicle emission label dates back to 1999, when Beijing first introduced yellow sticker for vehicles that do not meet China I emission standards. Following that, a number of provinces and major cities implemented environmental labels for motor vehicles, with unique design for each region. During the past decade, the emissions labels are mainly used to facilitate the traffic restriction program for high polluting vehicles. In 2009, MEP published a rule to standardize the design of vehicle emission labels in China, which allows the harmonization of the traffic restriction programs across regions. At the same time, MEP and other state agencies initiated a subsidy program to encourage early scrappage of yellow sticker vehicles aiming at phasing out some 18 million yellow sticker vehicles by 2015. These efforts turned out to be very successful in quickly replacing the heavy polluters with clean vehicles. Beijing, for example, eliminated 97 thousand yellow sticker vehicles, or 27% of its total yellow sticker vehicles by October 2009.

On the other hand, looking forward, China's labeling program, and the traffic restriction program can be improved in many ways. For example, current labels do not affect the purchase decision of new vehicles with low emissions. The design of the labels could be improved in order to better accommodate future tightening of the programs. This section introduces different types of emissions labels and provides case studies. A comparison of international practices provides some insight into possible improvements for the Chinese program.

## 7.1 国际方案概况

大体上，排放标志分为两类——新车标志和在用车标志。新车标志只在销售环节用于新车上，帮助消费者在购买前了解车辆排放油耗情况从而做出清楚的购买选择。在用车标志通常在每年登记时提供。接下来的章节中将更具体的介绍各种类型的标志。

### 新车标志

新车标志主要用于让消费者了解车辆的燃料经济性或温室气体排放水平。这是因为一旦选定了所购车型（及其节油技术组合），其燃料经济性（固定驾驶距离的油耗）和碳强度（固定驾驶距离的二氧化碳排放）在整个使用周期内的就不会改变。因此只有让消费者在做出购买决定前看到这些标志，标志才能发挥最大的影响作用。

新车上的燃料经济性或二氧化碳标志通常会包含具体的车辆信息，如车型种类、关键的技术参数和排放信息。一些标志还会提供燃料成本测算。英国的二氧化碳标志就是新车二氧化碳标志的一个实例，它是根据欧盟轿车标志指令实施的，将在下文中进行论述。

作为新车标志的三个实例，下面的章节将详细的介绍欧盟轿车的二氧化碳标志、加州的车辆环保性能标志以及日本的超节油汽车和清洁汽车的尾气排放和燃料经济性标志。

### 欧盟乘用车二氧化碳标志

2000年，欧盟议会通过立法要求所有新的乘用车向消费者提供燃料经济性和二氧化碳排放信息。各成员国根据议会的基本指导方针设计了不同的标志。大多数都在车辆标志上采用不同颜色对二氧化碳进行分级，就像家电上的能效标志（如冰箱）。消费者对类似标志设计的熟悉程度让车辆标志很容易被接受。

近几年来，在成员国中出现根据二氧化碳排放量来征收车辆税的趋势，根据车辆的二氧化碳排放范围来制订税率。2007年开始这种趋势日益增强，因为当年欧盟委员会宣布了新的欧盟2015年轿车二氧化碳减排目标，并把财税鼓励和消费者教育手段列为实现减排目标的综合途径之一。既含有车辆二氧化碳排放信息又含有二氧化碳税额信息的标志对消费者来说就更具有实际意义，图7.1提供了英国的标志作为样例。

## 7.1 Overview of international programs

There are generally two types of emission labels – new vehicle labels and in-use vehicle labels. New vehicle labels are only placed on new vehicles at the point of sale, to enable consumers to make informed choices. In-use vehicle labels are generally provided at registration. The next sections will address each label type in greater detail.

### *New vehicle labels*

New vehicle labels are mainly used to educate consumers about vehicle fuel efficiency or GHG emissions. This is because the type of car purchased determines the fuel efficiency (fuel consumption per distance of driving) and carbon intensity (CO<sub>2</sub> emission per distance of driving) throughout the vehicle lifetime. The labels are most effective when consumers see them before they make their purchase decision.

Fuel efficiency or CO<sub>2</sub> labels on new vehicles usually contain detailed vehicle information, such as model type, key physical specifications, and emissions. Some labels may also provide the estimation of fuel cost. The CO<sub>2</sub> label adopted in the UK required by the EU car-labeling Directive is an example of new vehicle CO<sub>2</sub> label and is further discussed below.

The next sections provide additional details on the EU car CO<sub>2</sub> label, California vehicle environmental performance label, and the Japanese exhaust emissions and fuel economy labels for super efficient and clean vehicles as three examples on new vehicle labels.

### *European Union Car CO<sub>2</sub> Label*

In 2000, the EU Parliament introduced legislation requiring that information on fuel economy and CO<sub>2</sub> emissions be provided to consumers for all new passenger cars. Member states have developed different label designs under the Parliament's general guidelines. Most have adopted a color-coded CO<sub>2</sub> band system for car labels that mirrors the energy-efficiency labels on appliances (such as refrigerators). The familiarity of such label designs has led to their easy acceptance.

In recent years, a trend has emerged among member states to base vehicle taxes on CO<sub>2</sub> emission levels, setting tax rates according to a vehicle's CO<sub>2</sub> emission range. The trend has become stronger since 2007, when the European Commission announced a new EU-wide 2015 CO<sub>2</sub> emission target for cars and included fiscal incentives and consumer information programs as part of an integrated approach to reaching the target. Labels that include information on both CO<sub>2</sub> emission and CO<sub>2</sub>-based vehicle tax, such as the UK's label provided as an example in Figure 7.1, are additionally valuable to consumers.

标识上的主要信息:

- 全部乘用车的二氧化碳排放等级以及本车所属的排放等级，使消费者能直接了解到与其它车辆相比本车的位置；
- 既标出本车的排放等级又给出本车的绝对排放水平（如克 / 公里），避免评级方法不同带来的主观影响；
- 燃料成本估算；
- 根据排放水平段决定的车辆税收数额（二氧化碳税收）；
- 城市、郊区和综合工况下的油耗数据；
- 车型信息和关键的车身数据让消费者可以和同类轿车进行比较；
- 声明驾驶习惯对实际排放的影响关系。

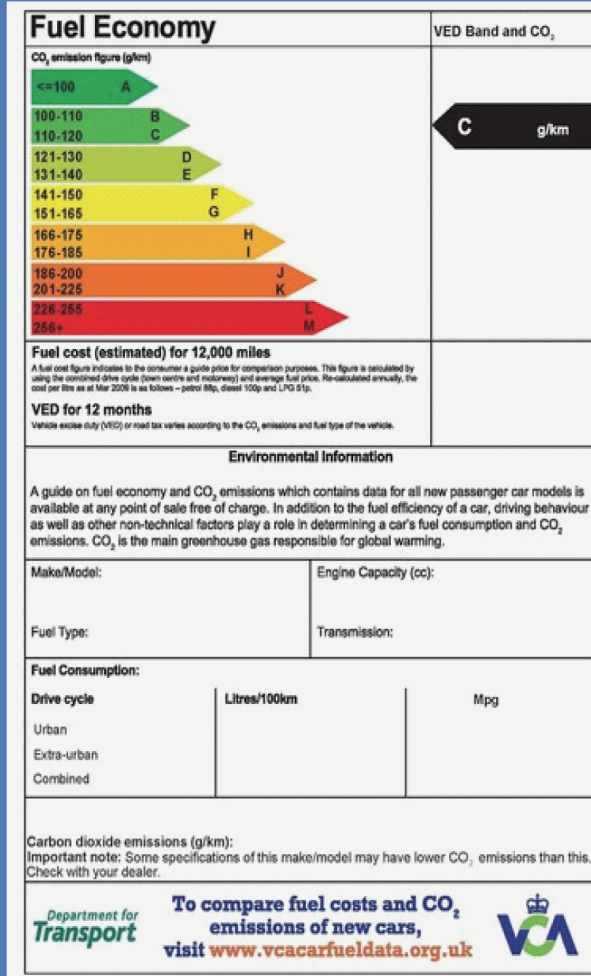


图 7.1: 英国轿车二氧化碳和燃料经济性标志

新车标志的第二个实例是加州的车辆环保性能标志。标志上同时标明了车辆的常规污染物信息和温室气体排放信息，但是没有像英国的二氧化碳标志一样提供具体的车辆信息。

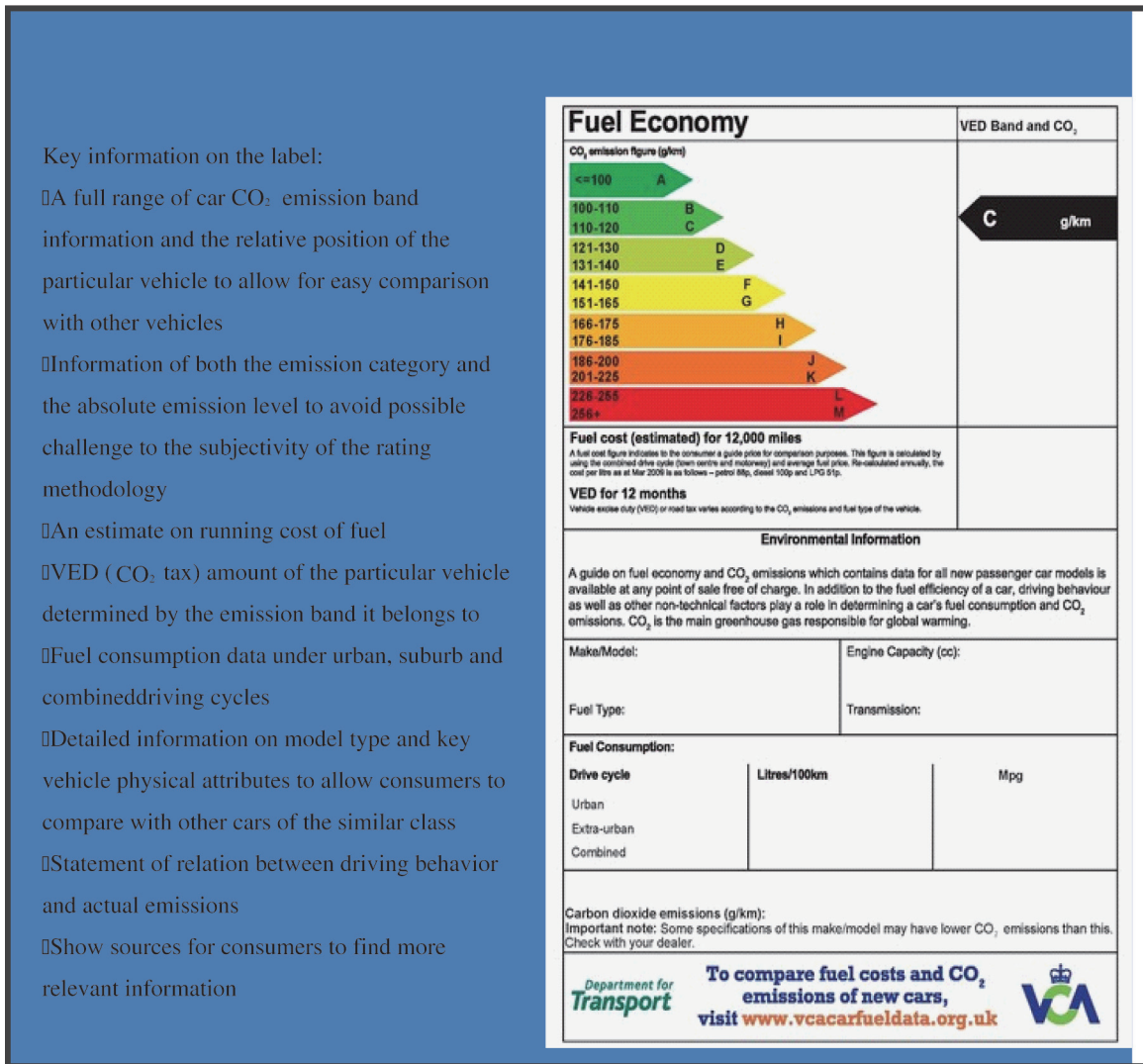


Figure 7.1: Car CO<sub>2</sub> and fuel economy label in the UK

The second example of new vehicle label is the Vehicle Environmental Performance Labels adopted in the State of California. The label presents both conventional pollutants information and GHG emissions information of a vehicle, but does not provide detailed vehicle information as the UK CO<sub>2</sub> label.



## 加州车辆环保性能标志

从1998年起要求所有在加州销售的新轿车带有烟雾指示标志。2005年，1229号议案要求加州空气资源局重新设计烟雾指示标志，要在其中包含全球变暖排放物的信息。2007年，空气资源局批准了新的环保性能标志，标志上包含车辆的烟雾评分和全球变暖评分，从2009年1月1日起，在加州销售的所有新轿车都必须在窗户上贴上标志。图7.2展示了标志的样例并介绍了标志的特点。

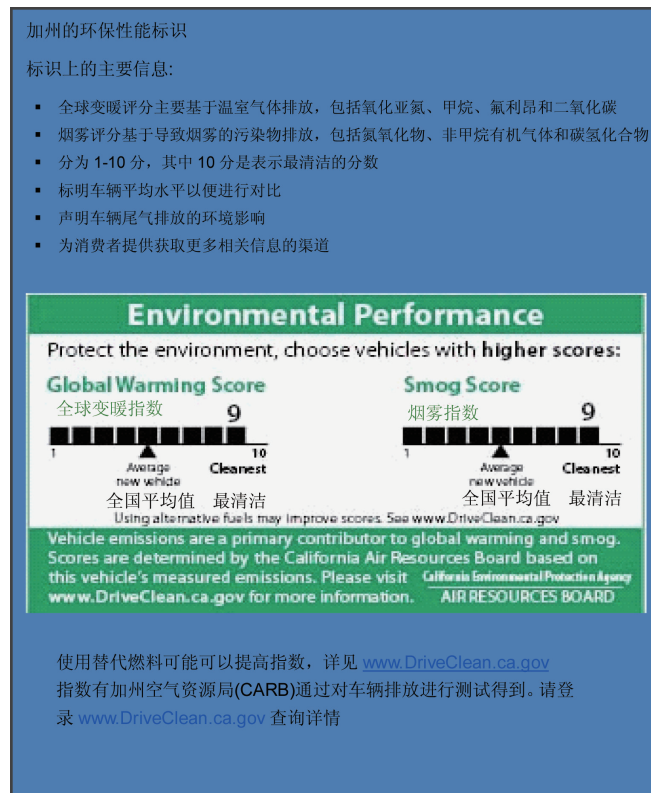


图 7.2: 加州环保性能标志

## 日本的尾气排放和燃料经济性标志

日本实施了两款标志，用于确认超低排放车和超节油的车辆。政府对购买贴标车辆的消费者大幅减税。排放标志包括一个星级评价体系，以2005年全国排放标准为参考基准，来说明车辆的尾气排放情况。例如，一辆车的排放比国标要求低75%可以评为4星。燃料经济性标志也运用了与排放标志类似的评价系统，即标明车辆的燃料经济性比国标提高多少。只有同时拥有4星排放标志和“+15%”或“+25%”燃料经济性评定的乘用车才能够获得减税幅度最高达75%的税收减免。表7.1提供了税收鼓励体系的全面信息。

### California vehicle environmental performance label

Starting with the 1998 model year, all new cars sold in California began to carry a Smog Index Label. In 2005, Assembly Bill 1229 required the California Air Resources Board to redesign the Smog Index Label to include information about global warming emissions. Approved by the Board in 2007, the new environmental performance labels, which show both a Smog Score and a Global Warming Score for the vehicle, must be affixed to the window of every new car sold in California manufactured after January 1, 2009. Figure 7.2 shows an example of the label and highlights its features.

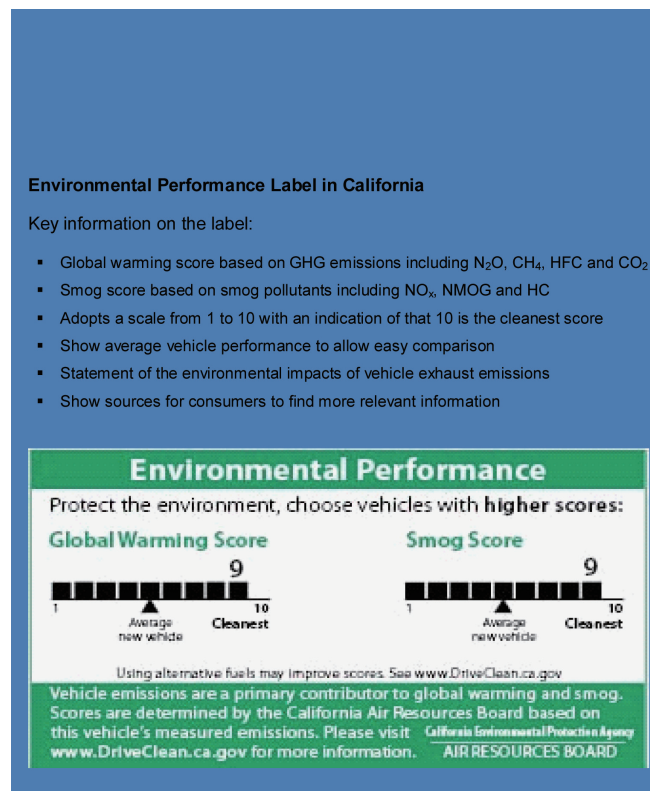


Figure 7.2: California environmental performance label

### Japan's Exhaust Emission and Fuel Economy Label

Japan developed two labels to recognize vehicles with super low tail pipe emissions and super fuel-efficient vehicles. The government also provides significant tax cuts for consumers who purchase vehicles with the labels. The emissions label includes a star rating system indicating the tailpipe emission status of a vehicle using its 2005 national emission standard as the reference. For example, a vehicle with emissions 75 percent lower than the national requirements receives 4 stars. A parallel labeling system indicating how much improvement a vehicle achieved above the national fuel economy standard has been established on a separate fuel economy label. For passenger cars, only those that achieve both the 4-star emissions label and a “+15%” or “+25%” fuel efficiency rating simultaneously can receive up to 75 percent tax reduction. Table 7.1 provides complete information about this tax incentive system.



表7.1: 日本尾气排放和燃料经济性标志说明










车辆类型	要求	核发标志		减税		
				购置税*	吨位税*	汽车税*
节油和低排放车辆（乘用车和微型车）	燃料经济性比2010年标准提高25%，排放比2005年标准低75%			75%	75%	50%
	燃料经济性比2010年标准提高15%，排放比2005年标准低75%			50%	50%	25%
重型车(车辆最大总质量大于3.5吨的卡车和巴士)	符合2015年燃料经济性标准和2009年排放标准			75%	75%	/
	符合2015年燃料经济性标准，氮氧化物或颗粒物排放比2005年标准低10%		  	50%	50%	/

注: 日本的机动车主要有三种税——在购买汽车时征收购置税；根据车辆重量每年征收吨位税；根据车辆发动机排量每年征收汽车税。财税鼓励都反映在这三项税收当中。

### 在用车标志

在用车标志在设计上比较简单，主要为配合实施其它的排放控制方案。一旦在年检或年度登记时取得了标志，就要求车主在规定的车身明显位置上一一直粘贴标志。本文介绍的实例包括德国配合低排放区方案的排放分类标志和东京用于重型卡车限行的“通行证”类型的标志。这些标志利用不同的设计、颜色或数值标志，也能够某种程度上为车主提供车辆的排放特征信息，但是因为标志是在车辆被购买以后才贴上的，这些信息不能直接影响新车的购买决策。另外，展现出的信息通常也不够详细，不足以让消费者进行同类车型比较。这也限制了标志在消费者选择购买二手车时的影响力。在下面的章节中，我们将更详细的介绍德国和日本的标志。

Table 7.1: Illustration of Japanese exhaust emission and fuel economy stickers

VEHICLE TYPE	REQUIREMENTS	CERTIFICATION STICKERS		TAX REDUCTION		
				ACQUISITION*	TONNAGE*	AUTOMOBILE*
Fuel-efficient and low-emission vehicles (passenger cars and mini cars)	Compliant +25% compared to 2010 fuel efficiency standards and emissions down by 75% from 2005 standards			75%	75%	50%
	Compliant +15% compared to 2010 fuel efficiency standards and emissions down by 75% from 2005 standards			50%	50%	25%
Heavy-duty vehicles (Trucks and buses with GVW above 3.5 tons)	Compliant with 2015 fuel efficiency standards 2009 emission standards			75%	75%	/
	Compliant with 2015 fuel efficiency standards with NOx or PM emissions down by 10% from 2005 standards		  	50%	50%	/
Note: Automobiles in Japan are subject to three major taxes—an Acquisition Tax due at vehicle purchase, an annual Tonnage Tax based on vehicle weight, and an annual Automobile Tax based on vehicle engine displacement. Tax incentives are reflected in all three tax items.						

*In-use vehicle labels*

In-use vehicle labels have much simpler designs to facilitate the implementation of other emission control programs. Once obtained at annual vehicle registration or annual emissions test, the in-use labels are required to be attached in a prominent location on the vehicle at all time. Examples include the emission category stickers associated with the low-emission zone program in Germany and the “pass” -style sticker used in the traffic-banning program for heavy trucks in Tokyo. Such labels, differentiated by designs, color, or number, also inform car owners, to some extent, about the emission characteristics of their vehicles, but because they are affixed after a vehicle is purchased that information doesn't directly affect new vehicle purchasing decisions. In addition, the information shown often is not detailed enough to allow consumers to compare with similar vehicles. This also limits the label's influence on consumer choice when purchasing used vehicles. The next sections introduce in greater detail vehicle labels in Germany and Tokyo.

### 德国：低排放区标志

为了减少机动车的细颗粒物和氮氧化物排放，德国在主要城市设立了低排放区（LEZs）：目前已经设立或计划中的低排放区有43个。低排放区是一个地理区域，通常是城市的核心区，在这里只有尾气排放达到特定标准的车辆才允许通行。为辨别合格车辆，特别设计推行了一款按颜色分级的尾气排放标志。

与旨在为消费者提供购买信息的标志相比，德国的低排放区标志设计相对简单。共有3种不同的标志，每种都有明显的颜色和数字来说明车辆的排放等级（图7.3）。轿车车主会在进行车辆登记时会获得标志。即使设计简单，这些标志有效的起到了它们的基本作用——协助低排放区方案的实施，从而减少城市中心区的排放，加速车辆更新和柴油车改造。与此同时，这个简单并广泛普及的标志和低排放区制度本身也能推动大众对车辆污染的认识和对清洁车辆的需求。最后，车辆

	Pollutant group			
	1	2	3	4
Sticker	No Sticker			
Requirement for diesel-driven cars	Euro 1 or worse	Euro 2 or Euro 1 + particle filter	Euro 3 or Euro 2 + particle filter	Euro 4 or Euro 3 + particle filter
Requirement for petrol-driven cars	Without 3-Way catalytic converter			Euro 1 with regulated catalytic converter or better

Space for registration number




	排放组别			
	1	2	3	4
标志	无标志			
对柴油车要求	欧1或以下	欧2或欧1加微粒过滤器	欧3或欧2加微粒过滤器	欧4或欧3加微粒过滤器
对汽油车要求	无三元催化转换器			欧1并有催化转换器或更好

图7.3: 德国低排放区标志

*Germany: Low Emission Zone Sticker*

Germany introduced low emission zones (LEZs) in major metropolitan cities in order to reduce fine particulate matter and NOx pollution from vehicles; 43 are now established or planned. A low emission zone is a geographical area, usually a city's inner core, where only vehicles meeting certain exhaust emissions standards are allowed to travel. To identify qualifying vehicles, a color-coded vehicle exhaust emissions sticker was specially designed and introduced.

Compared with consumer information labels, the design of the German LEZ stickers is relatively simple. There are three different designs of stickers, each with a distinct combination of color and number indicating the emissions class of a vehicle (Figure 7.3). Car owners obtain the labels when they register the vehicle. The labels effectively serve their primary purpose, to enable LEZ program enforcement in order to reduce emissions in the central city and accelerate fleet turnover and retrofits of diesel vehicles. At the same time, the simple and ubiquitous stickers, along with the program itself, may also promote greater awareness of vehicle pollution and the need for cleaner vehicles. Finally, car registration numbers are shown on the front of the label in a designated area.

	Pollutant group			
	1	2	3	4
Sticker	No Sticker			
Requirement for diesel-driven cars	Euro 1 or worse	Euro 2 or Euro 1 + particle filter	Euro 3 or Euro 2 + particle filter	Euro 4 or Euro 3 + particle filter
Requirement for petrol-driven cars	Without 3-Way catalytic converter			Euro 1 with regulated catalytic converter or better

Space for registration number

Figure 7.3: Germany LEZ labels

德国的低排放区方案根据不同城市的需求分阶段实施。例如柏林的低排放区，在第1阶段（2008年—2009年12月），贴有三种标志的车辆都允许通行，但不允许无标志（欧1或更差）车辆进入。在第2阶段，即从2010年1月起，只有绿标车允许在区域内通行。两阶段实施计划都是2007年宣布的，这样就给了车主几年的时间对上下班交通方式进行必要调整或来计划更新改造他们的车。

### 东京：重型柴油卡车排放标志

东京及其周边的8个县联合强制实施了一条柴油车排放管理法令，并在90年代末期发起了名为“对柴油车说不”的排放控制方案。该方案禁止不能满足法令规定的颗粒物标准的重型柴油卡车进入城市控制区。满足标准要求的车辆会核发蓝色的标志，贴在挡风玻璃上。标志正面也有车辆的牌照号。



图 7.4: 东京的“对柴油车说不”标志

和德国的低排放区标志不同，“对柴油车说不”方案的标志没有标明车辆所能达到的标准，只是看车辆能否满足地方法令。每当标准加严，车辆就必须重新进行认证并获得新的标志。

## 总结

在国际标志和低排放区方案中，与中国关系最密切的特征总结如下：

- 新车标志能影响消费者的购买决定并可以配合财税鼓励方案，加强对消费者的宣传并引导购买决定。在标志内容方面，加州和英国的标志都为消费者提供了本车的排放水平在全体车队中的相对位置。英国的标志还标明了绝对排放水平，更进一步的告知消费者车辆的实际环境影响。

- 在用车标志是特别设计用来配合地方排放控制方案的，如交通限行方案。它们的设计简单但独特，始终贴在车身上，很容易被管理机构识别。在此总结国际案例的三个特点供中国政策制定者参考。

- o 在德国的低排放区，针对每个排放等级都有一个特别的标志设计与之对应。这种设计即容易为车主理解和接纳，又不容易造成当低排区限行标准加严时公众可能产生的困惑（比如如果一种标志设计对应的是多个排放等级，当限行的排放标准加严时，有可能新的达标车和达标车仍在用同样设计的标志。这就需要替换原来的部分标志以便区分达标车辆，这样会给车主带来一定的困惑）。东京的颗粒物认证标志没有明显的区分排放等级。但是鉴于该管理方案只是针对商业物流公司，它们都是成批地检测车辆并领取标志，消费者的混淆也就不成为主要问题了。

The German LEZ programs are implemented in stages with varied schedules according to the needs of different cities. For example, in the Berlin LEZ program, during stage 1 (2008 to December 2009) vehicles with all three labels were allowed to travel into the zone but vehicles without stickers (Euro 1 or worse) were not allowed in. In stage 2, which began January 2010, only vehicles with green labels are allowed in the zone. The implementation plan of both stages was announced in 2007, allowing car owners several years to make necessary adjustments to their commute plan or replace or retrofit their vehicles.

#### *Tokyo: Emission sticker for heavy diesel trucks*

Tokyo and its eight neighboring prefectures joined forces to introduce an ordinance regulating diesel emissions and initiated a “Say No To Diesel” program in late 1990s. The program restricted diesel heavy trucks that did not meet PM standards defined in the ordinance from traveling into the controlled metropolitan areas. Vehicles that meet the standards are granted a blue certificate that is attached to their windshield. The label also shows the vehicle's license plate number on the front.



Figure 7.4: Tokyo's "Say No to Diesel" label

In contrast to Germany's LEZ label, the "Say No to Diesel" program label does not show what standard the vehicle complies with, only whether it meets that local ordinance. Each time the standards are strengthened vehicles must be recertified.

## Summary

Features of the international labeling and LEZ programs most relevant to China are summarized below:

- New vehicle labels affect consumer purchase decisions and can be combined with fiscal incentive programs to enhance consumer education and steer purchasing decisions. In terms of label content, both California's and the UK's labels inform consumers of the relative position of a vehicle compared with the whole fleet. UK's label also shows the absolute emissions level, which further informs consumers about the vehicle's actual environmental impact.
- In-use vehicle labels are specially developed to assist local emission control programs, such as a traffic restriction program. Their design are simple but unique, to be placed on vehicles all the time, and to be easily recognized by enforcing parties. There are three specific observations related to in-use vehicle labels.
  - In the German LEZ program, each emissions class is associated with a distinct label. This helps reduce confusion the public's confusion when the program is strengthened and is a visually clear signal that can be understood by consumers. For example, if the same label design applies to more than one emission grades, when the traffic restriction program tightens, part of the vehicles associated with that label will be affected but the rest will not. Consumers cannot distinguish between vehicles affected or unaffected by referring to the label design. In this case, the government has to replace the labels for affected vehicles, in order to make the distinction. Tokyo's PM certificate label does not distinguish between emission classes. But given that the program only affects commercial logistics companies that test their vehicle fleet and obtain labels in a group, this is less of a concern.



- o 在东京和德国的方案中，都要求一个标志对应一辆车，标志上明显的标明相关车辆的登记号或牌照号。这就降低了标志被盗或有意滥用的风险。
- o 如果仅仅是为了配合交通限行方案，根据实施手段的先进程度，可能将不再需要一个实质的标志。例如，得益于数码拍照和图像传输技术，伦敦通过读取和匹配车牌号码来实施低排放区方案，而不是依赖于应用额外的排放标志。
- 地方性交通限行方案能有效帮助污染和拥堵最严重的城市中心区逐步淘汰高排放车。德国的低排放区方案表明，政府可以考虑为特定车型提供弹性达标方式，并给消费者足够的适应期。
  - o 除了单纯的禁止高排放车，低排放区方案为政府提供了其它可考虑的选择。针对氮氧化物和颗粒物排放，德国管理方案允许车辆通过改造（安装颗粒物捕集器）来提升一个等级。例如，没有颗粒物捕集器的欧3柴油轿车是黄标的，而同样的车型，装有捕集器就可以领取绿标。
  - o 德国的方案还从一开始就设置了分步实施计划，给消费者足够的时间在实施交通限制之前调整他们交通出行的选择或更新改造他们的车辆。

## 7.2 中国的排放标志和相关管理方案概况

中国的车辆排放标志方案意在逐步淘汰污染最严重的车辆。如今，中国的6400万道路行驶车辆中，有1800万，即28%是国I前汽油车或没有颗粒物控制装置（柴油车氧化催化器或颗粒物捕集器）的国III前柴油车。这些车的尾气总排放量占全部车辆排放的75%<sup>86</sup>。在拥堵严重的城市，大量高排放车辆造成严重的空气质量问题。在过去10年里，如北京、深圳、上海和广州这样的大城市都已经实施了车辆排放标志和交通限制方案。一些中型城市也跟着实施相关方案。

2009年7月，环保部发文在全国范围内统一了在用车标志。中国所有进行登记注册的车辆都必须进行排放检测，基于测试结果来划定的排放等级，并依此获得排放标志。表7.2总结了新的全国统一的获得绿标的排放标准，图7.5展示了所使用的标志样式。可以领取绿标的车辆包括达到国I及国I以上排放标准的四轮点燃式汽车、到达国III及国III以上排放标准的四轮压燃式汽车和达到国III及国III以上排放标准的摩托车和轻便摩托车。不能达到这些最低标准要求的车辆则领取黄标。根据车辆的类型和使用年数，标志的有效期为6-12个月，在定期车辆排放检测时更换新标志。标志上除了（通过颜色）反映出车辆是否满足相应标准和认证有效期以外，没有其它更多的信息。

86 环境保护部机动车排污控制中心网上新闻，2008年8月18日[http://www.vecc-mep.org.cn/news/news\\_detail.jsp?newsid=34386](http://www.vecc-mep.org.cn/news/news_detail.jsp?newsid=34386)。

- o In both the Tokyo and German programs, a label is specific to a particular vehicle—labels prominently show the registration or license plate number associated with that vehicle. This reduces the risk of label theft and intentionally misuse of labels.
- o Finally, depending on enforcement tactics, a physical emission label may not be necessary if its only purpose is to help enforce a traffic control program. For example, thanks to the digital camera and image translation technologies, London enforced its LEZ program through reading and matching vehicles license plate numbers without relying on the application of an additional emission label.
- Local traffic restriction programs are useful tool to help phase-out heavy emitters in the most polluted and congested central urban areas. The German LEZ program shows that the government may consider flexible compliance methods for certain types of vehicle, and allow enough lead time for consumers to adapt.
  - o LEZ programs allow the government to consider alternative compliance pathways other than simply banning the high polluting vehicles. Focusing on NOx and PM emissions, the German program allows vehicles to move up one category through retrofits (particle filter installation). For example, a Euro 3 diesel car without a PM filter carries a yellow label, while the same model with a filter receives a green label.
  - o The German program also established a phase-in schedule from the beginning, providing consumers enough lead-time to adapt either their travel arrangements or replace or retrofit their vehicles before travel restrictions were in place.

## 7.2 Overview of China's emission labeling and relevant programs

China's vehicle emission labeling program aims at phasing out the most polluting vehicles. Of the 64 million motor vehicles operating in China today, 18 million, or 28 percent, are pre-China I gasoline vehicles or pre-China III diesel vehicles without particle control equipment (diesel oxidation catalysts or PM filters). These vehicles represent 75 percent of total exhaust emissions from all vehicles<sup>86</sup>. In most congested cities, the large numbers of high emission vehicles contribute to severe local air-quality problems. During the last decade large metropolitan areas such as Beijing, Shenzhen, Shanghai, and Guangzhou have introduced vehicle emission labels and traffic restriction programs. A number of other midsize cities have followed suit.

In July 2009, the MEP announced a new normalized labeling system nationwide. Table 7.2 summarizes the requirements for issuing the two types of labels, and Figure 7.5 illustrates the design of the labels. Vehicles receiving green labels include all spark ignition engine (SIE) four-wheelers that meet China I emission standard and above, compression ignition engine (CIE) four-wheelers that meet China III emission standard and above, and motorcycles or motor scooters that meet China III emission standard and above. Vehicles that do not meet these minimum requirements (but still meet their corresponding emission standards) receive yellow labels. Vehicles fail to meet their corresponding emission standards cannot be granted a label.

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86 Online news from the Vehicle Emissions Control Center of the Ministry of Environmental Protection, August 18, 2008, online, [http://www.vecc-mep.org.cn/news/news\\_detail.jsp?newsid=34386](http://www.vecc-mep.org.cn/news/news_detail.jsp?newsid=34386).

特别是，尽管标志背面有车牌号，但在标志正面没有明示车辆的具体信息。

表7.2: 中国车辆排放标志定义

车辆种类		绿标的最低要求
汽车	点燃式	达到国I标准
	压燃式	达到国III标准
摩托车 / 轻便摩托车		达到国III标准



图 7.5: 中国的车辆黄绿标

如前所述，中国引入车辆排放标志主要是为了配合实施排放控制措施。目前为止，标志已经被用于支持两项方案：区域交通限制和全国范围的报废鼓励。区域交通限制措施与欧洲的低排放区类似。在特定时间段禁止黄标车进入城区，北京从2009年10月起，不允许黄标车进入六环（这个限制区域较之当初扩大了很多，2003年刚刚开始实施限行措施时，仅仅是在二环路内限行）。

2009年6月，环保部、财政部和发改委等六家政府部门在全国范围内联合实施了为期一年的消费者补贴方案，来逐步淘汰高排放车辆。在这项方案中，车主（私人、政府机构或商业机构）凡是报废符合规定的老旧或黄标车辆，购买新车的，根据车辆类型，可以一次性获得3000-6000元人民币的现金返还。2010年1月，根据车辆类型，补贴金额被提升至最高1.8万元。一些地方政府还进一步提供额外的财税鼓励。以旧换新补贴方案将延期至2010年年底。

这些实施方案目前已经在全国成功的淘汰了数以千计的高排放车。不过，从另一方面，有报告指出并不是所有地方政府都要求以旧换新车辆提供报废证明。这样高排放车辆就可以被卖到其他地方，削弱了方案的减排效力。

Depending on vehicle type and age, labels are valid for 6 to 12 months, and renewal is contingent at results of their emission tests.

The labels contain no additional information other than whether a vehicle has met the relevant requirement and the certification's expiration date. Specifically, there is no vehicle-specific information shown on the front side of the labels although the license plate number is present on the back of the label.

Table 7.2: Definition of China's vehicle emission labels

Vehicle Type		Minimum requirement for Green label
4-wheelers	SIE	Meet China I Standard
	CIE	Meet China III Standard
Motorcycles / Scooters		Meet China III Standard



Figure 7.5: China's green and yellow vehicle labels

As indicated, China's vehicle emission labels are introduced mainly to assist in enforcing emission control programs. So far, the labels have been used to support two types of programs: local traffic restrictions and a national scrappage incentive. The concept of the local traffic restriction program is similar to the LEZs in Europe. Vehicles with yellow stickers are banned from travelling into the inner city area during some time period. For example, in Beijing beginning October 2009, yellow-sticker vehicles were not allowed to enter the 6th Ring Road. (This is an expansion of the restricted area, which only extended to the 2nd Ring Road when the program was initially introduced in 2003.)

In June 2009, MEP, MOF, NDRC, and six other government agencies collaboratively initiated a one-year nationwide consumer subsidy program to phase-out old and highly polluting vehicles. Under the program, vehicle owners (private, governmental, or commercial) who replace and scrap their qualified old or yellow-sticker vehicles with new purchases are eligible for one-time cash rebates ranging from RMB 3,000 to RMB 6,000, depending on vehicle class. The amount of subsidy was raised to up to RMB18,000 depending on vehicle type in January 2010. Some local governments provided additional financial incentives as well. The program is extended to end of 2010.

Such programs have successfully eliminated thousands of high-polluting vehicles across the country so far. But on the other hand, reports indicate that not all local governments require proof of scrappage of the vehicles traded-in. High-emitting vehicles could then be sold elsewhere, undermining the effectiveness of the program.

北京计划对混合动力车和零排放车使用另外的排放标志，不过目前还没有如何使用标志的计划。标志会是绿色底色，中间有“电动车”字样。

### 7.3 中国方案与国际经验对比

在前文中介绍的标志方案可以根据下列准则予以评估。

- 对消费者的影响。新车标志和在用车标志从不同角度影响消费者。新车标志会影响到消费者决定购买的车辆类型。当在用车标志运用于交通限制方案，会通过限制交通令高污染车辆的车主减少驾驶，鼓励他们升级车辆或更换新车。
- 长期使用计划。排放标志在设计上应当为方案日后的升级提供条件。各类标志必须严格定义并能够在方案升级时体现出对应的排放组别。例如，在一项交通限行方案中，如果下一步要限制欧3车并在今后进一步限制欧4车，那么每个组别就都应该用独立的标志来体现。另外，在方案实施之初就引入所有可能需要的标志会带来日后实施的便利，并且政府应当为方案实施中的每一步提供足够的过渡期。以上两点可以帮助消费者了解政策的长期影响并做出相应的出行计划调整决策。

德国的标志系统清楚的定义了各类车，可以适应长期政策的要求。德国政府在最初就宣布了长期要求，给出了几年的过渡时间。东京的标志是基于是否通过标准，不过该方案仅仅是针对商用卡车运输公司，更换标志不会对广大的普通车主带来困惑。另外，东京的方案给予商业运输公司7年的缓冲期。

尽管北京采用星级系统来表明车辆所达到的排放标准，全国绿标方案存在的最大问题就是没有明确的区分达到国I、国II、国III及以上标准的车辆。这样不利于实施更加严格的交通限制措施和对清洁车辆予以财政鼓励，例如财税激励政策如果要对绿标车给予财税鼓励，那么国V和国IV车将获得相同的激励力度，尽管国V理应得到更高的鼓励。另外，缺少今后加强交通限制方案的明确计划，这就削弱了消费者计划购买超低排放车的积极性。

- 非法使用、盗用标志的潜在可能。比起新车标志，滥用对在用车标志而言是一个大问题。对于新车而言，显示车型信息（如排量、车重等）就足以防止经销商滥用。在这方面，加州不要求显示任何特定车型信息，而英国的标志上则有详细的车型信息。在用车标志应当对应特定车辆，这样一来，即使标志被偷也不能用于其它的车上。东京和德国的标志上都有车辆的车牌号码。中国的在用车标志没有在正面显示车辆的任何特定信息（尽管在背面有车牌号），这样就造成了更大的滥用可能。

表7.3总结了上述的标志方案是否满足上述这些准则。

Beijing is considering introducing additional emission labels for hybrid electric and zero emission vehicles, though there is no proposal on how to make use of the labels. The label has a green colored background and shows "Electric Vehicle" in the middle.

### 7.3 Comparison of the China's program and international practices

**The labeling programs reviewed in the previous sections can be evaluated according to the following criteria.**

- Impact on consumers. New vehicle labels and in-use vehicle labels influence consumers in different ways. New vehicle labels affect consumer decision on the type of new vehicle they purchase. In-use vehicle labels when combined with traffic restriction programs, may encourage owners of more polluting vehicles to drive less by shifting their transportation modes, or encourage them to upgrade their vehicles, or to replace them with new vehicles.
- Long-term programmatic use. The design of emission labels should allow for future strengthening of the program. The label categories must be well defined and should represent the individual emissions group targeted for each future step in strengthening the program. For example, in a traffic restriction program, if the next step is to restrict Euro 3 vehicles and a further step is to restrict Euro 4 vehicles, there should be separate labels representing each group. In addition, it is beneficial to introduce all potential label categories at the beginning of a program, and government should provide adequate lead-time before implementing each step of a program. These two points help consumers understand the longer-term impacts of the policy and make plans and decisions accordingly.

The German labeling system has distinct and well-defined categories that can accommodate longer-term policy requirements. The German government announced the longer-term requirements at the beginning, allowing several years' lead-time. The Tokyo label is based on a pass/fail standard, but because the program only targets commercial trucks, changing the label may not create much confusion. In addition, the Tokyo program granted a 7-year grace period to commercial logistics companies.

The biggest concern with China's standardized national green label program is that it does not distinguish among vehicles that meet China I, II, and III standards and above although Beijing used to have a star system indicating emission standard levels of a vehicle. This will impair both the label's abilities in facilitating a tightened traffic restriction program and its ability to support a fiscal incentive to encourage cleaner vehicles. In the latter case, if incentive is provided for green sticker vehicles, both a China V or China IV would receive the same level of incentive, despite the fact that China V vehicles should deserve higher incentive given that they are cleaner. In addition, there is no clear plan to strengthen the traffic restriction program in the future, which reduces the incentives for consumers to plan for buying the lowest emission vehicles.

- Potential for misuse. Misuse is more of an issue for in-use vehicle labels than for new vehicle labels. For new vehicles, showing vehicle model information (such as displacement, weight etc) will be sufficient to prevent from misuse by dealerships. In light of this, the California label does not show any model-specific information, while the UK label shows detailed model information. In-use labels should be specific to a vehicle, so that if a label is stolen it cannot be used on another vehicle. Both the German and Tokyo labels include the vehicle license plate number. China's in-use label does not show any vehicle-specific information on the front (though it shows the license plate number on the back), and thus is subject to higher potential misuse.

Table 7.3 summarizes how the labeling programs discussed here measure up to these criteria.



表7.3: 标志方案评估

	加州/英国	德国	东京	中国
标志类型	新车	在用车	在用车	在用车
标志目的	消费者教育与鼓励	实施低排放区	实施“对柴油车说不”方案	实施交通限制和报废方案
对消费者的影响 说明: 影响取决于标志的类型和设计方案	购买决定	使用行为	使用行为	使用行为
长期使用计划 说明: 标志种类设计是否完善, 管理方案是否提供了足够的过渡时间	不适用	简单(好) 原因: 标志种类定义完善, 管理方案提供了合理的过渡时间	一般 原因: 只有一种标志, 不过管理方案提供了合理的过渡时间	困难 原因: 标志种类定义不明确, 管理方案没有提供合理的过渡时间
滥用的潜在可能 说明: 标志上是否由特定的车辆或车型信息	中等 原因: 加州标志上没有车型信息	低 原因: 标志上有车牌号	低 原因: 标志上有车牌号	高 原因: 标志上的车型信息有限
颜色注解: 绿色 = 最理想, 蓝色 = 中等理想, 红色 = 最不理想				

## 7.4 支持消费者宣传计划

如果没有配套的消费者宣传计划, 使消费者了解标志的基本含义并认识到哪些才是最环保的选择, 车辆排放标志本身能起到的作用会很有限。当然, 大多数标志或多或少的能提供一些这方面的信息。例如, 加州的环保性能标志上指出了排放最清洁的评分, 并同时显示了本车的评分。就算是在用车标志, 上面使用的颜色和数字也可以说明车辆的清洁程度。但是鉴于标志大小有限, 这些信息不能回答消费者可能存在的大量问题。具体问题可能包括车辆的实际环境影响或改善排放性能的方法。从长期角度, 配套的消费者教育将会促进更多环保的消费行为。

Table 7.3: Labeling program evaluation

CRITERIA	CALIFORNIA/UK	GERMANY	TOKYO	CHINA
Type	New	In-use	In-use	In-use
Goal	Consumer education and incentive	Enforce LEZ	Enforce “Say No to Diesel”	Enforce traffic restriction and scrappage programs
Impact on Consumers Explanation: the impacts depend on label type and design	Purchase decision	In-use behaviors	In-use behaviors	In-use behaviors
Long-term programmatic use Indicator: if label categories are well defined and if program provides enough lead-time for consumer adjustment	Not applicable	Easy (Good) Reasons: label categories well defined; program provides reasonable lead-time	Fair Reasons: only one label category; but program provides reasonable lead-time	Difficult Reasons: label categories not well defined; program does not provide reasonable lead-time
Potential for misuse Indicator: if label shows specific information about a particular vehicle or model	Some Reason: the California label does not show model data	Low Reason: label shows license plate data	Low Reason: label shows license plate data	High Reason: label shows limited model data
Color code: Green=most desired; Blue=moderately desired; red=least desired				

#### 7.4 Supporting consumer education programs

Vehicle emission labels alone may only achieve limited results without a matching consumer educational program that provides consumers with a basic understanding of what the label means and what the most environment-friendly choice is. Of course, most labels will display, to more or less extent, such information. For example, the California environmental performance labels point to the cleanest emission score at the same time showing the score for a particular vehicle. Even on the in-use vehicle labels, the use of colors and numbers may indicate the cleanness status of a vehicle. But given the limited space of a label, such information can never be thorough to answer a lot of important questions that consumers may have. Typical questions may include the vehicle's actual environmental impacts or ways to improve its emission performance. Such educational programs will foster more environment-friendly consumer behaviors in the long run.

美国EPA每年会在车辆燃料经济性标志基础上发布《绿色汽车指导手册》（指导）。指导中会介绍美国整体车队的燃料经济性情况和车辆的排放特征，并评出各类别车辆中最节油和最清洁的车型。《2007年能源独立与安全法》要求美国交通部（与能源部和EPA进行协商）制订综合的教育计划，增进消费者对标志的了解。

同样，德国在2007年，即低排放去方案实施之前一年，就利用所有公共媒体进行了非常深入的消费者教育宣传活动。

## 7.5 建议

总的来说，环保部应制定中长期标志政策和区域排放控制战略。尽管近期的标志主要是为了支持排放控制措施，它们也可以作为向消费者进行宣传教育的重要手段。中国可以更多的考虑将环保标志与财税鼓励相结合。下面列出了环保部可能考虑的一些步骤，从长期角度强化管理方案：

- 为避免标志被盗或滥用，可考虑在在用车标志的显著位置附上某车辆的特有信息（如车牌号码）。
- 近期（未来5年），环保部应考虑改革现有的标志体系，以便可以更容易地过渡到未来加严的交通限制措施。目前的绿标需要分开，以便区分国I以上各个排放级别的汽油车和国III以上各个排放级别的柴油车。应允许包含改造车辆。每个新的排放级别都需要不同设计的标志。
- 环保部可以考虑将现有的在用车标志的功能拓展至售前消费者信息标志，并结合标志引入财税（例如税收鼓励）或非财税（例如指定停车位）鼓励政策。这些政策可以包括对清洁车辆减税，就像对国II车辆实施过的那样。这些鼓励措施应该在新排放标准实施之前的几年内执行。例如，在未来几年中可以在拥有低硫燃料的城市或地区针对国VI车辆使用先进标志，配以有力的鼓励政策（货币或非货币的），加速国VI车的商业化推进。
- 从中长期角度，城市和地区可以通过逐步加严对允许进入市中心区的车辆的要求来强化交通限制措施，在此特提供设计严格管理方案的三项基本指导原则。首先，交通限制措施应该允许特定车辆有多种达标途径，例如柴油车改造。德国的低排放区在这方面提供了可借鉴的经验。第二，在实施更严格的管理方案之前，定义好车辆种类是必要的。第三，政府应尽早发布长期实施计划，为生产企业和消费者提供足够的过渡期来适应新的要求。
- 环保部应在新车上引用温室气体排放标志来进行消费者宣传，或修订现有的油耗标志来满足这一用途。中国应当考虑向温室气体排放低的车辆提供鼓励（详见第8章）。
- 环保部应考虑支持消费者宣传教育计划来提高消费者对标志的认识。
- 如果环保部考虑使用消费者信息标志来影响消费者的购买决定，实施机构应确保消费者能够在销售环节看到这些标志。通常，在没有强效实施方案时，汽车经销商可能不会主动向消费者展示和讲解标志。

The US EPA publishes Green Vehicle Guide every year along with the issuance of vehicle fuel economy labels. The Guide introduces the overall fuel economy and emission characteristics of the US fleet, and ranks the most fuel-efficient and cleanest models in each vehicle class. The Energy Independence and Security Act of 2007 also required DOT (in consultation with DOE and EPA) to develop more comprehensive educational programs to improve consumer understanding of the label.

Similarly in Germany, comprehensive campaign, involving all public media, disseminated information about the low emission zone program and the emission stickers starting in from 2007, a year before the programs were implemented.

## 7.5 Recommendations

In general MEP should develop mid- to long-term labeling policy and regional emission control strategies. Though in the near-term labels primarily support emission control programs, they can also serve as an important consumer education tool. China might in addition consider combining label requirements with fiscal incentives. Listed below are some possible steps that MEP may consider to follow in order to strengthen its program over time:

- To avoid label theft or misuse, consider displaying vehicle-specific information (such as license plate number) prominently on the in-use vehicle label.
- In the near-term (next five years), MEP should consider a reform of the current labeling system to allow an easier transition to a strengthened traffic restriction program. The current green label category needs to be broken down to distinguish between gasoline vehicle emission classes above China I and diesel vehicle emissions classes above China III. Allowances should be made to include retrofitted vehicles. Each new category needs a distinct design.
- MEP may consider extending the function of the current in-use labels to pre-sale consumer information labels, and introducing fiscal (e.g. tax incentive) or non-fiscal (e.g. designated parking space) incentives to combine with the labels. Such policies may include, for example tax deduction for cleaner vehicles as was done for the introduction of China II vehicles. Such incentive programs should be introduced several years before the new emission standards are phased-in. For example, an advanced label for China VI vehicles could be introduced in cities/regions with at lower sulfur fuel, with favorable incentive policies (monetary or non-monetary) within the next few years, to speed up their commercialization.
- In the mid- to long- term, cities and regions may strengthen the traffic restriction programs by gradually tightening the requirements for vehicles allowed in the core city areas. No specific schedule is recommended, but rather three general guidelines for designing a more stringent program are provided. First, traffic restriction programs should allow alternative compliance pathways for certain vehicles, such as retrofitted diesel vehicles. The German LEZ program offers a useful experience in this respect. Second, allowing for better-defined categories is necessary before implementing a more stringent program. Second, the government should provide enough lead-time for manufacturers and consumers to adjust to new requirements by announcing the longer-term implementation plan early.
- MEP should introduce GHG emissions labels for new vehicles for consumer education or revise the existing vehicle fuel consumption labeling to serve the purpose. China should also consider offering incentives for low-GHG emission vehicles (see Chapter 8).
- MEP should consider introducing supporting consumer educational programs to improve consumer understanding of the labels.
- If MEP considers introducing consumer information labels that influence consumer purchase decision, the enforcing agencies should make sure that the labels are made available to consumers at the point of sale. Often without strong enforcement, auto dealers may lack of incentive to show and explain the labels to consumers.