

**FICCI NOTE FOR  
REPLACEMENT POLICY FOR DIESEL COMMERCIAL VEHICLES  
MAY 2015**



## **Indian Automotive Market & Existing Vehicle Retirement Policy in India**

- The total vehicle population in India is over 125 million out of which over 90 million are two wheelers, 8 million are commercial vehicles, and almost 18 million are passenger cars.
- At present, India does not have a robust national policy on retirement of vehicles or end-of-life of vehicles, except for the recent mandatory ban been imposed by National Green Tribunal recently for vehicles more than fifteen years old and for diesel vehicles that are more than ten years old. Consequently, old vehicles continue to run on the roads leading to huge losses to the country on account of higher fuel consumption, higher emissions as well as compromising the safety of the vehicle occupants and other road users. Nearly 80% of road centric pollution is caused by vehicles more than 10 years old.
- Section 59 of Motor Vehicles Act, 1988 (MV Act) empowers Central Government to specify the life of a motor vehicle having regard to the public safety, convenience and objectives of Motor Vehicles Act, 1988 (MV Act). The current Road Safety and Transport Bill 2015 (version 4) also empowers the Government to prescribe age limits for vehicles.
- The Government has not specified age limit for any class or category of vehicles till date, although various rules like rules 82 and 88 of Central Motor Vehicles Rules, 1989 (CMVRs), specify different ages for the purpose of grant of permit to tourist vehicles and tourist cabs; national permit for goods carriages, multi-axle goods carriages, multi-axle trailers etc.
- Sub-rule 1 of Rule 88 of CMVRs provides that no national permit be granted in respect of goods carriage, other than multi axle vehicle, which is more than 12 years old; for multi axle goods carriage vehicle which is more than 15 years old and in respect of multi axle trailer approved to carry Gross Vehicle Weight of more than 50 tons which is more than 25 years old. Rule 82 of CMVRs provides that tourist permit

for motor cabs may be given up to 9 years old, and for other motor vehicle, other than motor cab, which are less than 8 years old.

- As regards non-transport vehicle i.e. private vehicles, section 41(7) of MV Act, provides that the certificate of registration in respect of motor vehicle other than transport vehicle shall be valid for a period of 15 years. The renewal of registration thereafter is done after fitness test.

### **NGT Tribunal Order to Ban Diesel Vehicles More than 10 Years Old**

- The air pollution level in Delhi has reached an alarming level that would make it difficult for the people of Delhi even to breathe freely much less fresh air, the National green Tribunal noted in its Order dated 7<sup>th</sup> April 2015.
- The Tribunal further noted that the studies have established that the diesel vehicles are major source of pollution and major cause for deteriorating ambient air quality. Many countries of the world are in the process of doing away with diesel vehicles and are imposing very heavy taxes and levies on such vehicles. Such countries include amongst other Brazil, China, Sri Lanka, Denmark and Paris. The Tribunal in its order noticed that certain stringent measures need to be taken to improve the ambient air quality in NCR, Delhi and to ensure that the residents of this area do not travel closer to ill-health by each breath that they take. Thus, the Tribunal, hereby directed that all diesel vehicles (heavy or light) which are more than 10 years old, will not be permitted on the roads of NCR, Delhi. All the registering authorities in the State of Haryana, U.P. and NCT, Delhi would not be registering any diesel vehicle which is more than 10 years old and shall file the list of vehicles before the Tribunal and provide the same to the Police and other concerned authorities. Petrol vehicles which are more than 15 years old and diesel vehicles that are more than 10 years old shall not be registered in the NCR, Delhi as per the Orders of the Tribunal.

- The Tribunal has now sought views of the stakeholders to suggest measures to reduce the emission levels and encourage vehicle owners to replace their vehicles. The Tribunal is perhaps also considering to extend the ban throughout the country and not limiting itself to NCR region. In this context, FICCI is sharing below the worldwide experience of such policies and also measures that could be implemented in the context of India.

### **Vehicle Replacement Schemes**

- Worldwide countries have adopted different models to reduce emission levels through vehicle replacement programmes. The International Council on Clean Transportation (ICCT) has recently conducted a survey of vehicle replacement programmes for reducing emission levels in different countries. The models followed in different countries are discussed in brief in the following paragraphs.
- Vehicle replacement programmes can be mandatory or voluntary backed by incentives. Mandatory vehicle replacement programs force the retirement of a vehicle from the fleet even if it has useful life remaining. Retirement is usually based on a vehicle's age or mileage. Mandatory vehicle replacement programs are not very common and, without additional incentives (fiscal or otherwise), may become unpopular. *More commonly, vehicle replacement programs are voluntary and supported by some form of policy incentives. These are usually fiscal incentives, such as direct subsidies or fees to eliminate or discourage the use of older vehicles. They may also include other incentive policies such as restrictions on when and where high-emitting vehicles may operate. The effective use of non-fiscal policy incentives to complement subsidies or other fiscal incentives are one of the important best practices.*
- In the recent past China has carried out such an exercise and Germany has also announced a package for replacement of old vehicles, which has also successfully

stoked demand. Most countries in the developed world have clear end-of-life regulations supported by a robust Inspection & Certification system. Examples of the schemes followed world-wide are given in the table below.

**Table: Vehicle Replacement Programmes Worldwide**

| Program                                                                      | Vehicles targeted                              | Approximate average subsidy offered                            | Complimentary policies used                                                                            |
|------------------------------------------------------------------------------|------------------------------------------------|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| <b>US: California: Carl Moyer Program</b>                                    | Multiple types, including on-road and off-road | ~\$28,000 per vehicle                                          | Mandatory upgrades of high polluting vehicles (regulatory backstops)                                   |
| <b>US: Consumer Assistance to Recycle and Save (CARS)</b>                    | Light-duty vehicles                            | \$3,500-\$4,500                                                | None                                                                                                   |
| <b>US: National Clean Diesel Campaign (NCDC)</b>                             | Heavy-duty vehicles                            | ~\$9,400 per vehicle spent for the program                     | None                                                                                                   |
| <b>Germany: Scrappage Bonus</b>                                              | Light-duty vehicles                            | \$3,500                                                        | Low emission zones                                                                                     |
| <b>China: National Vehicle Scrappage Program</b>                             | Light- and heavy-duty vehicles                 | Varies by vehicle type; between \$980 and \$2,940              | Mandatory vehicle age limits                                                                           |
| <b>China: Local Vehicle Scrappage Program</b>                                | Light- and heavy-duty vehicles                 | Varies by vehicle type; LDVs: \$410-2410 HDVs: \$1,330-\$2,100 | Mandatory vehicle age limits and low emission zones                                                    |
| <b>Mexico: Program to Modernize Federal Road Transportation</b>              | Heavy-duty vehicles on federal highways        | Up to 15% of the cost of the replacement vehicle               | None                                                                                                   |
| <b>Mexico: Mexico City: Program to Replace Microbuses with New Autobuses</b> | City buses                                     | Up to \$7,700                                                  | None                                                                                                   |
| <b>Chile: Swap your Truck</b>                                                | Heavy-duty trucks                              | From \$8,000 to \$24,000 depending on vehicle category         | Partial: there is a ministerial decree to implement a low emission zone, but it has not been executed. |

- Out of the eight vehicle replacement programmes studied in the ICCT White Paper, California’s Carl Moyer Programme was found to be the most effective.

➤ The ICCT White Paper also prescribes five best practices that serve as guidelines for policymakers seeking to design and implement these programs in their jurisdictions.

These are discussed below:

- a) **For maximum environmental benefits, replacement vehicles should be as clean as possible.** The largest emission reductions are achieved when the replacement vehicles are significantly cleaner than those they replace. For the benefits to be realized, policymakers must ensure that replacement vehicles have much lower pollutant emissions for the full range of operating conditions encountered by the vehicle during its useful life (“real-world” operation).
- b) **Program implementation, management, and enforcement should ensure expected benefits are actually achieved.** It is key that policymakers be cautious that subsidies are not provided for vehicles already abandoned and not in regular operation. In addition, replacement programs ideally include strong oversight and guarantees on the fate (e.g., destruction and recycling) of the replaced vehicles. These measures should ensure that high emitting vehicles do not continue to operate even after subsidies for their retirement have been issued.
- c) **Fiscal incentives should be carefully tailored to optimize both environmental benefits and cost-effectiveness.** The level of fiscal support necessary for a specific program will vary based in part on the severity of the regional air pollution, as well as the targeted vehicle types and resources available. Generally speaking, fiscal incentives should be sufficient to guarantee enough program participation to warrant investment in the program. In the long term, the economic benefits of cleaner or more fuel-efficient vehicles as a result of the program should exceed the fiscal incentives given.
- d) **Program design should carefully consider and balance the different roles of national, regional, and local-level policymakers.** Initially, a large-scale vehicle replacement program may need to be established and funded by a central

authority. However, program implementation and especially individual project grant determinations may be best handled by local policymakers who have a detailed understanding of local needs and conditions.

- e) **Complement fiscal policies with additional incentives such as low emission zones and regulatory backstops.** Complementary, non-fiscal measures could include regulatory backstops, *low emission zones*, mandatory age limits for vehicles, or operation restrictions. These complementary measures not only incentivize increased participation in the voluntary vehicle replacement program, but each measure will also have its own distinct emissions benefits as well.

### **Introducing Vehicle Replacement Schemes in India**

- As mentioned above, the experience worldwide is that the stand alone mandatory vehicle replacement programs are not very common and, without additional incentives (fiscal or otherwise), may become unpopular. *More commonly, vehicle replacement programs are voluntary and supported by some form of policy incentives.*
- In the context of India, mandatory orders are already in place as per the Orders issued by the National Green Tribunal. The vehicle owner as per the provision, can either replace his existing old vehicle with a new more environment friendly vehicle before attaining the retirement age of ten years for the vehicle or else can scrap it after ten years as per the Order of National Green Tribunal.
- These need to be supported by incentives to encourage the users to volunteer to replace their vehicles in advance and substitute with a more environment friendly vehicle if pollution levels are to be brought down significantly.
- We are suggesting below the subsidy that would perhaps encourage vehicle owners to replace their vehicles voluntarily in advance. To start with, FICCI would recommend that the scheme could be considered for commercial vehicles like diesel

trucks (MHCV) for ten years or more of age. It is estimated that over 37% of the diesel consumption in India is by Trucks which is the largest user of this fuel followed by passenger cars, buses etc.

**Sector-wise Consumption Pattern of Diesel in India (% terms)**

| S. No. | Sector/user Category | Consumption |
|--------|----------------------|-------------|
| 1      | Trucks               | 37          |
| 2      | Passenger cars       | 15          |
| 3      | Buses                | 12          |
| 4      | Agriculture          | 12          |
| 5      | Industry             | 10          |
| 6      | Power Generators     | 8           |
| 7      | Railways             | 6           |
|        | Total                | 100         |

*Source: Lok Sabha Secretariat*

- Further, segmental break-up of diesel consumption indicates that more than 90 per cent of the diesel is consumed by M&HCV in the total Commercial vehicle segment (which includes trucks, buses, LCV). This indicates the urgent need for better emission control in the MHCV segment (*source I-Macs & PCRA Report*).
- Based on a set of assumptions, we have tried to calculate various options of the subsidy or incentive required to encourage vehicle owners to replace their old vehicles before the retirement age. Incentivizing scrapping of old vehicles which are high contributors to environmental damage was one of the recommendations of the Working Group on Road Transport for the 12<sup>th</sup> Five Year Plan. Besides, non-fiscal options are also discussed at the end.
- Any robust programme would require that stringent conditions are imposed and enforced for the new vehicle too that would replace the old vehicle. For instance, under the ***Umweltprämie*** program of Germany, light-duty vehicle owners were eligible for a onetime bonus of €2,500 (\$3,500) for the purchase of a new vehicle to replace an old one. To qualify for the bonus, the old vehicle had to have been first



registered at least nine years before the time of application for the bonus, and the replacement vehicle had to be less than a year old and meet at least Euro 4 emission standards (BAFA, 2009). The Euro 4 emission requirement had strong synergy with Germany's low emission zones.

### **Option1**

- In Option 1, we discuss the possibility of providing subsidy by the Centre for encouraging replacement of the MHCV (Diesel Trucks). In this case the entire subsidy cost is borne by the Centre. This subsidy complements the ban been imposed by the National Green Tribunal.
- As a rough estimate, average life of the diesel truck is estimated to be 16 years. In the context of the ban by NGT for vehicles older than 10 years, we are taking the average life of 13 years which is in the middle of 10 and 16 years. Average price for the same vehicle is Rs 20 lacs with a residual value of 23% after thirteen years. Based on these assumptions, it is estimated that a subsidy of Rs 1231 crores would be required if all the existing diesel trucks of over 13 years of age (numbered 2,67754) were to be replaced with incentives.
- In the context of the current ban on diesel trucks (that has been put on hold) the above amount of subsidy may be required if all the truck are to be replaced. However, going forward the above estimates for the subsidy may be on the higher side for any given one year as all vehicles are not likely to be replaced in the same year.

**Table: Calculations for Replacement Subsidy for Diesel trucks More than 10 Years Old**

| <b>S. No.</b> | <b>Parameter</b>                                                                                       | <b>Assumptions</b> |
|---------------|--------------------------------------------------------------------------------------------------------|--------------------|
| 1.            | Average life of a MHCV truck (large truck)                                                             | 13 years           |
| 2.            | Average Price for the MHCV Truck (large Truck)                                                         | Rs 20 lacs         |
| 3.            | Percentage Residual Value after 13 years                                                               | 22%                |
| 4.            | Residual Value after 13 years                                                                          | Rs 4.6 lacs        |
| 5.            | Total Population (PARC) of MHCV Trucks that would be 13 years Old (6.6% of total registered)           | 267754             |
| 6.            | Total Residual Value of all the trucks that are 13 years old                                           | Rs 12316 crores    |
| 7.            | Subsidy per Vehicle for Replacement- 10% of the Residual Value                                         | Rs 46,000          |
| 8.            | Total Subsidy for All Diesel Trucks with more than 13 years of age- based on 10% of the Residual Value | Rs 1231 crores     |

**Note: Calculations in the above table are only approximates based on industry feedback**

- The subsidy amount per vehicle should be an absolute amount and not a percentage so that it is not subject to any kind of misuse.
- Also, the amount of subsidy which has been taken as 10% in the above calculation should vary depending upon the age of the vehicle. Early retirement can be entitled for higher amount of subsidy as was the case in Beijing's Vehicle Elimination Subsidies 2008-2009 (see table next page).
- The policy should also specify that either the vehicle should be new or should not be older than the year 2010.
- Further, the process should be online, with the registration and transfer of subsidy done online to ensure transparency.

**Table: Beijing’s Vehicle Elimination Subsidies 2008-2009 (US\$)**

| Vehicle type                      | Vehicle Model Year |                 |                 |                 |                 |                 |                  |
|-----------------------------------|--------------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|
|                                   | 2004+              | 2002-2003       | 2000-2001       | 1998-1999       | 1996-1997       | 1994-1995       | 1993 and earlier |
| Small passenger                   | \$1500 / \$1160    | \$1330 / \$1000 | \$1160 / \$830  | \$830 / \$660   | \$580 / \$500   | \$330 / \$250   | \$160 / \$130    |
| Medium passenger or Medium trucks | \$1660 / \$1330    | \$1500 / \$1160 | \$1330 / \$1000 | \$1000 / \$830  | \$660 / \$580   | \$500 / \$330   | \$330 / \$250    |
| Large passenger                   | \$4160 / \$3660    | \$3830 / \$3330 | \$3500 / \$3000 | \$3000 / \$2500 | \$2330 / \$1830 | \$1500 / \$1160 | —                |
| Small/micro trucks                | \$1000 / \$830     | \$830 / \$660   | \$660 / \$500   | \$500 / \$330   | \$330 / \$160   | \$160 / \$130   | \$130 / \$80     |
| Heavy trucks                      | \$2500 / \$2160    | \$2330 / \$2000 | \$2160 / \$1830 | \$1660 / \$1330 | \$1160 / \$1000 | \$830 / \$750   | —                |

Note: in each case, the first number is the Phase I subsidy (September 2008–June 2009); the second number is the Phase II subsidy (July–December 2009).

The funds for this subsidy need to be explored from the following two schemes/budget heads of Ministry of Environment, Forest & Climate Change:

- **Prevention of Air and Water Pollution**: This provision covers Grants-in-aid to State Governments/Central Pollution Control Board and funding of relevant schemes. The Central Pollution Control Board is also responsible for the prevention and control of air pollution. The provision covers Grants given for the promotion of common effluent treatment plants.
- **Mission on Climate Change and Adaptation**: With growing recognition of the threat of the Climate Change and its significance as an area of domestic policy making and planning a new scheme Climate Change Action Programme has been started in the first year of the 12th Five Year Plan. Adaptation projects can be implemented at the community, national, and transboundary level. An adaptation program is a process, a plan, or an approach for addressing climate change impacts that is broader than the scope of an individual

project. The Adaptation fund will assist States that are particularly vulnerable to the adverse effects of climate change in meeting the costs of adaptation. It will finance concrete adaptation projects and programmes that are State driven and are based on needs and priorities.

The proposed budget under the above two schemes for 20-15-16 is currently small to address this challenge through replacement subsidy. But it could be considered for higher allocation to address this challenge of air pollution. Table below shows the funds proposed to be allocated for the above two schemes for 2015-16:

| <b>S. No.</b> | <b>Scheme/Budget Head</b>                                                                       | <b>Allocation Proposed (Rs Crore)</b> |
|---------------|-------------------------------------------------------------------------------------------------|---------------------------------------|
| 1             | Prevention of Air and Water Pollution                                                           | 136                                   |
| 2             | Mission on Climate Change and Adaptation ( <i>National Adaptation Fund for Climate Change</i> ) | 160 (135)                             |

*Source: Expenditure Budget 2015-16*

### **Option 2**

- In the second Option, the amount of subsidy as calculated above i.e. Rs 1231 crore can be shared equally between the Centre and States. Which means 50% of the subsidy amount per vehicle is borne by the State. That would mean a subsidy of Rs 615 crore by the centre and an equal amount to be borne by the States. As the centre has devolved higher amount/share to the States from the budget this year onwards, the cost related to vehicle replacement subsidy can be borne at the State end too.

### **Option 3**

- In the third option, vehicle replacement can be done in Phases. In the first phase, replacement of vehicles older than 20 years is carried out. In the second phase vehicles that are older than 13 years and less than 20 years old can be replaced. In this case the amount of subsidy will also have to vary according to the age profile. Higher subsidy to be provided for vehicles with lower age profile. This would also ease the subsidy burden on the Government and can be phased out over a period of 5 years. After 5 years, all vehicles that would be more than 13 years old will not be allowed to ply on the roads and subsidy to be provided to encourage replacement.

### **Option 4**

- In the fourth option, the policy can be implemented in phases depending upon the congestion in cities. To start with Million-Plus cities can be targeted first and then the scheme is implemented in next two to three years in other parts of the countries as well.

| <b>S. No.</b> | <b>City</b>                                                    | <b>Number of Trucks/Lorries in cities</b> | <b>Number of Trucks/Lorries Older than 13 years of age (6.6%)</b> | <b>Phase</b> | <b>Amount of Subsidy for Replacement (Rs 46000/- per vehicle)</b> |
|---------------|----------------------------------------------------------------|-------------------------------------------|-------------------------------------------------------------------|--------------|-------------------------------------------------------------------|
| 1             | Million Plus Cities; There are 44 Million-plus cities in India | 9.9 lacs                                  | 65340                                                             | I            | Rs 300 crore                                                      |
| 2             | Other Cities                                                   | 30.6 lacs                                 | 201960                                                            | II           | Rs 920 crore                                                      |

- However, this needs to be complemented with the strong enforcement which would ensure that the scrapped vehicle is either destructed or not recycled and transferred to some other place for use.

### **Option 5**

- Another option would be that the ban of old vehicles is not based on the age of the vehicle but on its road worthiness and fitness test as is the case in some advance countries. This would require creating a robust Inspection and Certification system. Road worthiness can be certified by independent agencies after stringent tests as prescribed by the authorities. This would require empanelling the agencies for the effective certification system.

### **Option 6**

- Besides, incentivisation, Government could also explore options like creating low emission zones to reduce pollution levels in populated areas. Low emission zones are regions in which high-emitting vehicles are either prohibited from operating or charged a fee for entering. The establishment of such zones can provide strong additional incentives to owners of high-emitting vehicles to take advantage of fiscal subsidies and replace their vehicles. Given below are three international examples of such low emission zone strategies.
- In **China**, the city of Beijing offered subsidies for the replacement of older vehicles while simultaneously banning those vehicles from traveling in the city center, strongly incentivizing truck owners to take advance of the subsidies and upgrade their vehicles.

- Similarly, in **California** the twin ports of Los Angeles and Long Beach banned high-emitting drayage, thereby incentivizing truck owners who wished to do business in the port to upgrade. In some cases, especially in Europe, fees for entering the low emission zone are differentiated based on vehicle emissions, with higher emitting vehicles being charged more.
- Another country which has a successful experience in implementing low emission zone strategy is **Germany**. Germany has widespread experience at the municipal level with the implementation of low emission zones, which become increasingly stringent over time. For example, Berlin has a restricted zone based on emissions performance since 2008; current regulations have prohibited gasoline vehicles not meeting the Euro 1 and diesels not meeting Euro 4 emission standards from entering the city centers since 2010. Other cities have similar programs (Umweltbundesamt, 2013). Although the national Umweltprämie was not explicitly linked to cities' low emission zones, it is conceivable that the local LEZ policies provided additional motivation to consumers to take advantage of the replacement subsidies in 2009.
- In case of India, for truck category, if we switch from BS3 to BS4, we will reduce PM emissions by 80%. So, if we can allow only BS4 heavy vehicles to ply thru NCR- we will reduce the PM load by almost 60%. So, a big opportunity exists to reduce this pollution by switching completely to BS4 as soon as possible. Unfortunately, the fuel supply is not adequate for switching to BS4. Hence, there is a strong need to provide BS4 fuel as soon as possible all across India.

The six options discussed above are tabulated and summarized below.

| <b>Options Under the Vehicle Replacement Scheme</b> | <b>Details of the Options</b>                                                                                                                                                                                                                                                                                                                                                                                            | <b>Fiscal Implication/Remarks</b>                                           |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| Option 1                                            | <p>Direct Subsidy of Rs 46000/- per diesel truck older than 13 years; entire subsidy amount to be borne by the Centre by making additional allocation under the following budget heads/schemes:</p> <ul style="list-style-type: none"> <li>• <b>Prevention of Air and Water Pollution</b></li> <li>• <b>Mission on Climate Change and Adaptation</b><br/><i>(National Adaptation Fund for Climate Change)</i></li> </ul> | Rs 1231 crore for the Centre                                                |
| Option 2                                            | Direct Subsidy of Rs 46000/- per diesel truck older than 13 years; 50% subsidy amount to be borne by the Centre and 50% by the States as the Centre has devolved more funds to States this year onwards                                                                                                                                                                                                                  | Rs 615 crore for the Centre and Rs 615 crore for the States combined        |
| Option 3                                            | Direct Subsidy but Replacement to be done in Phases depending upon the age of vehicle; In the First phase vehicle older than 20 years to be replaced and in the second phase vehicle older than 13 years to be replaced.                                                                                                                                                                                                 | Age profile figures required to calculate the fiscal impact                 |
| Option 4                                            | Direct subsidy but the policy to be implemented in phases depending upon the congestion in cities. In the first phase Million-plus cities to be targeted followed by other cities in second phase                                                                                                                                                                                                                        | Rs 300 crore in Phase 1 for Million-Plus cities and Rs 920 crore in Phase 2 |



|          |                                                                                                                                                                                                                                                                      |                                                                              |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| Option 5 | Ban of old vehicles is not based on the age of the vehicle but on its road worthiness and fitness test as is the case in some advance countries. This would require strengthening of the inspection and certification system which could be implemented in PPP mode. | Robust Inspection & Certification System required                            |
| Option 6 | Creating low emission zones to reduce pollution levels in populated areas; high-emitting vehicles are either prohibited from operating or charged a higher fee for entering.                                                                                         | None; revenue to be generated; but supply of cleaner fuels to be accelerated |

- Government may like to initiate discussions on the pros and cons of each of these schemes in the context of India to introduce incentivisation of vehicle replacement. However, as logical extension to the vehicle replacement programme, the Government also needs to look at the policy for scrappage and safe disposal of the old vehicles to avoid any environmental hazard as a result of scrappage of vehicles. The Consumer Assistance to Recycle and Save (CARS) Act of 2009 was a vehicle replacement program that sought to improve LDV fuel economy throughout the United States. However, an unintended long-term environmental consequence of the CARS program was that many vehicles in working condition were not recycled. While outdated vehicles can generally be fully recycled, the requirement of the CARS program that the engines of scrapped vehicles be destroyed meant that many parts of the vehicles could not be reused for other purposes. This hurts the non-air quality and non-GHG emissions aspects of the environment.

**References:**

- Ministry of Road Transport Year Books
- Survey of Best Practices in Reducing Emissions Through Vehicle Replacement Programs, ICCT, White Paper March 2015
- Replies to Various Parliament Questions
- Industry Inputs